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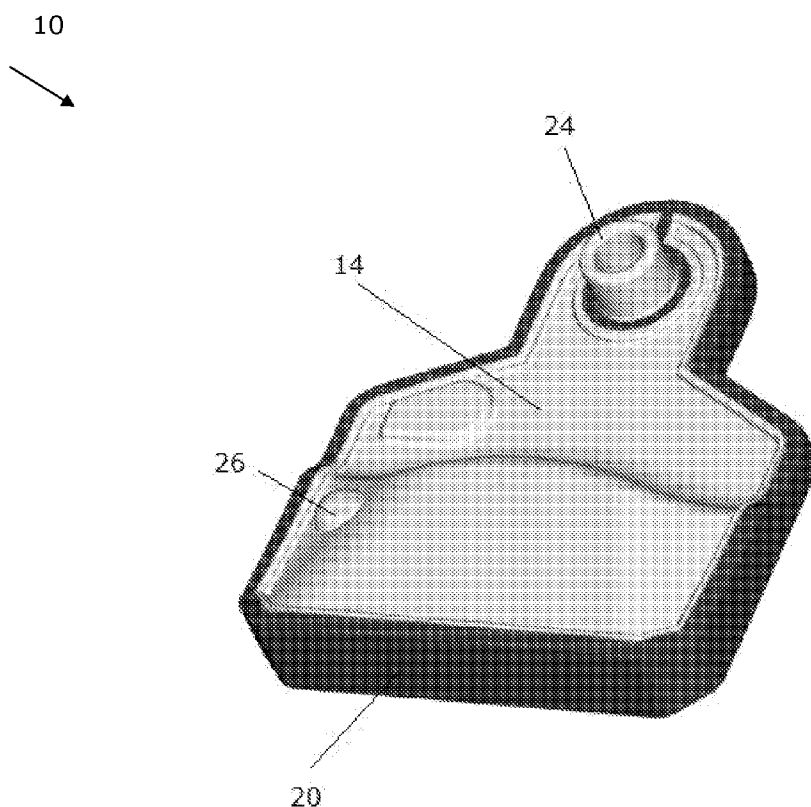
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(54) Title: MONITORING TAG

FIG. 1



(57) Abstract: The invention discloses a monitoring tag with a housing means defining a cavity for receiving electronic monitoring means and sealing means overmoulded on the housing means being adapted to tightly seal the cavity to prevent ingress of fluids.

MONITORING TAG

FIELD OF INVENTION

The present invention relates to a monitoring tag.

More particularly, the present invention relates to a monitoring tag for
5 monitoring moving objects, such as animals.

BACKGROUND TO INVENTION

In view of the loss of livestock due to theft or wandering animals, it has become increasingly important for owners to monitor and track livestock and other moving objects. In addition often the owner requires to track
10 or locate a specific animal or item in a vast area to inspect or treat the animal or object.

PCT/IB2006/050432 Britz et al discloses a monitoring system, which includes at least one tag adapted to be associated with an object to be monitored; at least one field station adapted to determine the relative
15 position of the tag(s) relative to the field station(s); and calculation means for calculating the global positioning system coordinates of the object to be monitored when provided with a tag. The system includes at least one base station adapted to communicate with the field stations(s) and/or the tags. The system includes at least one base station adapted to
20 communicate with the field station(s) and/or the tag(s). The system includes triangulation mapping means and pre-plotted GPS (Global Positioning System) mapping means to determine the global positioning system coordinates of the object to be monitored. The system is adapted to be used to determine the global position of movable property and/or
25 equipment at any given time from any given place, and to be used to continuously track and/or monitor objects.

Known tags for monitoring systems and methods are unfortunately not sufficiently robust for outdoor use, in particular where they are exposed to the elements of nature.

It is an object of the invention to suggest a monitoring tag which will
5 assist in overcoming the afore-mentioned problems.

SUMMARY OF INVENTION

According to the invention, a monitoring tag includes

- (a) a housing means defining a cavity to receive electronic monitoring means;
- 10 (b) sealing means over-moulded on the housing means and adapted to seal the cavity fluid tightly.

Also according to the invention, a method of manufacturing a monitoring tag includes the steps of

- (a) providing housing means defining a cavity;
- 15 (b) inserting electronic monitoring means inside the cavity; and
- (c) of fluid tightly sealing the housing means and the cavity by means of over-moulding.

Yet further according to the invention, a method for monitoring objects includes the use of a monitoring tag as described herein.

- 20 The housing means may include a first housing member and a second housing member associated with the first housing member, the first and second housing members abutting along associated abutting faces and being adapted to define a cavity between them when fitted together.

- 25 The abutting faces of the first and the second housing members may be constituted by associated grooves and ridges.

The sealing means may be adapted to seal the abutting faces of the first and second housing members together so as to seal the cavity between the first housing member and the second housing member outwardly.

The housing means may be made of a soft material.

- 5 The sealing means may be made of a stiff or rigid material.

The housing means may be made of polyurethane and/or TPU plastics material.

The sealing means may be made of polyurethane and/or TPU plastics material.

- 10 The monitoring tag may be an ear-tag.

The monitoring tag may be mounted on a collar.

The monitoring tag may be UV-resistant.

The monitoring tag may be microbial resistant.

- 15 The electronic monitoring means may include an electronic chip and/or identification means.

Printing may be provided on the monitoring tag.

The tag may include connecting means adapted to connect the tag to a collar and/or ear of an animal.

The sealing means may be integrally formed with the housing means.

The housing means may be formed in a first step and the sealing means may be over-moulded on the housing means in a second step after the electronic monitoring means have been located in the cavity.

5 The tag may include switching means to switch and/or control the electronic monitoring means.

The electronic monitoring means may be switched on and off as desired.

The tag may be an intelligent, self-contained electronic device.

The tag may be adapted and/or fixed to the object to enable monitoring of vital signs of the object.

10 The tag may contain a GPS module.

The tag may be connected to an animals, live stock, wild life and/or a domestic animal.

Triangulation mapping means may be used to monitor the position of the tag.

15 The tag be non-toxic to animals and humans.

The tag may be adapted to endure large temperature ranges, namely from -20 deg Celsius to + 50C deg Celsius.

Ink marking adhesion may be provided on the tag.

20 Laser engraving may be provided on the tag and may be durable for at least 5 years.

The tag may have sufficient resistance to tensile forces, namely 280 and 320 Newton's (tearing of material).

The tag may be utilised for at least of the functions selected from the group consisting of

- 5 (a) an early warning system against theft;
- (b) determining and/or predicting of grazing patterns;
- (c) determining the fertility of the animals;
- (d) tracking of animal migrations/movements;
- (e) facilitating game viewing;
- 10 (f) facilitating game hunting; and
- (g) determining position of an injured, sick or dead animal.

The tag may be adapted to communicate via a radio frequency (wireless) link.

The tag may be adapted to transmit and receive data.

- 15 The tag may be adapted to be provided with a unique identification number (UID).

The tag may be adapted to be unique in order to distinguish if from another tag.

The tag may be adapted to monitor and/or control the object:

- 20 The tag may be adapted to be powered by a battery and charged by solar energy and/or electrical energy.

The tag may be adapted to communicate with field stations and/or with another tag.

The fluid may be a liquid, gas and/or air.

BRIEF DESCRIPTION OF DRAWINGS

The invention will now be described by way of example with reference to the accompanying schematic drawings.

In the drawings there is shown in:

- 5 Figure 1: a perspective view of a monitoring tag in accordance with the invention;

Figure 2: a front view of the monitoring tag as shown in Figure 1;

Figure 3: an exploded view of the monitoring tag as shown in Figure 1; and

- 10 Figure 4: an exploded view of the monitoring tag as shown in Figure 2.

DETAILED DESCRIPTION OF DRAWINGS

Referring to the drawings, a monitoring tag in accordance with the invention, generally indicated by reference numeral 10, is shown.

The monitoring tag 10 includes

- 15 (a) a housing means 12 including a first housing member 14 and a second housing member 16 adapted to define a cavity 18 adapted to receive electronic monitoring means;
- (b) sealing means 20 over-moulded on the housing means and adapted to seal the cavity 18 fluid tightly.
- 20 The first housing member 14 and the second housing member 16 abut along associated abutting faces 22, which is constituted by associated grooves and ridges.

The sealing means 20 is adapted to seal the abutting faces 22 of the first housing member 14 and the second housing member 16 together so as to seal the cavity 18 outwardly.

5 The housing means 12 is made of a soft material such as polyurethane and TPU plastics material.

The sealing means 20 is made of a stiff or rigid material such as polyurethane and TPU plastics material.

10 The monitoring tag 10 is an ear-tag, but can also be mounted on a collar. The tag 10 include connecting means 24 adapted to connect the tag 10 to a collar or ear of an animal. The tag 10 can thus be connected to an animals, live stock, wild life and a domestic animal.

The monitoring tag 10 is UV-resistant and microbial resistant.

The electronic monitoring means includes an electronic chip and identification means.

15 Printing may be provided on the monitoring tag 10.

The sealing means 20 is integrally formed with the housing means 12.

The housing means 12 is formed in a first step and the sealing means 20 is over-moulded on the housing means 12 in a second step after the electronic monitoring means have been located in the cavity 18.

20 The tag 10 includes switching means 26 to switch and control the electronic monitoring means. The electronic monitoring means can thus be switched on and off as desired.

The tag 10 is an intelligent, self-contained electronic device. The tag 10 is adapted and/or fixed to an object to enable monitoring of vital signs of the object.

The tag 10 can contain a GPS module.

5 The tag's 10 Polyurethane TPU material specifications includes the following:

- Non toxic to animals and humans
- Microbial resistant
- Large temperature range -20 deg Celsius and + 50C deg
10 Celsius
- Ink marking adhesion to TPU excellent
- Laser engraving durable for 5 years
- Sufficient resistance to tensile force of 280 and 320 Newton's (tearing of material).

15 Triangulation mapping means is used to monitor the position of the tag 10. The tag 10 can be utilised for at least of the functions selected from the group consisting of

- (a) an early warning system against theft;
- (b) determining and/or predicting of grazing patterns;
- 20 (c) determining the fertility of the animals;
- (d) tracking of animal migrations/movements;
- (e) facilitating game viewing;
- (f) facilitating game hunting; and
- (g) determining position of an injured, sick or dead animal.

25 The tag 10 can communicates via a radio frequency (wireless) link and transmit and receive data.

The tag 10 is provided with a unique identification number (UID).

The tag 10 is unique in order to distinguish it from another tag.

The tag 10 is adapted to monitor and/or control the object.

The tag 10 is self-contained and can be powered by a battery and charged by solar energy and/or electrical energy.

- 5 The tag 10 is adapted to communicate with field stations and/or with another tag.

The fluid is generally liquid and air.

The monitoring tag 10 in accordance with the invention, can thus be used for a method for monitoring objects.

LIST OF REFERENCE NUMERALS

	10	Monitoring tag
	12	Housing means
	14	First housing member
5	16	Second housing member
	18	Cavity
	20	Sealing means
	22	Abutting faces
	24	Connecting means
10	26	Switching means

PATENT CLAIMS

1. A monitoring tag, which includes
 - (a) a housing means defining a cavity to receive electronic monitoring means; and
 - (b) sealing means over-moulded on the housing means and adapted to seal the cavity fluid tightly.
2. A tag as claimed in claim 1, in which the housing means includes a first housing member and a second housing member associated with the first housing member, the first and second housing members abutting along associated abutting faces and being adapted to define a cavity between them when fitted together.
3. A tag as claimed in claim 2, in which the abutting faces of the first and the second housing members are constituted by associated grooves and ridges.
4. A tag as claimed in claim 2, in which the sealing means are adapted to seal the abutting faces of the first and second housing members together so as to seal the cavity between the first housing member and the second housing member outwardly.
5. A tag as claimed in any one of the preceding claims, in which the housing means is made of a soft material.
6. A tag as claimed in any one of the preceding claims, in which the sealing means is made of a stiff or rigid material.
7. A tag as claimed in any one of the preceding claims, in which the housing means is made of polyurethane and/or TPU plastics material.

8. A tag as claimed in any one of the preceding claims, in which the sealing means is made of polyurethane and/or TPU plastics material.
9. A tag as claimed in any one of the preceding claims, which is adapted to be an ear-tag and/or to be mounted on a collar.
10. A tag as claimed in any one of the preceding claims, which is UV-resistant.
11. A tag as claimed in any one of the preceding claims, which is microbial resistant.
12. A tag as claimed in any one of the preceding claims, in which the electronic monitoring means includes an electronic chip and/or identification means.
13. A tag as claimed in any one of the preceding claims, in which printing is provided on the monitoring tag.
14. A tag as claimed in any one of the preceding claims, which includes connecting means adapted to connect the tag to a collar and/or ear of an animal.
15. A tag as claimed in any one of the preceding claims, in which the sealing means is integrally formed with the housing means.
16. A tag as claimed in any one of the preceding claims, in which the housing means is formed in a first step and the sealing means is over-moulded on the housing means in a second step after the electronic monitoring means has been located in the cavity.

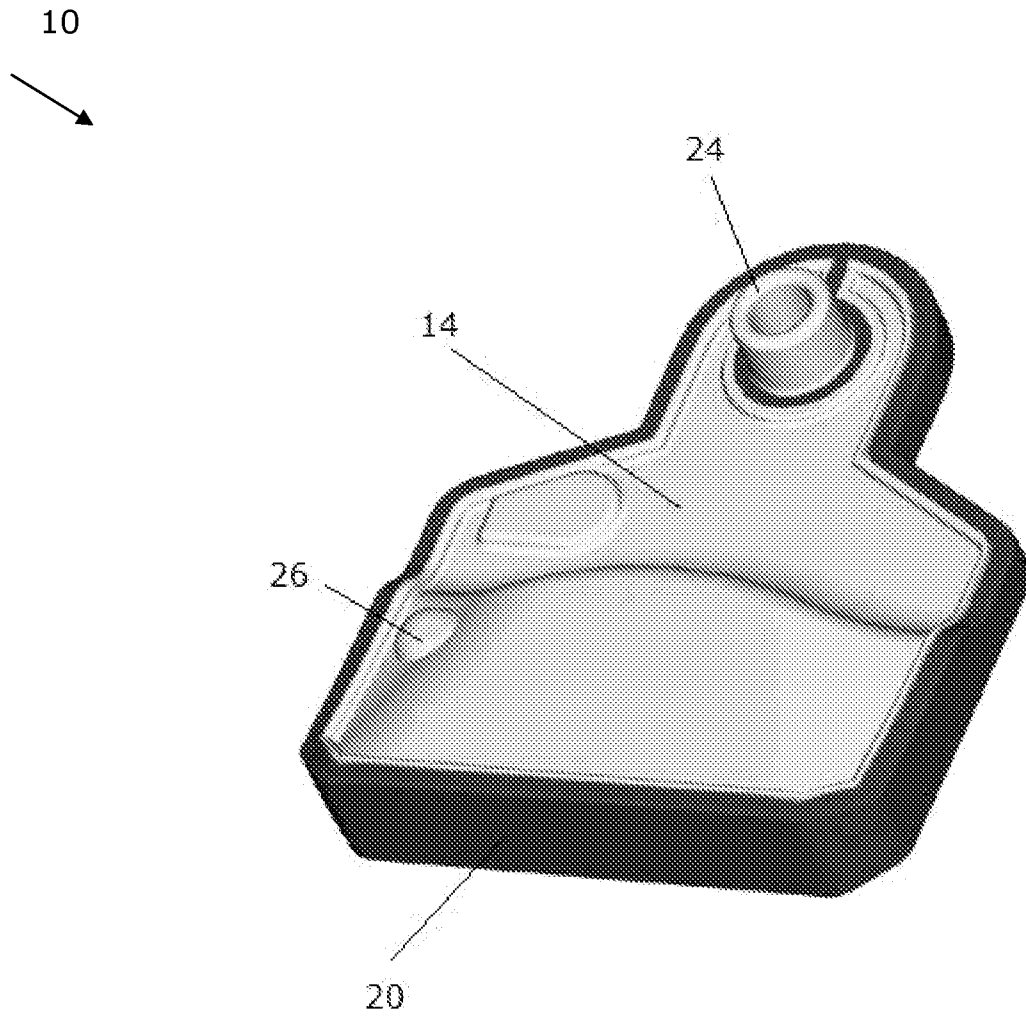
17. A tag as claimed in any one of the preceding claims, which includes switching means to switch and/or control the electronic monitoring means.
18. A tag as claimed in any one of the preceding claims, in which the electronic monitoring means may be switched on and off as desired.
19. A tag as claimed in any one of the preceding claims, which is an intelligent, self-contained electronic device.
20. A tag as claimed in any one of the preceding claims, which is adapted and/or fixed to the object to enable monitoring of vital signs of the object.
21. A tag as claimed in any one of the preceding claims, which includes a GPS module.
22. A tag as claimed in any one of the preceding claims, which is adapted to be connected to an animal, live stock, wild life and/or a domestic animal.
23. A tag as claimed in any one of the preceding claims, in which triangulation mapping means is used to monitor the position of the tag.
24. A tag as claimed in any one of the preceding claims, which is non-toxic to animals and humans.
25. A tag as claimed in any one of the preceding claims, which is adapted to endure large temperature ranges, namely from -20 deg Celsius to + 50C deg Celsius.

26. A tag as claimed in any one of the preceding claims, on which ink marking adhesion provided.
27. A tag as claimed in any one of the preceding claims, on which laser engraving is provided.
28. A tag as claimed in any one of the preceding claims, which is adapted to possess sufficient resistance to tensile forces, namely 280 and 320 Newton's (tearing of material).
29. A tag as claimed in any one of the preceding claims, which is utilised for at least one of the functions selected from the group consisting of
 - (a) an early warning system against theft;
 - (b) determining and/or predicting of grazing patterns;
 - (c) determining the fertility of the animals;
 - (d) tracking of animal migrations/movements;
 - (e) facilitating game viewing;
 - (f) facilitating game hunting; and
 - (g) determining position of an injured, sick or dead animal.
30. A tag as claimed in any one of the preceding claims, which is adapted to communicate via a radio frequency (wireless) link.
31. A tag as claimed in any one of the preceding claims, which is adapted to transmit and receive data.
32. A tag as claimed in any one of the preceding claims, which is provided with a unique identification number (UID).
33. A tag as claimed in any one of the preceding claims, which is adapted to be unique in order to distinguish it from another tag.

34. A tag as claimed in any one of the preceding claims, which is adapted to monitor and/or control the object.
35. A tag as claimed in any one of the preceding claims, which is powered by a battery and charged by solar energy and/or electrical energy.
36. A tag as claimed in any one of the preceding claims, which is adapted to communicate with field stations and/or with another tag.
37. A tag as claimed in any one of the preceding claims, in which the fluid is a liquid, gas and/or air.
38. A method of manufacturing a monitoring tag includes the steps
 - (a) providing housing means defining a cavity;
 - (b) inserting electronic monitoring means inside the cavity; and
 - (c) of fluid tightly sealing the housing means and the cavity by means of over-moulding.
39. A method for monitoring objects includes the use of a monitoring tag as claimed in any one of claims 1 to 37.
40. A monitoring tag substantially as hereinbefore described with reference to the accompanying drawings.
41. A method of manufacturing a monitoring tag substantially as hereinbefore described with reference to the accompanying drawings.
42. A method for monitoring objects substantially as hereinbefore described with reference to the accompanying drawings.

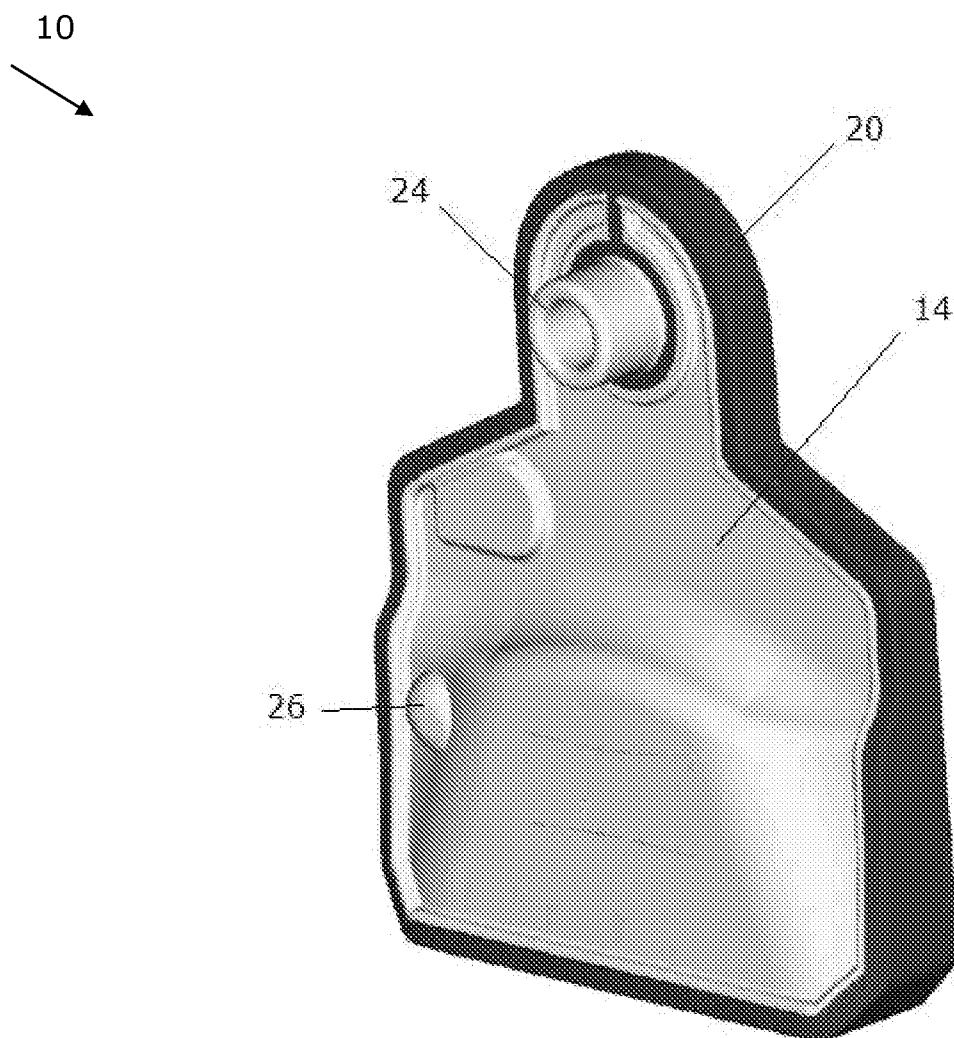
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FIG. 1



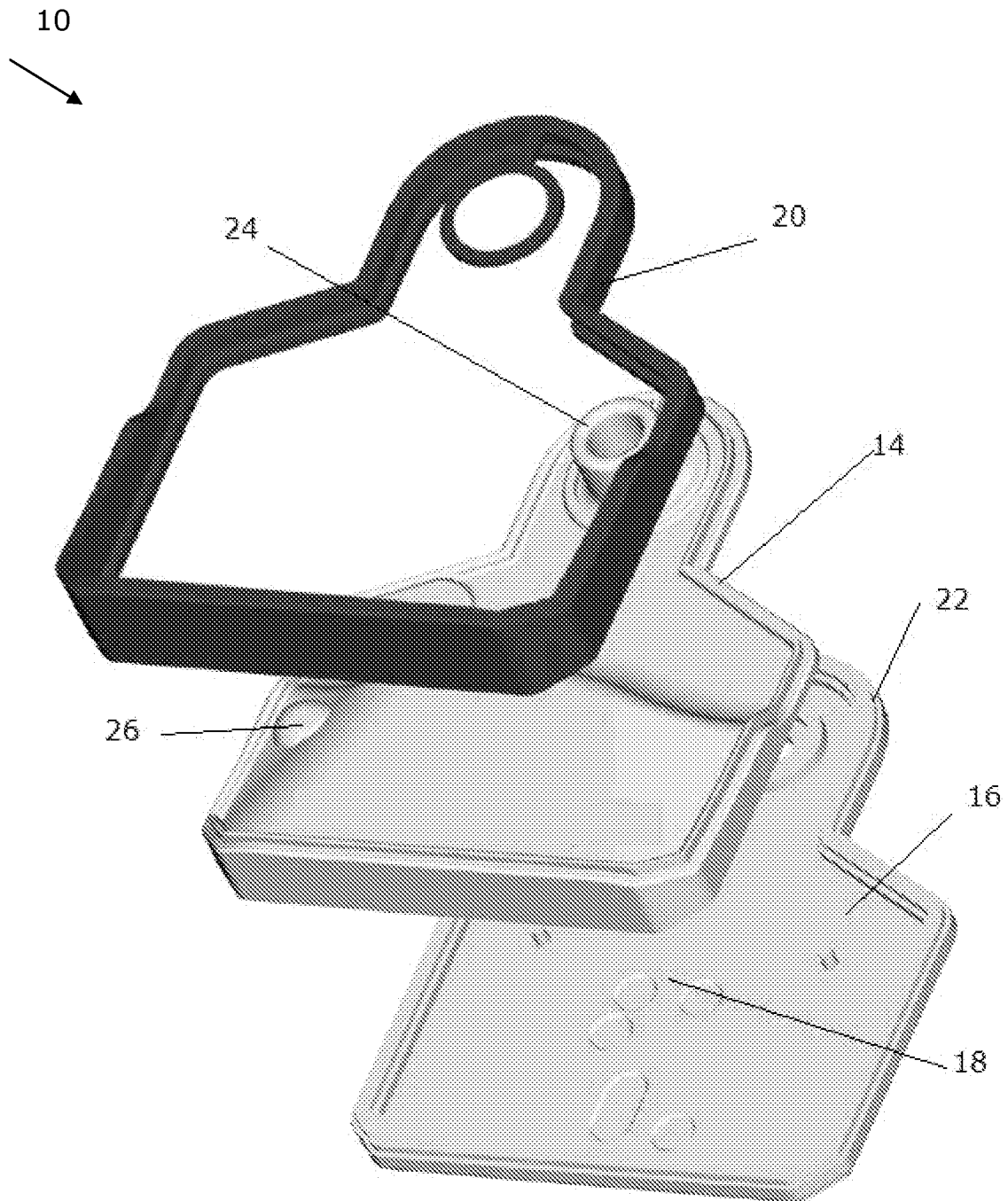
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FIG. 2



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FIG. 3



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FIG. 4

