(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 583 048 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
05.10.2005 Bulletin 2005/40

(51) Int Cl.[7]: **G07D 11/00**

(21) Application number: **04077441.6**

(22) Date of filing: **01.09.2004**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL HR LT LV MK

(30) Priority: **02.04.2004 NL 1025869**
30.07.2004 NL 1026759

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(54) Method for manufacturing a valuables container ('seal-bag') having a RFID element and method for its use

(57) The invention relates to a method for manufacturing a bag-like valuables container, such as a "seal-bag", comprising of

a. providing a length of sheet-like material,
b. forming a portion of the length into a bag,
c. arranging a radio frequency identification element (RFID element) on the bag,
d. arranging unique identification data visibly on the bag,
e. wherein data corresponding to the visual identification data are stored in the identification element.

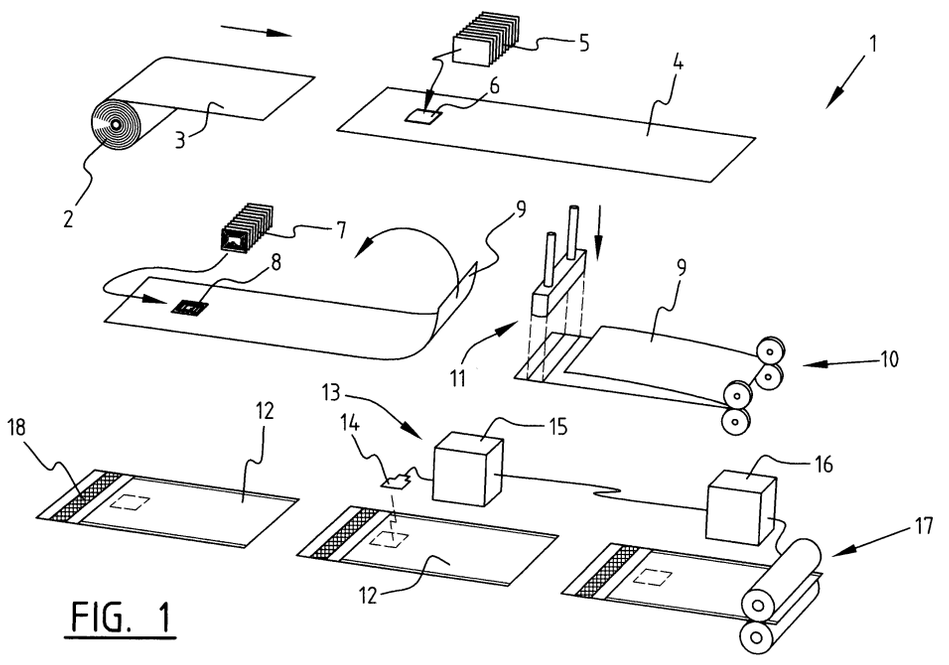

FIG. 1

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Description

[0001] The invention relates to a method for manufacturing a bag-like valuables container, such as a "seal-bag".

[0002] Such a method comprises of providing a length of sheet-like material, for instance of plastic foil. Portions separated from this length are each formed into a bag. Visible unique identification data are then arranged on the bag, for instance by being printed thereon.

[0003] Such a bag is hermetically sealed after for instance value-bearing paper, such as banknotes, has been arranged therein. The content of the bag is recorded, and this content is related to the unique identification data. The value-bearing paper can subsequently be transported in the bag to for instance a bank where the value-bearing paper has to be deposited.

[0004] As long as the hermetically sealed bag remains undamaged, it can be assumed that the content of the bag has remained unchanged.

[0005] The identification of the bag takes place by optionally automatic reading of the unique identification data. These unique identification data can be arranged for instance in the form of a barcode.

[0006] In order to enable automatic processing of the bag, it must be possible to read the identification data automatically. It is not always possible in reliable manner to read visible data arranged on a bag.

[0007] The invention has for its object to obviate this problem by arranging a radio frequency identification element (RFID element) on the bag. In the identification element are stored data corresponding to the visual identification data. The identification data can thus be read not only with an optical read device, but also with a read device suitable for the relevant RFID element.

[0008] It is of course of the greatest importance that the visible identification data correspond with the identification data stored in the identification element. According to a further development of the invention as characterized in claim 2, this is achieved by pre-storing the identification data in the identification element and reading the data from the identification element prior to the visible arrangement of the identification data. The identification element can already be arranged on the bag during read-out, but the method can also be embodied such that the identification element which has been read is arranged with certainty on the bag where the read-out identification data are arranged.

[0009] Another suitable method is characterized in claim 3. Here the visible identification data are first arranged on the bag, for instance by being printed thereon. In a subsequent method step the applied identification data are read, for instance with an optical reader such as a barcode reader. The thus read data are programmed into the radio frequency identification element with a suitable programming device, the element then being arranged on the bag. Thus is ensured that the data in the identification element correspond to the visible identification data arranged on the bag.

[0010] According to a suitable embodiment of the method according to the invention, the identification element is connected non-releasably to the bag. This prevents the possibility of bags being exchanged as a result of identification elements being exchanged.

[0011] The identification element can preferably be adhered fixedly, such as glued, to the bag.

[0012] A radio frequency identification element (RFID element) is per se known and can for instance be embodied as transponder. For reading purposes a radio frequency signal is generated by the RFID element, in which signal the information for transferring is incorporated in suitable manner.

[0013] The element is provided with an antenna for transmitting the radio frequency signal and, if the RFID element is embodied as transponder, also for receiving the exciting radio frequency signal.

[0014] According to a suitable embodiment of the invention, if the RFID element is arranged non-releasably on the bag, the antenna is preferably printed on the bag using conducting ink. Thus is ensured that the RFID element cannot be released from the bag and, for instance with a view to fraud, be exchanged for another RFID element.

[0015] According to another embodiment of the method however, the identification element is arranged releasably on the bag. Measures must then be taken to preclude unobserved access to and release of the RFID element. However, by arranging the RFID element releasably on the bag, the element can be reused in the intended manner, whereby the cost of the valuables container ("seal-bag") can be reduced.

[0016] In a very simple embodiment of this further method, the identification element is received loosely in the bag. After the value-bearing paper has been arranged in the bag, the bag is hermetically sealed and the identification element therefore also becomes inaccessible. A strict protocol will be followed here in order to prevent fraud, wherein a precise record is kept of what happens to the identification element received loosely in the bag when the valuable container bag is opened. This protocol will include that the separate identification element can be transported to a location where it can be reused.

[0017] In those cases where it is necessary, in order to record historical data, that unique identification data can only be used once, the identification element will have to be reprogrammable and must be able to be provided with another, as yet unused, identification number or the like.

[0018] According to a further development of the invention, the bag is provided with an insert sleeve in which the identification element is arranged. The position of the identification element relative to the periphery of the bag is hereby precisely determined, which facilitates reading of the element. The insert sleeve can be arranged inside the bag or on the outside thereof.

[0019] After arranging of the identification element, according to a further development of the method according to the invention the insert sleeve is sealed. This will in any case have to take place when the insert sleeve is arranged on the outside of the bag.

[0020] After use of a thus embodied valuables container bag, this latter will, for purposes of reuse of the RFID element, be collected in controlled manner and the identification element will be removed from the used bag, whereafter this element can be used once again after optional reprogramming.

[0021] The invention also relates to and provides a valuables container which is manufactured with the method according to the invention and which is provided with both a visible identification and a radio frequency identification element (RFID element) in which is stored data corresponding to the visible identification.

[0022] According to a further development of the invention, such a valuables container according to the invention enables a suitable, further developed method for transporting value-bearing paper such as banknotes.

[0023] According to the prior art, the value content of a valuables container of the present type can only be credited to the sender once the content, and in particular the value thereof, has been established by the receiving party, for instance a bank. The period of time involved herewith may be problematic for the sender.

[0024] In the stated further developed method according to the invention, this drawback can be obviated in that the sender provides the identification element with data representing the value of the value-bearing paper received in the bag. Upon receiving the valuables container filled with the value-bearing paper and hermetically sealed, the receiving party, in particular a bank, can read the identification element and use the value stored therein in order to directly credit the sender therewith, wherein verification will of course take place later.

[0025] According to a further development, a list is drawn up, by or on behalf of the sender, of the value-bearing paper to be transported, for instance containing the number of each type of value-bearing paper to be sent. This value-bearing paper is placed in the valuables container bag and the list is stored in the identification element.

[0026] The valuables container is subsequently transported to its destination, and the identification element can be read, wherein both the identification data and the data stored therein by the sender concerning the value of the content of the valuables container are detected.

[0027] A retail trader for instance can thus place his daily takings in a valuables container of the present type and program the value into the RFID element.

[0028] When deposited in the deposit vault, the valuables container can be detected and the RFID element thereof read, so that the data relating to the value received in the bag are known to the holder of the deposit vault immediately after depositing of the valuables container, and these data can be used to credit the account of the retailer.

[0029] A further useful application of a valuables container provided with an RFID element is when the deposit vaults used herein are provided with a reading device and the relevant data can be viewed by selected people via a network, for instance internet. A transportation service for valuable items, which must collect and transport further the valuables containers deposited in a deposit vault, can thus check how many valuables containers have been deposited at any given moment in a specific deposit vault and determine when the deposit vault for instance contains so many valuables containers that it must be emptied. In this manner the travel route of a security vehicle can be chosen such that optimum efficiency is achieved.

[0030] Shown in the above is that where the present application refers to a radio frequency identification element (RFID element), this can be an element containing only fixed programmed identification data, but can also be an element which is reprogrammable and can moreover contain more data than just the identification data.

[0031] The method for manufacturing a valuables container according to the invention is further elucidated hereinbelow in the following description with reference to the annexed figures.

Figure 1 shows schematically a number of steps of the method according to a first embodiment of the invention.

Figure 2 is a front view of a valuables container manufactured with the method shown in figure 1.

Figure 3 shows an alternative embodiment of the method according to the invention.

[0032] Figure 1 shows schematically an apparatus 1 with which the method according to the invention is performed. The material from which the bag-like valuables containers ("seal-bags") are manufactured is provided in the form of a length 3 of sheet-like material, or foil material, wound onto a roll 2.

[0033] Portions 4, which will each ultimately form a bag, are cut off the length 3.

[0034] Situated in a processing station in the direction of transport of apparatus 1 is a supply container 5 for insert sleeves. An insert sleeve 6 taken from the supply 5 is arranged on each portion 4, for instance by sealing thereof along three sides to foil part 4.

[0035] In a subsequent station of apparatus 1 is situated a supply of pre-programmed RFID elements 7. Pre-programmed is in this case understood to mean that the RFID elements are each provided in a memory with unique identification data.

[0036] For each length portion 4 such an RFID element 8 is placed in each case in the arranged insert sleeve 6.

[0037] The foil portion 4 is then further processed for the purpose of making a bag. As shown here, this can

for instance take place by folding over a leading edge 9 of portion 4 such that there still just remains a rear edge. Using a suitable device 11 a glue edge 18 is applied to the rear edge. The longitudinal edges of the folded part 9 of length portion 4 are sealed using a schematically shown sealing device 10, so that the desired bag shape is obtained. There thus results a finished bag 12 with a flap edge provided with a glue layer 18. Glue layer 18 can be temporarily protected with a protective strip. After removal of this protective strip the flap can be folded over and the container thus closed.

[0038] It is per se known to choose a type of glue for the glue layer 18 such that it cannot be detached without damaging the foil material. In similar manner the longitudinal seals are formed such that they cannot be opened without damage.

[0039] In a subsequent station of the apparatus the RFID element already received in insert sleeve 6 is read using a read-out device 13. This comprises an antenna 14 which can transmit a signal for exciting the RFID element which responds by sending back a signal in which the identification data are incorporated.

[0040] Processing device 15 of read-out device 13 analyses the signal and determines the identification data therein. These identification data are transmitted to the processing device 16 of a printing device 17 which then applies the identification data to bag 12 in visible form.

[0041] A bag-like valuables container ("seal-bag") is thus obtained as shown somewhat schematically in the front view of figure 2. The container is provided with longitudinal seams 19, a glue edge 18 embodied in the described manner, and has an identification imprint 20 which in this case comprises a barcode 21. Inside the bag is situated insert sleeve 6 in which the RFID element 8 is received. By applying the described method the identification data stored in the RFID element correspond to the identification data incorporated in imprint 20 or barcode 21.

[0042] It is noted that the method described with reference to figure 1 does not have to be performed in a single operating cycle. The length portions 4 can for instance be manufactured first and provided with an insert sleeve 6 and identification element 8, whereafter a stack of such length portions 4 are folded into bags and sealed. The application of the glue edge can take place in the same operating cycle, but it is also possible to apply this in another operating cycle.

[0043] Reading of the RFID elements and printing of the valuables containers must of course take place as successive linked operations, but can take place separately of the preceding operating cycles.

[0044] Another embodiment of the method according to the invention is shown in figure 3.

[0045] A bag-like container 25, which largely corresponds with bag-like container 12 of figure 1, is here formed with a number of method steps that are not further shown. Insert sleeve 27 is here arranged on the outside of bag-like container 25 and a space 26 is provided in which the identification data are arranged, in particular printed. This is indicated with printing device 28 which prints the desired identification data 29 on bag 25.

[0046] These method steps for manufacturing a bag-like valuables container with identification data 29 thereon can be performed repeatedly in order to obtain a series of such valuables containers.

[0047] The following method steps can be performed directly thereafter or at a later time.

[0048] The imprinted identification data 29 are read using a reading device 30 which can for instance comprise a barcode reader. The read identification data are analysed in processing device 31 and transmitted to an RFID programming device 32. An RFID element is programmed herein with the read identification data. The thus programmed RFID element is placed in insert sleeve 27, whereafter this sleeve 27 is sealed, in this exemplary embodiment using a seal beam 34. A bag-like valuables container is thus obtained with an RFID element comprising identification data which correspond to identification data 29 arranged visibly on container 25.

[0049] In the case of the valuables containers manufactured with both the method according to figure 1 and the method according to figure 3, the RFID elements can be detached and reused after optional reprogramming in the manner described above after these valuables containers have been used once.

Claims

1. Method for manufacturing a bag-like valuables container, such as a "seal-bag", comprising of

   a. providing a length of sheet-like material,
   b. forming a portion of the length into a bag,
   c. arranging a radio frequency identification element (RFID element) on the bag,
   d. arranging unique identification data visibly on the bag,
   e. wherein data corresponding to the visual identification data are stored in the identification element.

2. Method as claimed in claim 1, wherein the identification data are pre-stored in the identification element and are read from the identification element prior to the visible arrangement of the identification data.

3. Method as claimed in claim 1, wherein the identification data are stored in the identification element at the time the identification data are arranged visibly on the bag.

4. Method as claimed in any of the foregoing claims,

wherein the identification data are printed on the bag.

5. Method as claimed in any of the foregoing claims, wherein the identification element is connected non-releasably to the bag.

6. Method as claimed in claim 5, wherein the identification element is fixedly adhered, such as glued.

7. Method as claimed in claim 6, wherein the identification element comprises an antenna which is printed on the bag using conducting ink.

8. Method as claimed in any of the claims 1-4, wherein the identification element is arranged releasably on the bag.

9. Method as claimed in claim 8, wherein the identification element is received loosely in the bag.

10. Method as claimed in claim 8, wherein the bag is provided with an insert sleeve in which the identification element is arranged.

11. Method as claimed in claim 10, wherein the insert sleeve is sealed after arranging of the identification element.

12. Method as claimed in claim 8, wherein the identification element is reprogrammable.

13. Bag-like valuables container manufactured as claimed in any of the foregoing claims.

14. Method for the use of a bag-like valuables container as claimed in claim 13 for transporting value-bearing paper such as banknotes, comprising of

a. Drawing up a list of the value-bearing paper to be transported, containing the number of each type of value-bearing paper,
b. Placing the value-bearing paper in the bag,
c. Storing the list in the identification element,
d. Closing the bag,
e. Transporting the bag with value-bearing paper, and
f. Reading the identification element at least at one location.

15. Method as claimed in claim 14, wherein the location is a deposit vault and the list read from the identification element is used to credit an account.

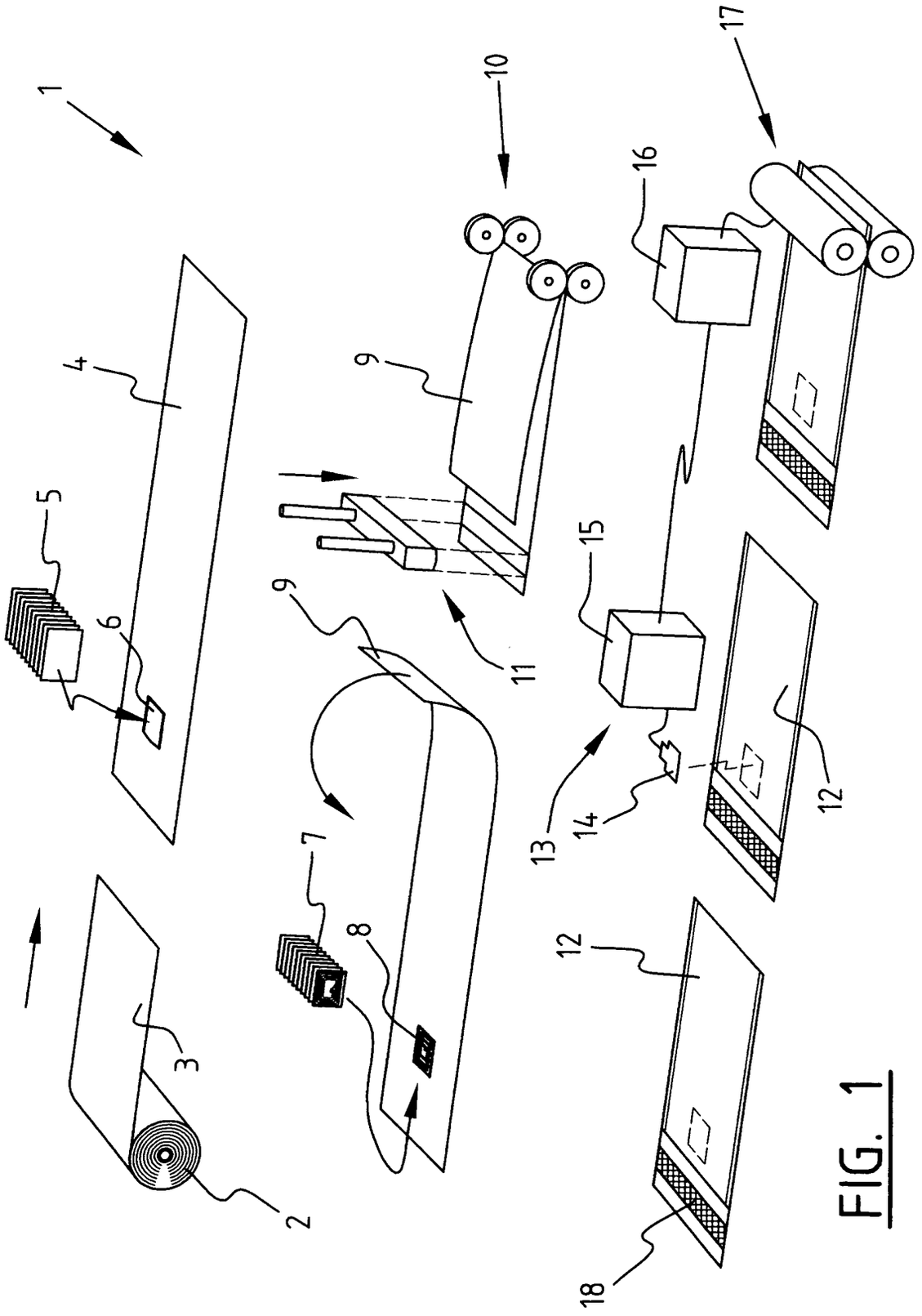

FIG. 1

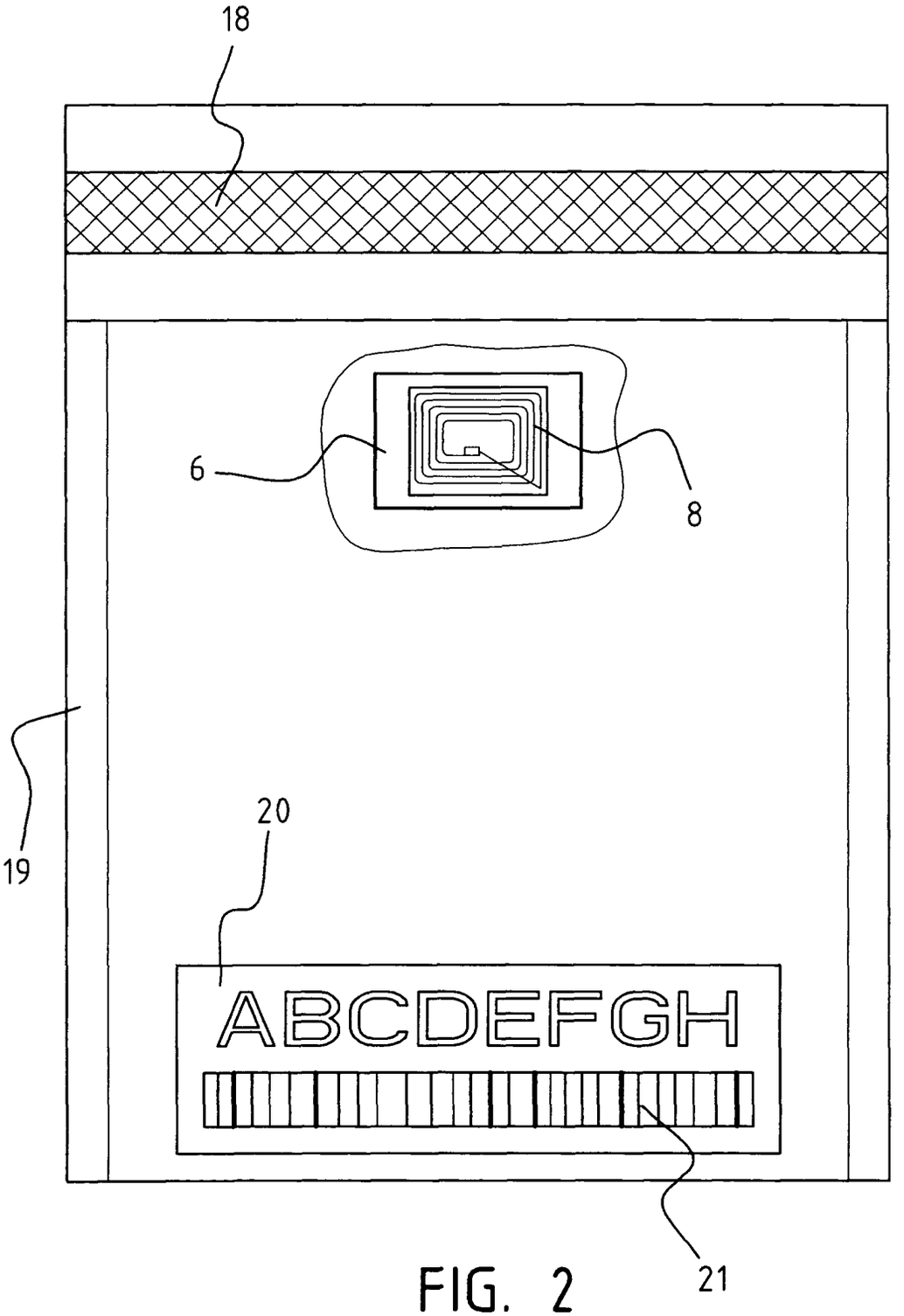

FIG. 2

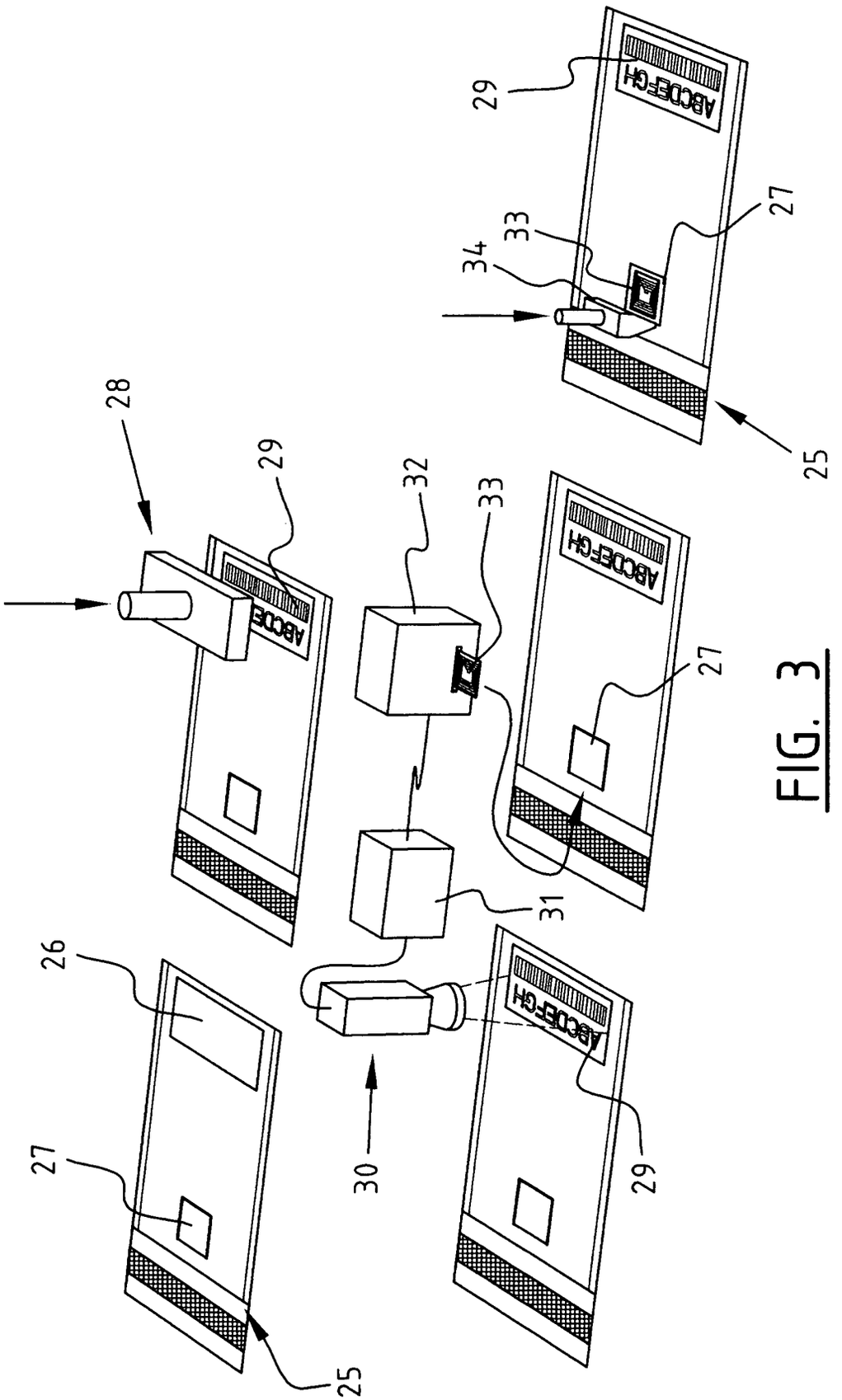
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FIG. 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 07 7441

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)
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X	DE 196 19 851 A1 (FAUST, HOLGER, 01309 DRESDEN, DE; REICHL, GUENTER, DIPL.-ING., 10997 B) 12 June 1997 (1997-06-12) * abstract * * column 7, line 21 - line 55 * * claims 14-20 * * figures 3-5 *	1-15	
A	US 2 903 946 A (HONSEL CARL) 15 September 1959 (1959-09-15) * the whole document *	1-15	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7) G07D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	4 May 2005	Van Dop, E

CATEGORY OF CITED DOCUMENTS

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