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1. Field of the invention

The field of the invention is that of the identification and tagging of animals.

More specifically, the invention pertains to a station for identifying a series of animals
5 that can be used to affix or attach an identifying tag to an animal, remove a sample from the animal and identify the sample removed, and then repeat these operations for another animal.

Such a station can be used to identify any animal species, and especially to identify piglets, poultry or any animal that can be easily carried.

2. Prior Art

10 The document US2008/0227662 A1 discloses a station for identifying animals, comprising means for tagging animals by attaching an identifying tag to each animal, means for taking a sample from said animal and means for reading at least one piece of identifying information carried by said identifying tag. The document US2008/0227662 A1 furthermore discloses the pre-
15 recording, in a data base, of an identifying number carried by the identifying tag and/or an identifier carried by a capsule for receiving a taken sample and/or the reading, by means of a specific reader, of an identification number carried by the identifying tag and/or an identifier carried by the capsule, so as to associate the identification number carried by the identifying tag with the identifier carried by the capsule.

The patent application FR 2 981 242 filed on behalf of Allflex Europe, relates to a station
20 for identifying piglets used especially to automatically affix identifying tags on the ears of the piglets, each tag being formed by a male part and a female part intended to be crimp-connected through a piglet's ear, inserted by hand into a housing dedicated to the crimp connection.

To this end, such a station comprises:

- means for storing a plurality of male parts and female parts,
- 25 - means to control the crimp connection through the ear inserted into the dedicated housing, and
- means for the automatic execution of a controlled crimp connection, using a male part and a female part automatically sent forward by the storage means, through the ear inserted into the dedicated housing.

30 Such a station has many advantages.

In particular, as compared with the manual techniques requiring the use of a clamp to individually tag each animal, it enables the rapid identification of large numbers of animals (in the range of one piglet every three seconds).

In addition, such a station restricts the number of operators required to identify a piglet
35 through an entirely manual method, since only one user is needed for the use of the station. It is

enough indeed for this user to introduce an ear of the piglet into the housing dedicated to the crimp connection to automatically or manually control the execution of the crimp connection though the piglet's ear (for example by applying pressure to a pedal, a push-button, a lever etc).

In particular, such a station can especially be used to affix electronic rings to the piglets.

5 One drawback of such a station is that it is not multi-functional. In other words, it is dedicated only to the automatic placing or laying of the identifying tags.

There is therefore a need for a novel identification station that can be used especially to carry out other operations such as the automatic placing of identifying tags.

3. Summary of the invention

10 The invention proposes a novel solution that does not have all these drawbacks of the prior art, in the form of a station for identifying animals comprising means for the automatic tagging of the animals, by attaching an identifying tag to each animal.

According to this invention, such station also has the following means, activated to identify at least one of said animals:

- 15
- means for taking a sample from said animal,
 - means for reading at least one piece of identifying information of said animal carried by the identifying tag,
 - means for generating at least one identifier from said at least one piece of identifying information read by said reading means, and
- 20
- means for identifying said sample with said at least one identifier.

The invention thus proposes a novel identification station enabling the performance, at the same time and the same place, of all the operations for the veterinary treatment/identification of animals. The next animal is therefore treated only after the operations for identifying the first animal have been completed. Thus, the identification of an animal and the sample associated with the animal are secured by an operation, for each animal, of linking the sample taken from the animal with a piece of information identifying the animal, carried by an identifying tag of the animal.

25

In particular, the invention enables the simple performance of operations for placing an identifying tag and taking a sample by using every known technique. In particular, the invention enables the association of a sample-taking technique with a machine for the automatic placing of identifying tags and more specifically makes it possible to identify the taken sample when an automatic placing machine is used.

30

It must be noted that the term "identifying tag" is understood to mean a visual and/or electronic tag. In particular, an electronic tag comprises especially electronic rings to be placed

on an external part of the animal (such as its ear, its wing, etc) or subcutaneous implants to be inserted beneath the animal's skin, working for example by an RFID type technology.

The sample collected can for its part be blood, saliva, fur, feather, pieces of flesh, etc.

According to a first embodiment, the identification station comprises means for printing
5 said at least one identifier on a container intended to receive said sample or a label intended to be associated with said container.

A simple "visual" reading therefore makes it possible to identify the corresponding animal.

According to a second embodiment, the identification station comprises means for
10 programming a component of an electronic label, capable of storing said at least one identifier in said component, said electronic label being intended to be associated with a container intended to receive said sample.

For example, the same identification information as that carried by the identifying tag attached to the animal is stored in the electronic label.

15 A simple "electronic" reading of the label therefore makes it possible to identify the corresponding animal.

Such a label can especially work at high frequencies (HF), of the order of 3 to 30 MHz, or in the ultra high frequencies (UHF), of the order of 300 MHz and 3000 MHz.

In particular, according to this embodiment, it is possible to use an existing electronic
20 label and to program a component of the electronic label in order to store the identifier or identifiers therein or else to directly print a label carrying the identifier or identifiers using for example a technology based on plane elements working in the UHF band. According to this latter example the electronic label comprises at least one planar antenna and at least one plane component storing at least one identifier of the animal.

25 According to one variant, the electronic label takes the form of an implant or a "glass tag" (a glass capsule).

Thus, whatever the embodiment, it is possible to either print/program directly the identifier or identifiers on the container intended to receive the sample or to print/program a label and insert this label into the container or to fixedly attach this label to the container (for
30 example, by gluing it if the label is adhesive). Naturally, these operations can be carried out before the insertion of the sample into the container or after the insertion of the sample into the container, by hand or automatically.

It should be noted that this type of container is for example of the bag, envelope, sample-taking tube (or sampling tube) or other type.

In particular, if the container is of the sample-taking tube or sampling tube type, then the sample can be inserted into the sample-taking tube during the sample-taking operation and the label can subsequently be associated with the sample-taking tube, for example by gluing it to the sample-taking tube. Such a sample-taking tube can also be introduced into a bag or envelope type container carrying said at least one identifier or being associated with a label carrying said at least one identifier.

As the case may be, means for preserving the sample and preparing the sample for future analysis can be planned in the container, for example in the form of gel, cream, grease, liquid, powder, gas, impregnated foam etc. These means can especially be preliminarily inserted into a specific compartment of the container.

According to one particular characteristic of the invention, if the identifying tag is a visual tag, then reading means scan said at least one piece of identification information carried by the visual tag and convert it into said at least one identifier.

For example, the reading means capture an image of said at least one piece of identification information carried by the visual tag and transfer this image to the printing means, which print it on a container or on a label intended to be associated with the container. According to one variant, the reading means capture an identification number of the animal, convert it into digital data by using an "OCR" (Optical Character Recognition) type software, and the printing means print out the identification number (or another identifier encoding the same number) on a container or on a label intended to be associated with the container. According to another variant, the reading means capture an identification number of the animal, convert it into digital data by using an "OCR" (Optical Character Recognition) type software, and the programming means store this identification number in a component of an electronic label intended to be associated with the container.

According to another particular characteristic of the invention, if the identifying tag comprises an electronic identification device storing said at least one piece of identification information, then the reading means read said at least one piece of identification information stored in the electronic identification device and convert it into said at least one identifier.

For example, the reading means read an identification number of the animal and transfer this number to the printing means which print it out on a container or on a label to be associated with the container. According to one variant, the reading means read an identification number of the animal and the programming means store this identification number in a component of an electronic label to be associated with the container.

In particular, the identifier or the identifiers belong to the group comprising:

- a bar code;

- a number code;
- an alphanumeric code;
- a matrix code;
- an image of said at least one piece of identifying information carried by the identifying tag.

Such an identifier is generated from a reading of the identifying information carried by the identifying tag. It can especially be the identification number corresponding to the identification number stored in the electronic identifying device or printed out on the identifying tag, or any other piece of information used to encode this same number.

Whatever the form of this identifier, it must enable the identification of the same animal as the corresponding identifying tag.

According to one particular aspect of the invention, the identification station comprises a container distributor or dispenser, each container enabling the storage of a sample associated with an animal.

According to another characteristic of the invention, the identification station comprises means for the secured closing of the container, for example by sealing.

Once the container is closed, it is no longer possible to exchange the sample or the label (which can be glued to the container or inserted into the container) and consistency is thus ensured between the collected sample and the identifier or identifiers carried by the label associated with it.

It will be noted that this means of closing can be implemented automatically.

According to yet another characteristic of the invention, the identification station comprises means for the treatment or analysis of the animal.

For example, this means for treatment or analysis comprise a set of scales, a device for measuring the animal, a vaccination station, etc.

In another embodiment, the invention relates to a method for identifying animals implementing a step for the automatic tagging of an animal, by affixing an identifying tag to the animal.

According to the invention, such a method also comprises:

- a step for taking a sample of the animal,
- a step for reading at least one piece of information identifying the animal, carried by the identifying tag,
- a step for generating at least one identifier from said at least one piece of identification information read during the reading step,
- a step for identifying the sample with said at least one identifier.

Such a method of identification can especially be implemented in an identification station as described here above.

This method could of course comprise the different characteristics relating to the identification station according to the invention which can be combined or taken in isolation.

5 Thus, the characteristics and advantages of this method are the same as those of the identification station. They are therefore not described in more ample detail.

According to one particular embodiment of the invention, the step of reading is implemented simultaneously with a step for the treatment or analysis of the animal.

10 For example, the step of reading can be implemented simultaneously with the step for sample-taking or a step for injecting a specific substance into said animal (for example the injection of a vaccine, a medicine, a vitamin or a food supplement etc) or a step for weighing the animal or a step for measuring the size of the animal etc.

Thus, another operation performed on the animal is put to advantageous use in order to read the information of identification carried by the identifying tag and (automatically) print
15 out/program a corresponding identifier associated with the sample.

4. List of figures

Other features and advantages of the invention shall appear more clearly from the following description of a particular embodiment, given by way of a simple illustrative and non-exhaustive example and from the appended figures, of which:

- 20 - Figure 1 presents the main steps implemented by a technique for identifying animals according to the invention;
- Figures 2 and 3 illustrate two examples of labels generated according to the invention;
- Figure 4 presents an example of an identification station implementing the steps of figure 1 according to one particular embodiment of the invention.

5. Description of one embodiment of the invention

The general principle of the invention relies on the taking of a sample from an animal and on the automatic placing of an identifying tag on this same animal, then on the identifying of the taken sample through a reading of identifying information carried by the identifying tag, so as to make the animal-identifying process secure.

30 Referring to figure 1, a more precise description is given of the main steps implemented by a technique for identifying at least one animal according to the invention.

More specifically, during the first step 11 for tagging, an identifying tag is fixed to the animal. Such a tag can be visual (i.e. it can carry one or more pieces of identifying information in visual form, for example in the form of a barcode and/or a number code and/or an alphanumeric
35 code and/or a matrix code and/or another code), or it can be in electronic form (i.e. it can carry

one or more pieces of identifying information stored in an electronic component in digital form). An electronic identifying tag takes for example the form of a subcutaneous implant or an electronic ring affixed to the animal's ear or wing, especially, working for example according to RFID technology.

5 In particular, an identifying tag of this kind (visual and/or electronic) can be affixed by an automatic machine to place the rings, as described for example in the European patent EP2223591 filed on behalf of the company Piglets Treatment System BV or the above-mentioned French patent application FR 2 981 242.

10 During a second step 12 for sample-taking, a sample of the animal is taken. Such a sample is for example of the type constituted by saliva, blood, fur, piece of flesh of the animal (a piece of ear, tail, etc). In particular, such sample-taking operation can be carried out by any known means (drawing blood through a syringe, recovering a sample of the ear while placing the electronic ring or a visual ring, ablation of the tail by means of a tail-docking device, collecting hair etc).

15 Such a sample-taking operation makes it possible especially to preserve cells/tissues carrying biological or biochemical characteristics of the animal, making it possible for example to subsequently identify the animal or detect illnesses in the animal.

It can be noted that these two steps can be implemented simultaneously or one after the other, in one order or another.

20 In a third step 13 for reading, the information for identifying the animal carried by the identifying tag is read. To this end, it is possible to use any reader capable of reading an electronic identifying device or scanning/capturing identifying information present in visual form.

Advantageously, this reading step is performed after attaching the identifying tag to the animal, in order to prevent any risk of mixing identifying tags. This especially increases the reliability of the identification process.

25 In particular, it can be performed simultaneously with another action for which the animal needs be immobilized for a short period, such as an action for administering a medicine, a vaccine, or other substance, taking a sample, weighing the animal, measuring the animal etc.

It can also be noted that, as a variant, this reading step can be implemented prior to the attaching of the identifying tag to the animal.

30 In a fourth step 14, an identifier is generated from the piece or pieces of identifying information read during the reading step 13. Such an identifier is used to identify the sample.

For example, at least one identifier of the animal is printed on a container intended to receive the sample or on a "paper" label to be associated with the container. The container or the label then carries one or more identifiers of the animal in visual form, for example in the form
35 of a bar code and/or a number code and/or an alphanumeric code and/or a matrix code and/or a

image (black and white or colour) of the identifying information carried by the identifying tag. Such an example of a label comprising a bar code or a number code is illustrated in figure 2.

According to another example, the identifier(s) of the animal are programmed in electronic form, in a memory. Such a label is also called an electronic label and can for example
5 work in the HF and UHF bands. For example, as illustrated in figure 3, such a label is designed by using flexible plane elements such as a UHF planar antenna 41 and a plane electronic component 42 storing the identifier. In particular, the UHF planar antenna and the plane electronic component can be printed directly on a flexible plastic film or a sheet of paper. According to one variant, the UHF planar antenna and the plane electronic component are cut out of copper sheet
10 and glued to a flexible plastic film or a sheet of paper. According to yet another variant, the UHF planar antenna and the plane electronic component can be printed directly on the container.

It can be noted that these different pieces of visual or electronic information enable a same animal to be identified.

If the identifier or identifiers of the animal are printed out/programmed on a label, the
15 label is glued to a sampling tube containing the sample, or the sample is inserted into a container (for example, a bag or an envelope) and the label is glued to the container.

According to one variant, the sample is inserted into a container (for example, a bag or an envelope) and the label is inserted directly into the container.

According to yet another variant, the label is glued to the container or the label is inserted
20 into the container prior to the insertion of the sample into the container.

The container can then be closed in a secured manner, for example sealed, in order to be forwarded to a laboratory.

It can be noted that a container or a sampling tube according to these two variants can especially be filled with a specific substance enabling the sample to be prepared for subsequent
25 analysis or to be better preserved.

Thus, at the end of these steps a container is obtained comprising a sample and at least one identifier to identify a same animal.

These different steps can then be repeated to identify other animals.

Here below, referring to figure 4, we present an example of an identification station
30 implementing the identification technique described here above.

More specifically, figure 4 illustrates an identification station 51 implementing a machine 52 for placing rings automatically, used for example for the identification of piglets.

Such a machine 52 is fed with visual rings and/or electronic rings possibly connected to one another in the form of a garland of rings.

Depending on the type of animal to be identified, these rings can be made up of a male part only or a pair constituted by a male part and a female part. Such a machine 52 therefore has at least one cartridge for feeding male parts and/or female parts such that the different parts can slide in the cartridge as and when they are used. In particular, such a machine comprises means
5 for automatically detecting the presence of an animal's ear so as to automatically trigger the operation for placing the ring when the presence of the piglet's ear is detected.

Such an identification station is also equipped with fixed or detachable reading means 53 by which identifying information carried by the identifying tag can be read.

As already indicated with reference to figure 1, the reading of this identifying information
10 can be done simultaneously with another operation, such as the operation for taking a sample of the animal, the injection of a specific substance into the animal (such as a medicine, a vaccine, a vitamin etc.), for example by means of a syringe 54, weighting the animal, the measurement of the animal etc. This identifying information is then transmitted to a label generator 55 which delivers a label carrying at least one identifier of the animal in visual and/or electronic form as
15 described here above. As a variant, the label generator 55 can be replaced by a printer that prints out the identifier or identifiers directly on the container.

Such an identification station is also provided with means for taking a sample of the animal, taking, for example the form of an electrical docker 56. Such an electrical docker is used to dock the piglets' and cauterize the wound at the docking position.

20 The piglet's tail thus docked along with the associated label can fall directly into a bag dispensed by a bagging machine 57, and then the bag can be closed hermetically, for example by crimping.

As a variant, the label can be automatically glued to the bag containing the piglet's tail, or prior to the insertion of the piglet's tail into the bag.

25 According to another variant, the piglet's tail thus docked can fall directly into a bag on which the identifier or identifiers are printed and then the bag can be closed hermetically.

According to other variants, the operations for inserting the piglet's tail into the bag and the insertion or gluing of the label to the bag can be done by hand.

The bag can then be closed to be forwarded to an analysis laboratory.

30 In other words, according to this embodiment, since the animal (the piglet, the bird or any other animal that can be carried) is bearing an identifying tag, the performance of another operation on the animal (such as a vaccination for example) makes it possible to read the identifying tag and activate the identification of the taken sample (or more precisely its container).

It can be noted that one valuable feature of such a station is that it enables the operations of veterinary treatment and identification of the animals to be carried out at one at the same time and in the same place. The next animal is therefore dealt with only when the identification of the first animal is finished. Thus, the identification of the animal and of the sample associated with
5 the animal are made secure.

In addition, if the generated label comprises a piece of visual information, it is possible by simple visual checking to make sure that the taken sample is accurately identified.

Finally, it can be noted that such a station can be provided with the wheels so that it can be moved about more easily in the pigsty. It can also be portable. Besides, it can be adjustable
10 heightwise or be equipped with any element that makes it easier for users to carry out the operations of identification and veterinary treatment.

P a t e n t k r a v

1. Dyreidentificeringsstation, omfattende midler (52) til automatisk mærkning af dyr ved fastgørelse af et identificeringsmærke på hvert dyr,
- 5 - midler (56) til at udtage en prøve af dyret,
- midler (53) til at læse mindst én identificeringsinformation, som bæres af identificeringsmærket,
- kendetegnet ved, at** stationen ligeledes omfatter følgende midler, som aktiveres for at identificere mindst ét af dyrene:
- 10 - midler (55) til generering af mindst ét identificeringsmiddel ud fra den mindst én identificeringsinformation, der læses af læsemidlerne, og
- midler til identificering af prøven med det mindst ét identificeringsmiddel.
2. Identificeringsstation ifølge krav 1, **kendetegnet ved, at** den omfatter mid-
- 15 ler til trykning af det mindst ét identificeringsmiddel på en beholder, der er indrettet til at optage prøven, eller på en etikette, der er indrettet til at forbindes med beholderen.
3. Identificeringsstation ifølge krav 1, **kendetegnet ved, at** den omfatter mid-
- 20 ler til programmering af en komponent af en elektronisk etikette, der kan lagre det mindst ét identificeringsmiddel i komponenten, hvor den elektroniske etikette er indrettet til at forbindes med en beholder, der er indrettet til at optage prøven.
- 25 4. Identificeringsstation ifølge et hvilket som helst af kravene 1 til 3, **kendetegnet ved, at** identificeringsmærket er et visuelt mærke, og **ved, at** læsemidlerne scanner den mindst én identificeringsinformation, der bæres af det visuelle mærke og konverterer den til det mindst ét identificeringsmiddel.
- 30 5. Identificeringsstation ifølge et hvilket som helst af kravene 1 til 3, **kendetegnet ved, at** identificeringsmærket omfatter en elektronisk identificeringssindretning, der lagrer den mindst én identificeringsinformation, og **ved, at**

læsemidlerne læser den mindst én identificeringsinformation, der er lagret i den elektroniske identificeringsindretning, og konverterer den til det mindst ét identificeringsmiddel.

- 5 **6.** Identificeringsstation ifølge et hvilket som helst af kravene 1 til 5, **kendetegnet ved, at** det mindst ét identificeringsmiddel tilhører gruppen, som omfatter:
- en stregkode;
 - en numerisk kode;
 - 10 - en alfanumerisk kode;
 - en matrixkode;
 - et billede af den mindst én identificeringsinformation, som bæres af identificeringsmærket.
- 15 **7.** Identificeringsstation ifølge et hvilket som helst af kravene 1 til 6, **kendetegnet ved, at** den omfatter en beholderfordeler (57), hvor hver beholder gør det muligt at lagre en prøve forbundet med et dyr.
- 20 **8.** Identificeringsstation ifølge krav 7, **kendetegnet ved, at** den omfatter midler til sikret lukning af beholderne.
- 25 **9.** Identificeringsstation ifølge et hvilket som helst af kravene 1 til 8, **kendetegnet ved, at** den omfatter midler (54) til behandling og analyse af dyret.
- 30 **10.** Identificeringsstation ifølge et hvilket som helst af kravene 1 til 9, **kendetegnet ved, at** udtagningsmidlerne (56) omfatter et elektrisk kuperingsinstrument.
- 30 **11.** Fremgangsmåde til identificering af dyr, som anvender et trin (11) til automatisk mærkning af et dyr ved fastgørelse af et identificeringsmærke på dyret,
- et trin (12) til at udtage en prøve af dyret,

- et trin (13) til at læse mindst én identificeringsinformation af dyret, som bæres af identificeringsmærket,

kendetegnet ved, at fremgangsmåden ligeledes omfatter:

5 - et trin (14) til generering af mindst ét identificeringsmiddel ud fra den mindst én identificeringsinformation, der læses af læsemidlerne, og til identificering af prøven med det mindst ét identificeringsmiddel.

10 **12.** Fremgangsmåde til identificering ifølge krav 11, **kendetegnet ved, at** læsetrinnet (13) anvendes samtidig med et trin til behandling eller analyse af dyret.

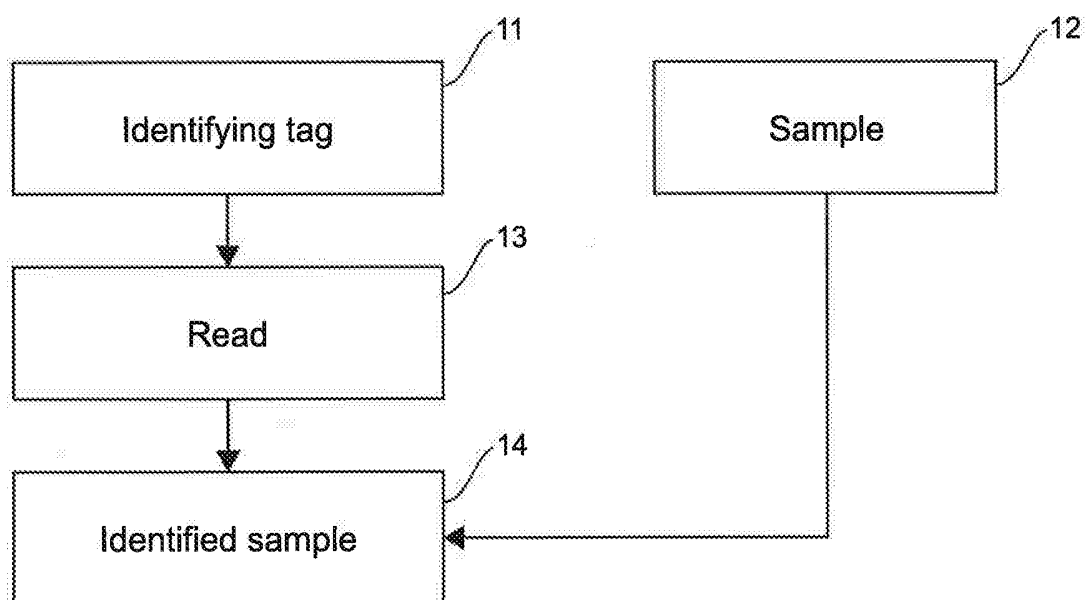


Fig. 1

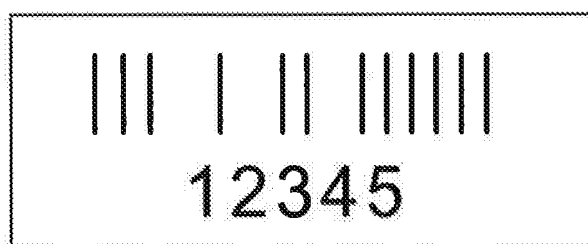


Fig. 2

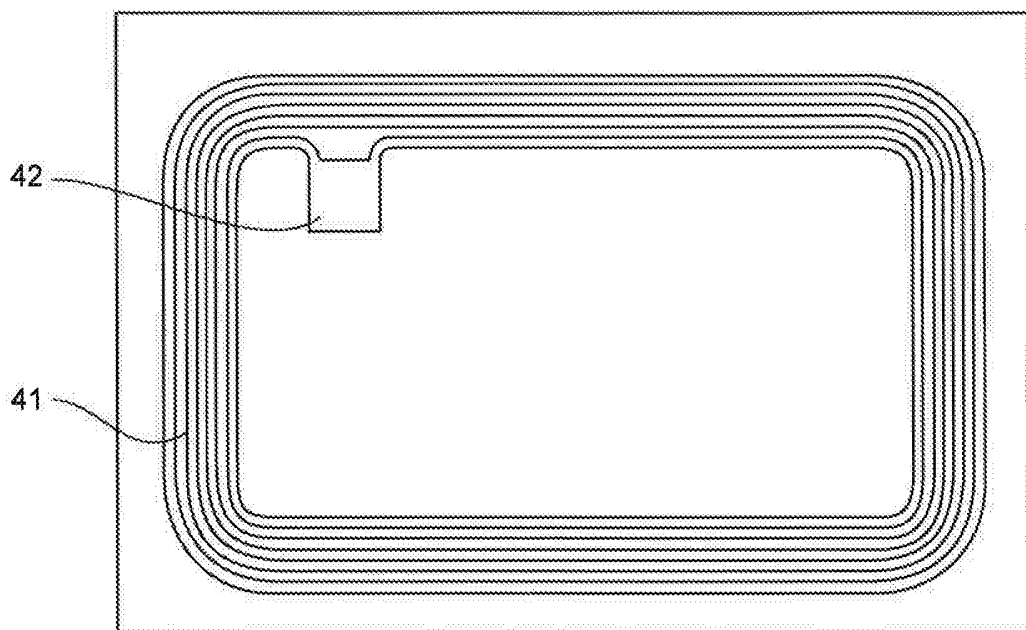


Fig. 3

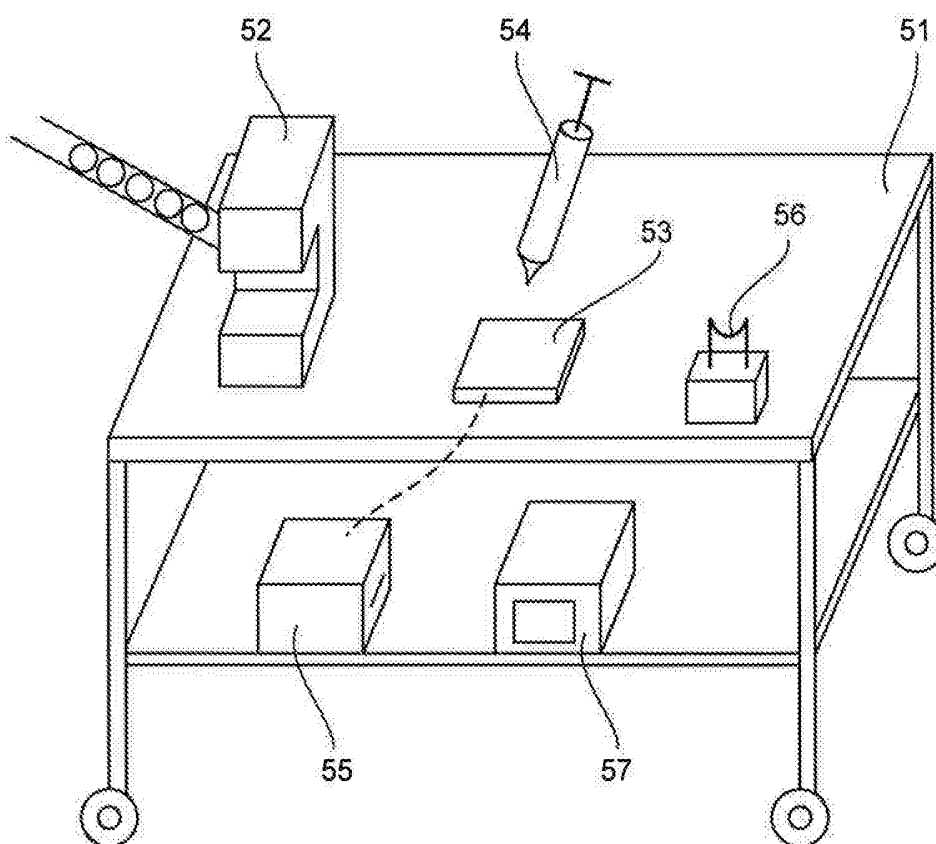


Fig. 4