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Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 559 206 A2

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **93103548.9**(51) Int. Cl.⁵: **B41J 2/175**(22) Date of filing: **05.03.93**

(30) Priority: **06.03.92 JP 49507/92**
19.02.93 JP 30106/93

(43) Date of publication of application:
08.09.93 Bulletin 93/36

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI LU NL
PT SE

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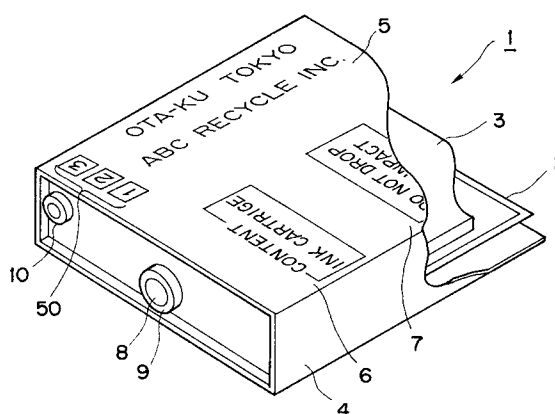
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(54) **Containers for containing expendables, its packaging material and method for collecting the same.**

(57) A container for containing a replaceable article of consumption to be expended as office equipment is operated has a sealing member for hermetically sealing an opening capable of communicating the inside of the container with the outside thereof, and an additional container for accommodating the container for containing the expendable supply. A package or an envelope as the additional container bears an addressee of the manufacture concerned, the details of the contents and matters that demand special attention, these being printed on its surface, for use when the container for containing an article of consumption is collected after use and sent back to the addressee.

FIG. 1



BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates generally to containers for containing replaceable expendables to office equipment and more particularly to a container for containing an article of consumption and a packaging material for accommodating such a container in order to facilitate the recycling of expendables and to a method for collecting those exhausted from office equipment.

Related Background Art

Heretofore, replaceable expendables, for example, used in office automation equipment have been discarded by users themselves after their use. In this case, equipment manufacturers normally provide instruction manuals for equipment to be used and replaceable expendables so that they may be discarded properly, and further stick caution labels to such equipment, expendables and the like to enumerate matters that demand special attention at the time of discarding them.

However, there arise the following problems in the prior art method of letting users discard articles of consumption:

- 1) Varieties of materials including metals, plastics and paper are employed for expendables and besides a combination of these materials has been used therein and this has made these articles of consumption complicated in structure. As it is difficult to determine their contents by the outlooks when metals have been embedded therein, the expendables have been discarded actually as only nonflammable or flammable materials without being classified beforehand.
- 2) When classification as mentioned above is carried out, most of expendables need disassembling by means of tools and the like. Even with special tools attached to them, users will have to do unfamiliar disassembling work.
- 3) Recently materials whose quality is hardly discernible from the external appearance are employed very often, that is, the materials including those which may not be distinguishable as being plastic at first sight or specified metals. In other words, ordinary users may hardly discriminate them.
- 4) In the case of products made of composite materials, it is impossible to recover intended objects before they are disposed of.
- 5) When different expendables are so arranged that used ones are collected into one container, they may be in various forms; powder or liquid, and this is also problematical in that they are not fit for collective disposal.

Moreover, it still poses a serious social problem to the fact that, in view of not only recycling refuse as one of the current topics but also environmental preservation, adequate disposal of refuse has not yet been implemented and that manufacturers are still unable to fulfill their responsibility therefor.

Brochures describing collection of refuse for recycling and stickers designating collecting destinations are presently supplied to users at the time of sales, and these brochures and stickers normally accompany the product sold. In other words, the brochure is intended only to call attention to collection of refuse for recycling. Any consumer who has purchased the expendables repeatedly is not necessarily tempted to read the brochure enclosed in the instruction manual. It is therefore readily imagined for the sticker designating collecting destinations to be thrown away without attention.

Even if, moreover, the consumer reads such a brochure and wishes to contribute to recycling refuse by sending back the expendables, the consumer himself is supposed to do the work of fitting boxes to be returned with buffer materials to prevent them from being damaged or soiled. This work imposes a considerable burden on the consumer.

When the expendables are liquid instead of powder, they need hermetic sealing and this would make it costly to employ means of transportation or to send them by mail, for instance.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a container for containing an article of consumption to be expended as, for example, office equipment is operated, the container being so configured and functioned that it is transportable while bearing a prewritten addressee and matters that demand special attention at the time it is sent back for collection.

It is another object of the present invention to provide a package for accommodating a container for containing a used article of consumption, the package being so configured and functioned that it is transportable while bearing a prewritten addressee and matters that demand special attention at the time it is sent back for collection.

It is still another object of the present invention to provide a method of facilitating the recycling of exchangeable expendables by enclosing a transportation bag in the container itself for containing an article of consumption or a package for accommodating a container for containing a used article of consumption, the transportation bag being so configured and functioned that it is transportable while bearing a prewritten addressee and matters

that demand special attention at the time it is sent back for collection.

With the utilization of the aforementioned container or packaging material according to the present invention, the container for containing a used article of consumption and the refuse discharged from office equipment can be sent back by mail or express delivery to the manufacturer concerned without causing any trouble to the user. In this manner, the manufacturer concerned is allowed to fulfill the responsibility for refuse so that recycling of refuse may be implemented in consideration of environmental preservation.

Transportation means adapted to the invention is not limited since the container for the expendables can easily be collected and returned, and pollution during transportation can be prevented.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a partially exploded perspective view of an ink cartridge according to a first embodiment of the present invention.

Fig. 2 is a partially exploded perspective view of an ink cartridge according to a second embodiment of the present invention.

Fig. 3 is a partially exploded perspective view of an ink cartridge according to a third embodiment of the present invention.

Fig. 4 is an external perspective view of a package for an ink cartridge according to a fourth embodiment of the present invention.

Fig. 5 is an external perspective view of a package for an integrated type ink cartridge according to the fourth embodiment of the present invention.

Fig. 6 is a diagram illustrating a protective material for the discharge port of the integrated type cartridge.

Fig. 7 is a diagram illustrating an integrated type protective material for the discharge port of integrated type cartridge.

Fig. 8 is a partially exploded perspective view of an envelope for use in returning the ink cartridge according to a seventh embodiment of the present invention.

Fig. 9 is a partially exploded perspective view of an envelope for use in returning the ink cartridge according to an eighth embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiments of the present invention will subsequently be described.

[First Example]

Fig. 1 is a partially exploded perspective view of an ink cartridge for supplying expendable ink to an ink jet recording apparatus as a first example of the present invention. In Fig. 1, numeral 1 denotes a replaceable ink cartridge, and 4 a container therefor. An addressee 5, the details 6 of the contents, matters 7 that demand special attention at the time the cartridge is sent back, a postal code 50 and the like have been printed beforehand on the back of the container 4, this side corresponding to the back of the apparatus proper during its normal use.

While the apparatus is in use, its suction force causes the ink filled in an ink tank 2 to be supplied from an ink supply port 8 to the apparatus body. As the ink supply port 8 is usually formed of rubber, it is provided with a retaining ring 9 to maintain the tightening force of the rubber.

The ink used and discharged through the operation of a suction pump of the recording apparatus is led from a waste ink suction port 10 into the ink cartridge 1 before being absorbed into an internal porous material 3 for absorbing waste ink.

When the remaining stock of ink in the tank 2 decreases, a detecting mechanism (not shown) in the apparatus operates to inform the user of the necessity of replacing the expendable cartridge.

If the rubber member in the sealing part is so arranged that its compression permanent deformation is set at not greater than 10%, the air-tightness of the used cartridge may be increased further when the pin is pulled out. Moreover, the porous material for absorbing waste ink is absorbent enough to prevent the waste ink from leaking through the waste ink suction port.

[Second Example]

Fig. 2 illustrates a cartridge cover 11, that is, a hermetic sealing member as a hermetic sealing means for preventing ink from leaking during transportation.

The example shown in Fig. 2 is provided with the cartridge cover 11 for hermetically sealing the ink supply port 8 and the waste ink suction port 10 to further ensure the air-tightness in the first example. The cartridge cover 11 has pawls 13 for preventing the cover 11 from slipping off, whereas an ink cartridge case 4 has holes 14 for catching the pawls.

The cartridge cover 11 is fitted with rubber members 12 for hermetically press-sealing the ink supply port 8 and the waste ink suction port 10, respectively. In place of such water-repellent rubber members, those which are water-absorbent may be employed in the hermetic sealing parts.

Consequently, ink is prevented from leaking even though external force is applied to the ink cartridge, which can be collected without contaminating anyone handling it or staining other commodities in transit.

[Third Example]

Fig. 3 illustrates recessed and protruded parts for use in fitting the cartridge cover 11. As shown in Fig. 3, recessed parts 15 and pawls 16 as protruded parts are used to mate the cartridge with the recording apparatus, the pawls being provided on the cartridge cover 11. This arrangement is effective in saving production cost and preventing the number of processes in manufacture from increasing.

Either of the recessed and protruded parts, may be fitted to the cartridge without inconvenience.

The address of the manufacturer concerned has already been printed on the back of each ink cartridge as referred to in the first through third examples. Therefore, the user can have the manufacturer collect the used cartridge and waste ink without any nuisance only by requesting the forwarding of them as they are.

[Fourth Example]

Fig. 4 is an external perspective view of a cartridge package 17 as the second example of the present invention. The package 17 accommodates an ink cartridge 1a (which is different from what is described in the first example and only bears outwardly the details of the contents and matters that demand special attention thereto in a printed form) and is used not only for the collection of a container for containing a used cartridge but also as the delivery package before using. The addressee 5, the details 6 of the contents, the matters 7 that demand special attention at the time the cartridge is transported and the like have been printed on the surface of the package 17, which is also supplied with a fixing tape 18 for sealing the package cover. As a result, the same effect as stated in the first example is achievable. When this ink cartridge is collected, the utilization of the package before use together with the hermetic sealing member described in the second example can prevent the ink from leaking in combination.

Since the package before use is employed, even an integral cartridge 20 incorporating a recording head having discharge ports and an ink container as shown in Fig. 5 (irrespective of the fact that it is an integrally molded type or separable type) is applicable without any problem.

The addressee and the like printed on the surface of the package cover ensure that attention is directed to them when the package is opened. Consequently, the consumer is allowed to send back the used expendable cartridge more readily than before without newly preparing another box.

[Fifth Example]

The prevention of ink leakage at the time the cartridge integrally having a head is collected can further be accomplished by employing a cap of Fig. 6. This cap is fitted into a mating part 21. The cap 22 of the integral cartridge equipped with a discharge port protective member 23 sticking to ink discharge ports 19 is provided when the cartridge is collected.

If this cap 22 is used when the cartridge is not only collected but also replaced with another one containing ink of different color during the usual operation, it may be effective in preventing the ink discharge ports 19 of an unused cartridge from drying up.

When a cartridge is used until a continuous printing operation is no longer performable, it is naturally possible to use the cap enclosed in another newly purchased cartridge for the used one as both of them are replaceable since they are of the same standard.

[Sixth Example]

As shown in Fig. 7, a cap 24 may be provided as an attachment to the integral cartridge (not as a separate member as shown in Fig. 6) in order to prevent ink leakage when the cartridge is collected. The cap 24 is provided with a discharge port protective member 23 adhering to the ink discharge port 19.

With the provision of the cap as a separate member, it may be lost. However it can be prevented by combining it with the cartridge.

Although the protective members described in the fifth and sixth examples may be either waterproof or water-absorbent, it has to be able to adhered to the discharge ports.

In order to prevent ink from leaking out, a waterproof or water-absorbent member may be attached to the inside of the packaging material or there may otherwise be provided what has a dual construction with a water-absorbent member adhering to the inside of a waterproof member. Further, a coating instead of the use of such a member may be enough for the purpose.

[Seventh Example]

Fig. 8 is a partially exploded perspective view of an envelope for use in sending back an ink cartridge as a seventh example of the present invention. This return envelope 25 is used in place of the package 17 in the fourth example and enclosed in a product before use. The user is to send back the envelope 25 with the used cartridge 1a enclosed therein when it is replaced with a new one. The addressee 5, the details 6 of the contents, the matters 7 that demand special attention and the like have been printed beforehand on the surface of the envelope. This example has also the same effect as stated in the first through sixth examples.

[Eighth Example]

The return envelope 25 may also be large enough to accommodate the whole package shown in the fourth example. For sure transportation, as shown in Fig. 9, however, the inside of such an envelope as shown in the seventh embodiment may be coated with vinyl, polyethylene or the like typical of a waterproof member 26 to effectively prevent ink from leaking out even if ink leakage should happen inside the return envelope used in the seventh example.

In order to prevent ink leakage, the provision of a water-absorbent member inside the envelope may also be enough for the purpose. Further, such a water-absorbent member may be attached to the inside of a waterproof member. In this case, there will arise no problem if any one of the hermetic sealing members shown in Figs. 2, 3 or Figs. 6, 7 is used for the cartridge accommodated in the envelope to ensure that it is sent back with safety.

[Other Examples]

Although a description has been given of cases where ink jet recording apparatus are employed in the respective examples, the present invention is not limited to them but applicable to replaceable expendable supplies to office equipment in general. Moreover, the integral cartridges shown in Figs. 5, 6 may be combined with what is arranged in the first example and besides any of those shown by way of examples may also be employed in combination.

As set forth above, the used articles of consumption supplied to office equipment, for instance, and the refuse discharged and collected from such equipment is sent back to the manufacturers concerned without much trouble and any limitation on the means of transportation to be caused to users. Therefore, contributions to environmental preservation are promoted by properly

processing recycling flow.

A container for containing a replaceable article of consumption to be expended as office equipment is operated has a sealing member for hermetically sealing an opening capable of communicating the inside of the container with the outside thereof, and an additional container for accommodating the container for containing the expendable supply. A package or an envelope as the additional container bears an addressee of the manufacture concerned, the details of the contents and matters that demand special attention, these being printed on its surface, for use when the container for containing an article of consumption is collected after use and sent back to the addressee.

Claims

1. A container for containing a replaceable article of consumption to be expended as office equipment is operated, said container comprising:
 - a sealing member for hermetically sealing an opening capable of communicating the inside of said container with the outside thereof; and
 - an additional container for accommodating said container for containing a used article of consumption,
 - wherein said additional container bears a printed addressee and matters that demand special attention for use when said container is collected after use and sent back to said addressee.
2. A container according to claim 1, wherein said opening includes an ink supply port of an ink cartridge containing ink for use in an ink jet recording apparatus and a waste ink suction port and wherein said sealing member is used for hermetically sealing said ink supply port and said waste ink suction port.
3. A container according to claim 1, wherein said opening is an ink discharge port of an integral cartridge having a recording head for use in an ink jet recording apparatus and an ink container and wherein said sealing member is used for hermetically sealing said ink discharge port.
4. A packaging material for accommodating a container for containing a replaceable article of consumption to be expended as office equipment is operated, said packaging material being used for accommodating a container for containing an article of consumption before use, said packaging material bearing, on its

surface, a printed addressee and matters that demand special attention for use when said container for containing an article of consumption is collected after use and sent back to said addressee.

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5. A packaging material according to claim 4, wherein the surface of said packing material is a cover of said packaging material which is opened and closed when said container for containing an article of consumption is taken out.

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6. A packaging material according to claims 4 or 5, said container therefor comprising a sealing member for hermetically sealing an opening capable of communicating the inside of said container with the outside thereof.

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7. A packaging material according to claim 6, wherein said opening includes an ink supply port of an ink cartridge containing ink for use in an ink jet recording apparatus and a waste ink suction port and wherein said sealing member is used for hermetically sealing said ink supply port and said waste ink suction port.

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8. A packaging material according to claim 6, wherein said opening is an ink discharge port of an integral cartridge having a recording head for use in an ink jet recording apparatus and an ink container and wherein said sealing member is used for hermetically sealing said ink discharge port.

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9. A packaging material for accommodating a container for containing a replaceable article of consumption to be expended as office equipment is operated, said packaging material enclosing therein a transportation bag capable of accommodating said container for containing a used expendable supply, said bag bearing a printed addressee and matters that demand special attention for use when said container is collected after use and sent back to said addressee.

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10. A packaging material according to claim 9, said transportation bag having a waterproof member inside.

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11. A packaging material according to claims 9 or 10, said container for containing an article of consumption having a sealing member for hermetically sealing its openings.

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12. A packaging material according to claim 11, said openings including an ink supply port of

an ink cartridge containing ink for use in an ink jet recording apparatus and a waste ink suction port, said sealing member being used for hermetically sealing said ink supply port and said waste ink suction port.

13. A packaging material according to claim 11, said opening being an ink discharge port of an integral cartridge having a recording head for use in an ink jet recording apparatus and an ink container, said sealing member being used for hermetically sealing said ink discharge port.

14. A method for collecting a container for containing a replaceable article of consumption to be expended as office equipment is operated, a packaging material for accommodating said container for containing an article of consumption before use bearing a printed addressee and matters that demand special attention for use when said container is collected after use and sent back to said addressee, said method comprising hermetically sealing an opening capable of communicating the inside of said container with the outside thereof by means of a hermetic sealing member.

FIG. 1

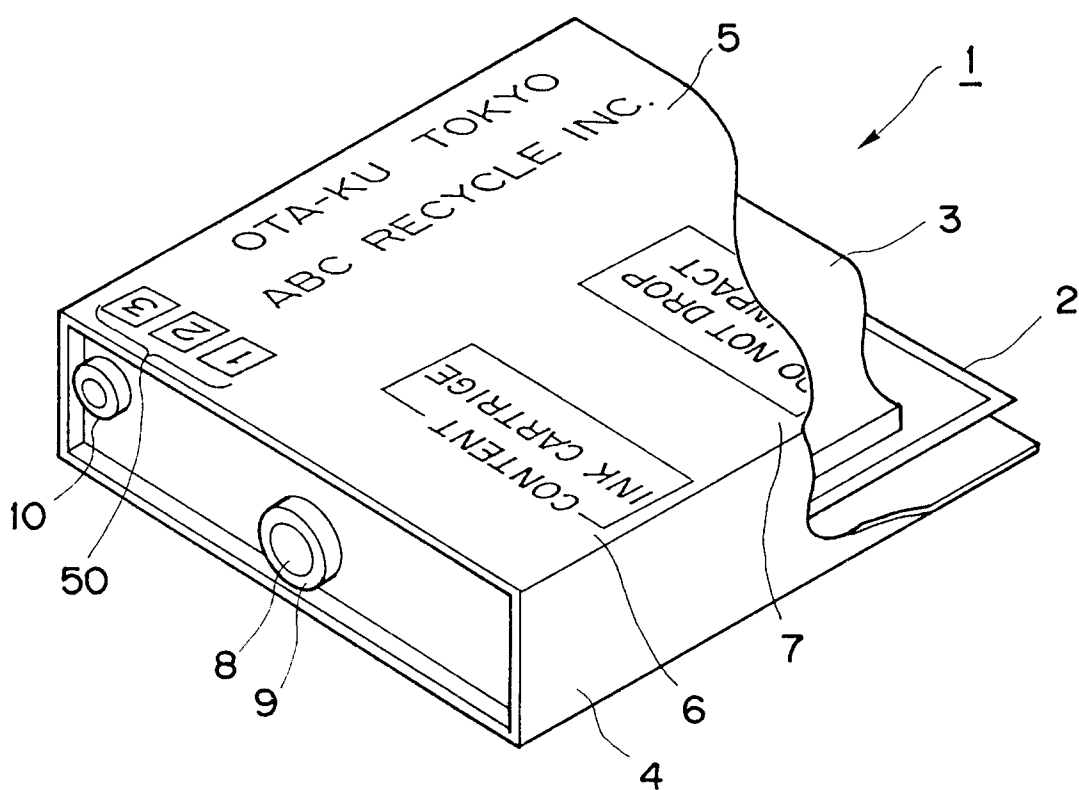


FIG. 2

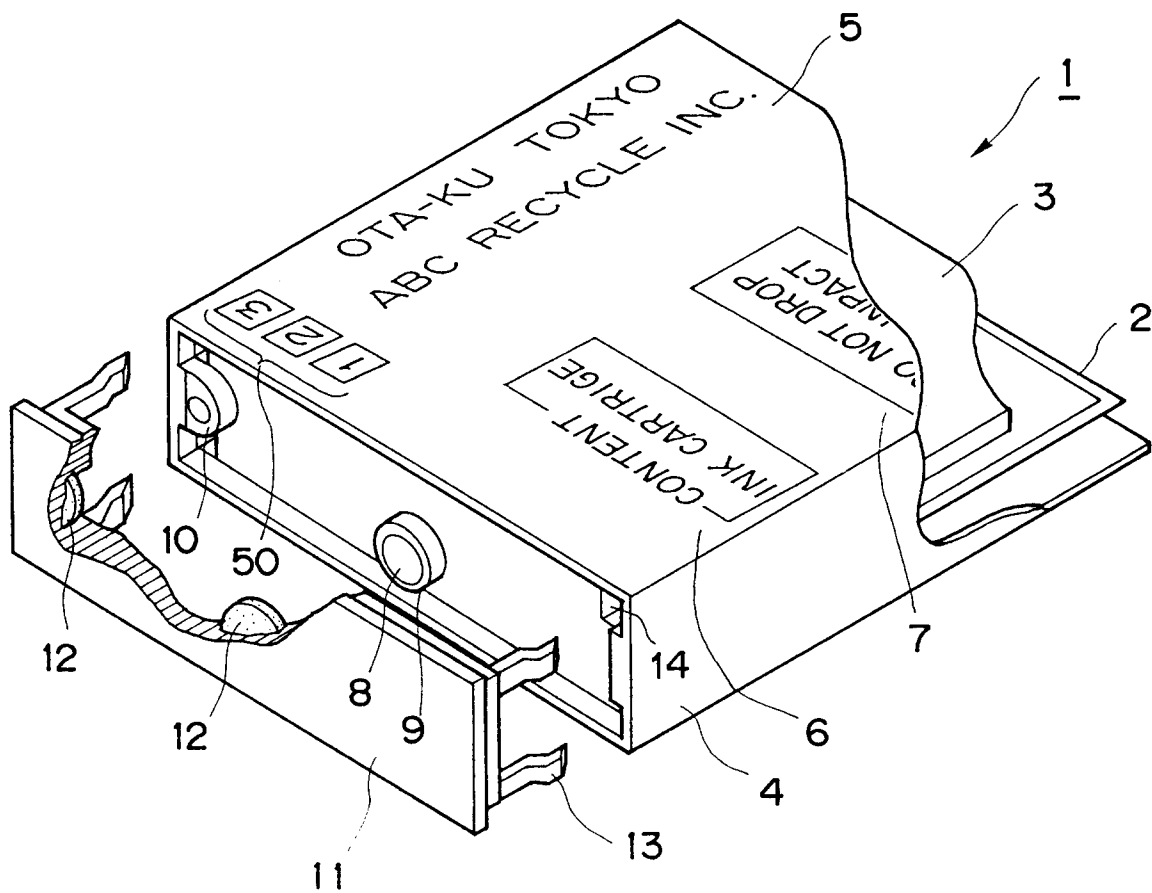


FIG. 3

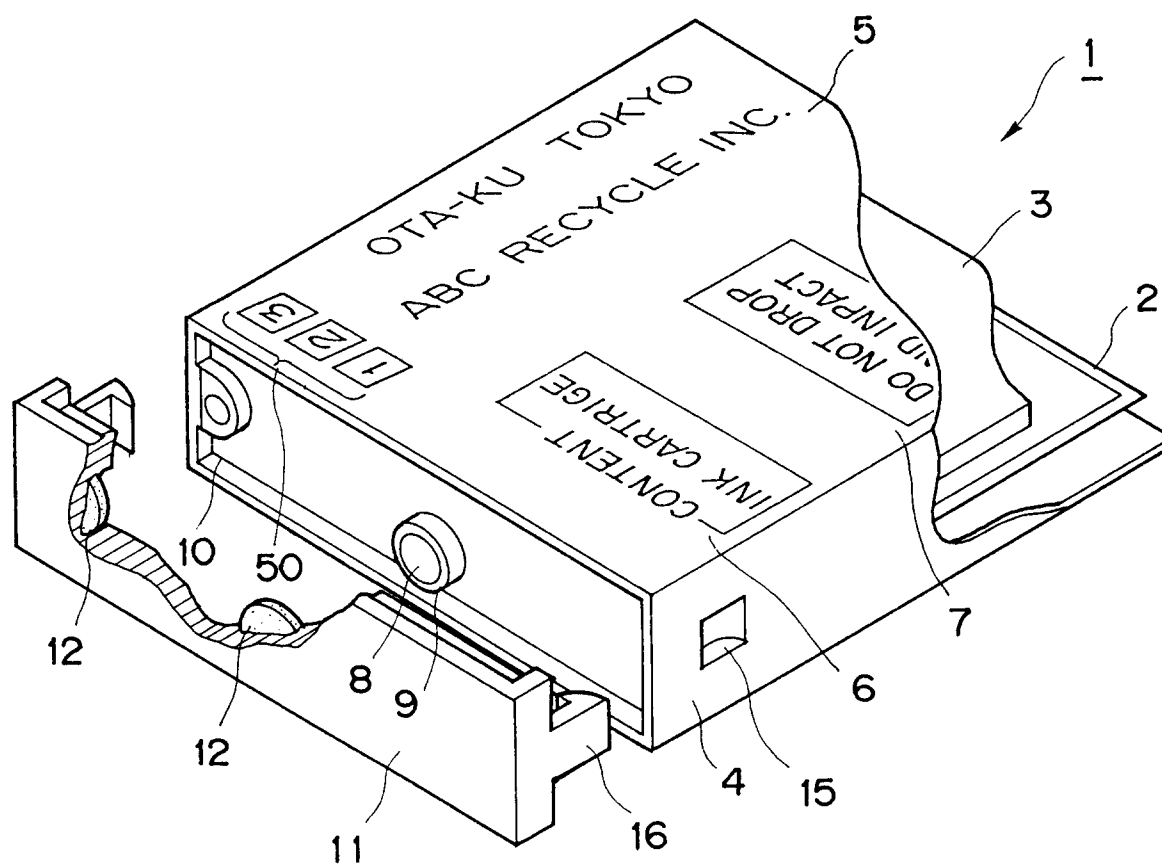


FIG. 4

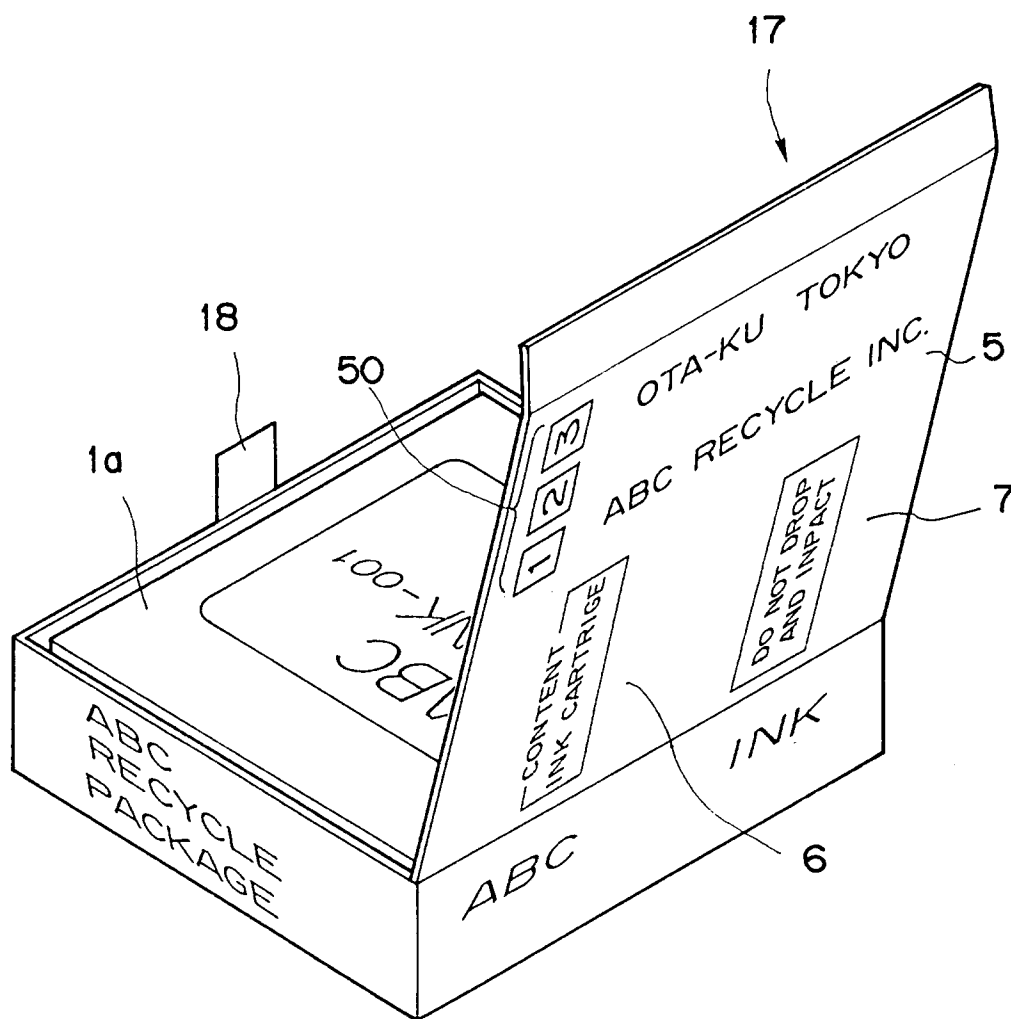


FIG. 5

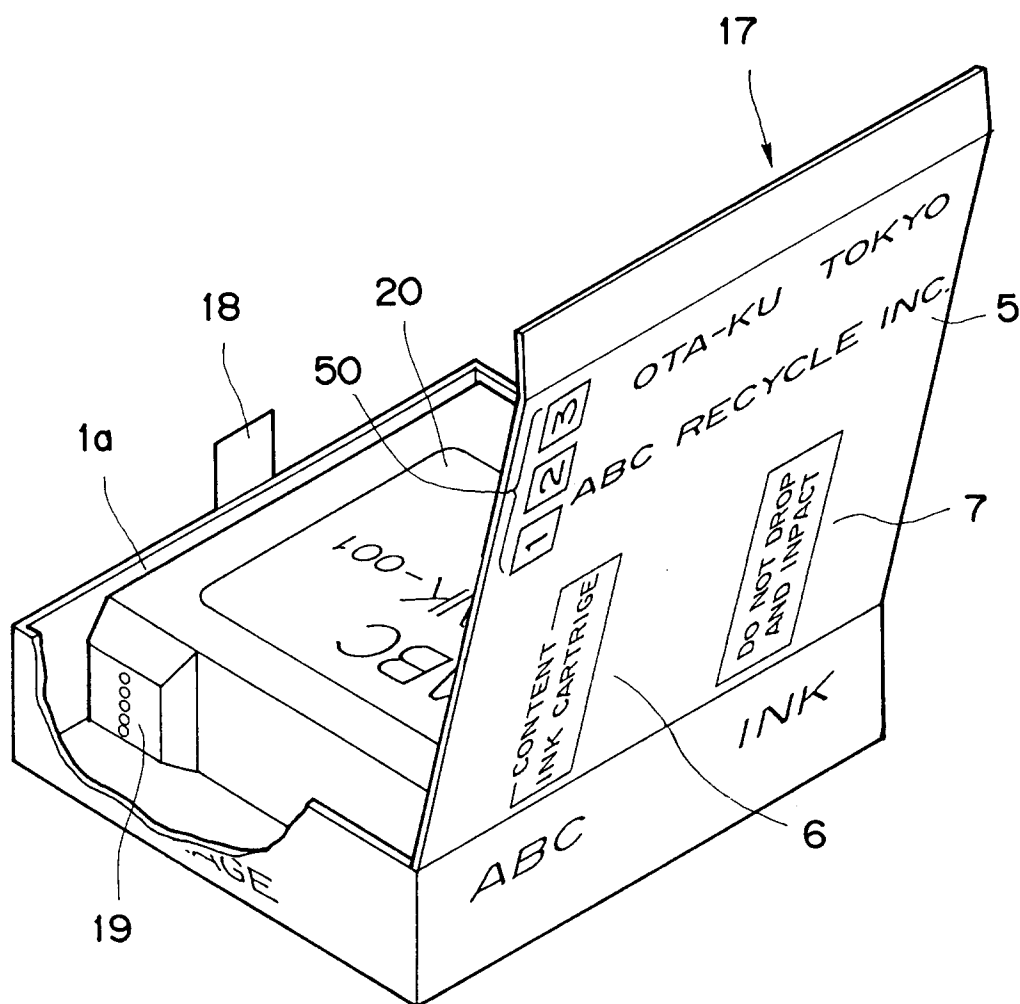


FIG. 6

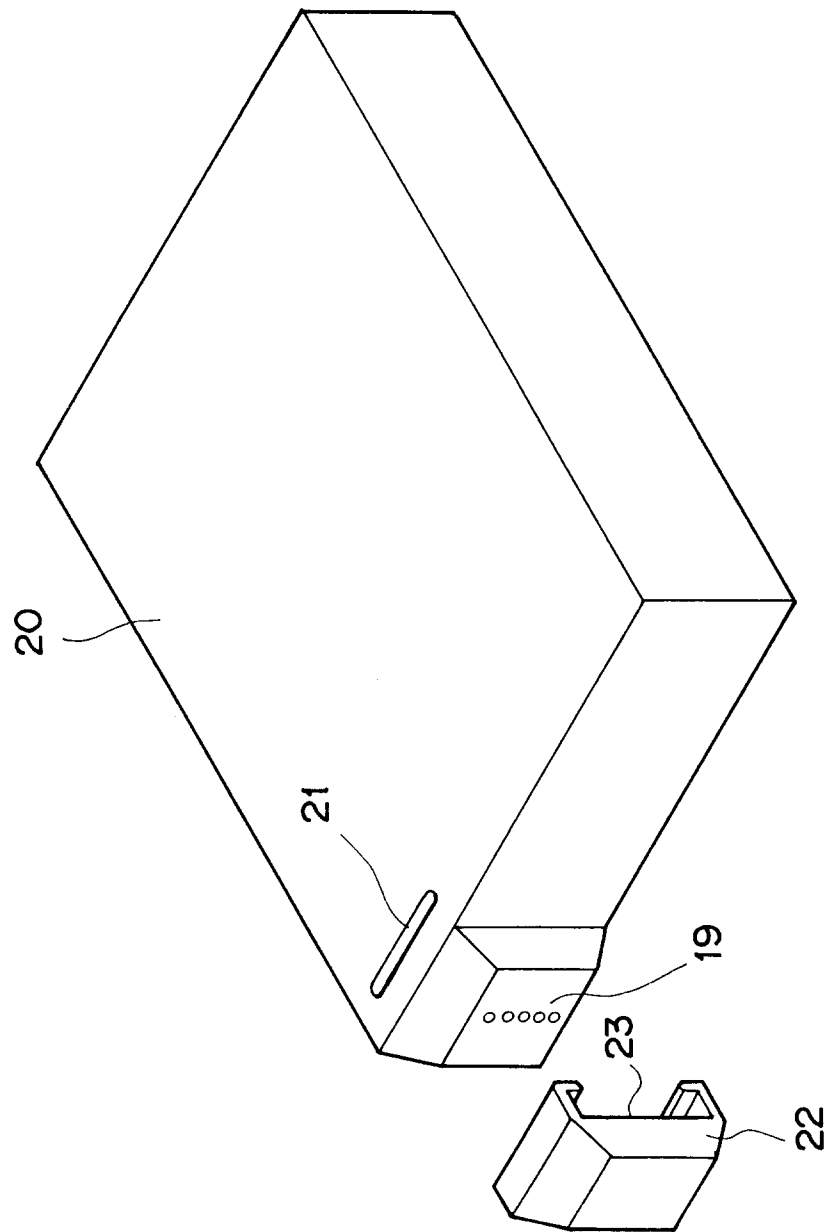


FIG. 7

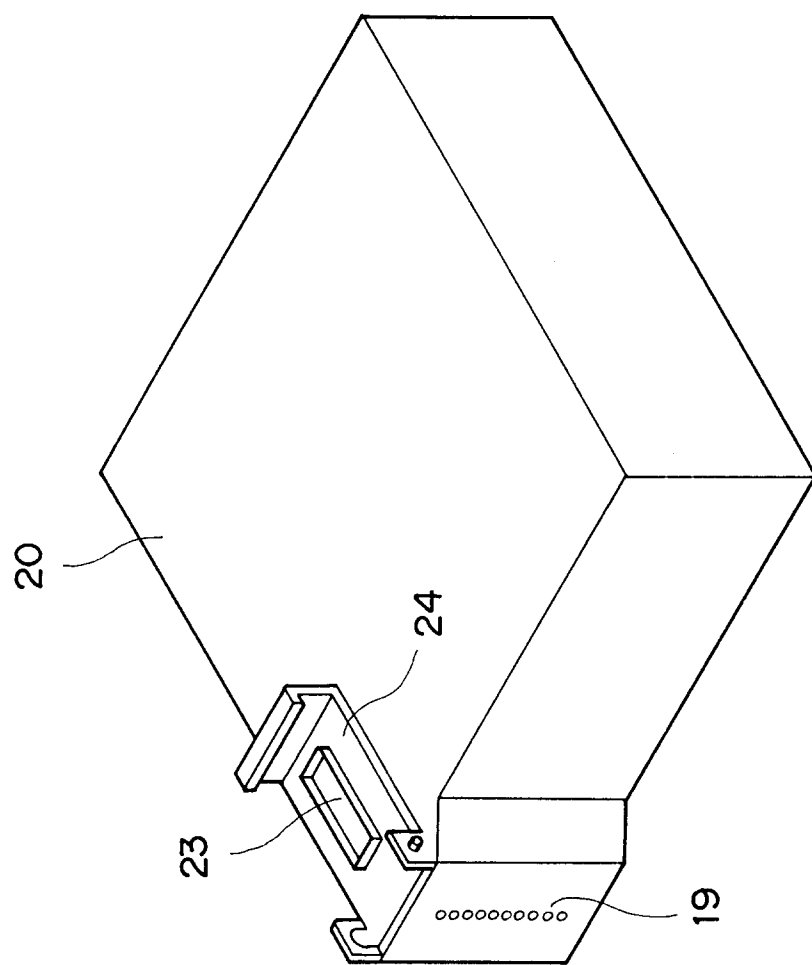


FIG. 8

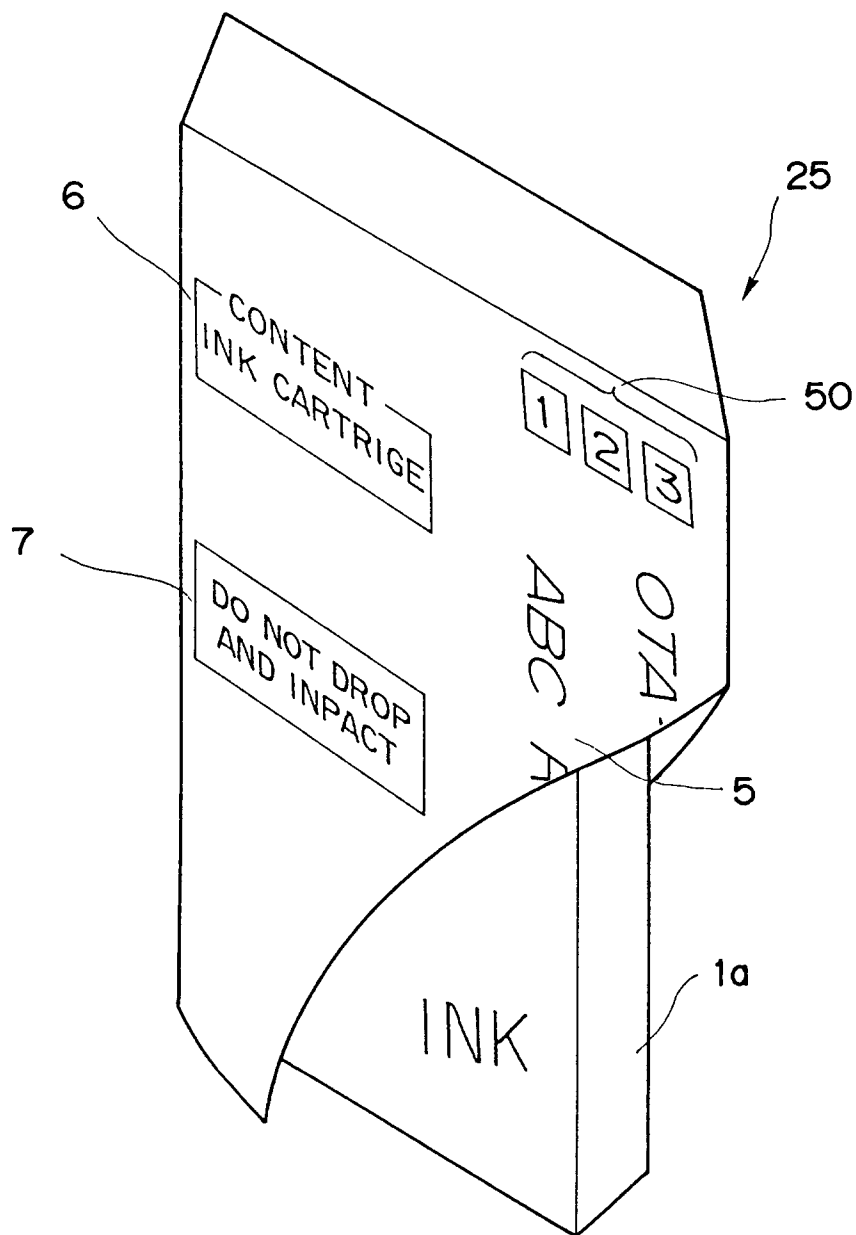


FIG. 9

