

FRAUD-PROOF ELECTRONIC PAYMENT TOKEN AND METHOD OF MANUFACTURE

The invention pertains to a fraud-proof electronic payment token and to the method of manufacturing this token. Electronic payment devices such as chip cards are already known. It is possible to define two types of chip cards that can be used to make payment:

- Prepayment cards from which units are consumed at each time of use. This principle is widely used for the payment of telephone units in public phone booths fitted out with card readers.

- Credit card type cards enabling the identification of the bearer and the debiting of his account in any shop having an appropriate card reader available.

It can be seen that prepayment cards can be used only for particular applications and that cards of the credit card type entail excessive running costs for small sums.

Moreover, there are still many machines that accept only coins or tokens purchased in advance.

It is known that coins have a magnetic signature by which it is possible to curb the existence of "fakes". However, it is generally easier to manufacture "fakes" where tokens are concerned.

The present invention is aimed at overcoming this problem. An object of the invention is an electronic payment token chiefly characterised in that it comprises a contact-free reading electronic circuit and a set of mechanical parts made of materials that are different in nature so as to provide the token with mechanical strength and ensure the physical protection of the circuit and the contact-free reading of the circuit.



The invention also relates to a method for the manufacture of an electronic payment token chiefly characterised in that it comprises the following steps:

- The preparation of a metal ring;
- 5 - The preparation of two plastic side plates;
- The positioning of the electronic circuit on one of the side plates;
- The depositing of a drop of resin on the circuit;
- The positioning of the second side plate;
- 10 - The joining together of all the parts.

Other particular features and advantages of the invention shall appear from the following description, which is given by way of an illustration that in no way restricts the scope of the invention and is made with
15 reference to the appended drawing, wherein:

- Figure 1 shows a longitudinal section of the token according to the invention;
- Figure 2 shows a cross section of the token according to the invention.

20 The invention relates to an electronic token and to the method of its manufacture.

An object of the invention, therefore, is the making of an electronic token 1 carrying a piece of information liable to be read automatically. The use
25 of such a token will be sought in order to curb fraudulent activity consisting of the imitation of tokens in the use of coin-operated machines or any other machine using tokens or coins. The term "token" shall be used throughout the rest of the description,
30 it being understood that it could refer to tokens as well as to coins, depending on the application.

Reference may be made to the drawings of figures 1 and 2 for the rest of the description.

The electronic token 1 that is an object of the
35 invention is formed by a set of parts 2, 5, 6 assembled so as to provide for the mechanical strength of the



token and for the physical protection of the electronic circuit 3 and 4 placed in the token.

This electronic circuit enables the identification of the token, i.e. it carries a characteristic piece of information that can be checked so as to verify the authenticity of the token.

The electronic circuit enabling the identification of the token comprises an integrated circuit 3 for the storage of the characteristic information and transmitter/receiver type means 4 enabling contact-free access to this information.

The means used to obtain contact-free access to the characteristic information comprise, according to the preferred embodiment, an antenna constituted by a simple coil 4 or, according to another embodiment, by an oscillator circuit 7. In the case of an oscillator circuit, it will be possible to access the characteristic information at a substantial distance (about ten centimetres) whereas in the case of the simple coil, this distance will be far smaller (some millimetres) because the frequency tuning is not fully obtained with the inductance coil alone. The simple coil is used, for example, for coin-operated machines in which the coin may be guided precisely in the vicinity of a means for the contact-free reading of the token.

The reading is done by a contact-free reader (not shown) capable of sending an amplitude-modulated magnetic field. The integrated circuit of the token uses this modulated magnetic field to power itself. The response of the token is made by modulation of the magnetic field by the antenna of the token as a function of the characteristic information elements stored in this token.

The storage means placed in each token comprise a PROM (programmable memory) containing a serial number



programmed during its manufacture. It is possible for example to choose a PROM with laser programming.

The characteristic information therefore comprises a serial number. It may also comprise the face value
5 of the token or an encoded information element.

More specifically, the token is formed by a metal ring 2 and two side plates 5 and 6 that are concentric with the ring and are placed on each side of the ring. One of the two side plates is used as a support for the
10 electronic circuit. The circuit may be fixed, for example, to this side plate by bonding. The circuit is then between the two attached side plates. The interior space is filled with resin 8.

A description shall now be given of the method of
15 manufacture of the token according to the invention.

The side plates are made of plastic. The ring is made of metal. This makes it possible for the tokens to have, in addition to mechanical strength, a ringing quality similar to that of coins.

20 The procedure will then consist of the following steps.

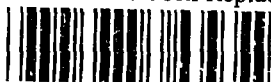
Metal plates are punched out so as to obtain rings of the requisite dimensions.

The side plates are made by thermoplastic
25 injection. The material used is shock resistant and abrasion resistant. Polycarbonate, polysulfone or polythermide, possibly charged with fibre glass, could be used for example.

A thermoplastic can be used to obtain different
30 colours. Tokens made in colours could be used for the coin-operated machines.

A logo or inscriptions could, as the case may be, etched in the mould.

The integrated circuit and the antenna may be
35 fixed, as the case may be, to an epoxy glass substrate.



A side plate 5 is then positioned. This side plate 5 may have a housing set aside for the positioning of the electronic circuit.

5 It is possible to provide for the depositing of a drop of bonder on the side plate for the fastening thereto of the integrated circuit and the antenna formed by the coil 4 or the oscillator circuit 7.

A drop of resin is then deposited on the integrated circuit and on the antenna.

10 The metal ring 2 is then positioned.

The second side plate 6 is then positioned.

All these parts are joined together by ultrasonic soldering, clipping together or bonding.

15 Finally, the token may be tested before it is made available for commercial distribution.

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CLAIMS:

1. An electronic payment token chiefly characterised in that it comprises a contact-free reading electronic circuit (3, 4) and a set of mechanical parts (2, 5, 6) that are joined together and are made of materials different in nature so as to provide the token with mechanical strength and ensure the physical protection of the circuit and the contact-free reading of the circuit.
2. An electronic payment token according to claim 1, characterised in that the set of parts comprises a metal part (2) and two side plates (5, 6) made of a material transparent to electromagnetic radiation.
3. An electronic payment token according to claim 2, characterised in that the metal part is a ring.
4. An electronic payment token according to any of the foregoing claims, characterised in that the characteristic information contained in the token is a serial number.
5. An electronic payment token according to claim 4, characterised in that the characteristic information further comprises the face value of the token and an encoding of this value.
6. An electronic payment token according to any of the foregoing claims, characterised in that the electronic circuit (3, 4) comprises an integrated circuit for storage and transmission/reception means.
7. An electronic payment token according to claim 6, characterised in that the transmission/reception means comprise an oscillator circuit (7).
8. An electronic payment token according to claim 6, characterised in that the transmission/reception means comprise an inductance coil (4).
9. An electronic payment token according to claim 6, characterised in that the storage means comprise a PROM with laser programming.

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10. A method for the manufacture of an electronic payment token according to any of the foregoing claims, characterised in that it comprises the following steps:

- The preparation of a metal ring;
- 5 - The preparation of two plastic side plates;
- The positioning of the electronic circuit on one of the side plates;
- The depositing of a drop of resin on the circuit;
- The positioning of the second side plate;
- 10 - The joining together of all the parts.

11. A method for the manufacture of an electronic payment token according to any of the foregoing claims, characterised in that the ring is obtained by the punching out of a metal plate.

15 12. A method for the manufacture of an electronic payment token according to any of the foregoing claims, characterised in that the side cheeks are obtained by plastic injection.

20 13. A method for the manufacture of an electronic payment token according to any of the foregoing claims, characterised in that the parts are joined together by ultrasonic soldering.

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