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**Datasheet for the decision
of 10 April 2013**

Case Number: T 1218/09 - 3.4.03

Application Number: 98912684.2

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Language of the proceedings: EN

Title of invention:
Countable electronic monetary system and method

Applicant:
Cardis Enterprise International N.V.

Opponent:
-

Headword:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 1218/09 - 3.4.03

D E C I S I O N
of the Technical Board of Appeal 3.4.03
of 10 April 2013

Appellant:
(Applicant)

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Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted 18 December 2008
refusing European application No. 98912684.2
pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: G. Eliasson
Members: T. M. Häusser
T. Bokor

Summary of Facts and Submissions

I. The appeal concerns the decision of the examining division to refuse European patent application No. 98 912 684 for lack of inventive step within the meaning of Article 56 EPC 1973 in view of the following document:

D1: US-A-5 305 383.

II. The appellant requested in writing that the decision under appeal be set aside and as main request that a patent be granted in the following version:

- claims 1 to 21 as filed with letter dated 18 March 2013;
- description pages 4, 6, 11, 17 and 24 as filed with letter dated 18 March 2013; description pages 3, 5, 7-10, 12, 14-16, 18, 19, 25, 28, 29, 32, 34, 35, 37-40, 42-47, 49 and 51 as filed with letter dated 12 February 2013; original description pages 1, 2, 13, 20-23, 26, 27, 30, 31, 33, 36, 41, 48, 50, 52 and 53;
- original drawing pages 1/31 to 31/31.

III. The wording of independent claims 1 and 15 of the main request reads as follows (labelling "α.", "d.", "e.", "f.", "g." by the board):

Claim 1:

"α. A countable electronic monetary system for the transfer of electronic money in amounts which are an integer multiple of an elementary monetary unit, the transfer of electronic money made

between two selected ones from a plurality of payment cards (140), a plurality of points of sale (141, 220) and a number of financial institutions (142), the countable electronic monetary system comprising:

- a. a plurality of electronic coins (180-1), each electronic coin having a serial number (24-n);
- b. a plurality of stored-value devices (91-S), each for storing electronic coins from said plurality of electronic coins (180-1), comprising:
 - i. a plurality of electronic coin purses (P-n), each included in a payment card (140) of the plurality of payment cards;
 - ii. a plurality of electronic coin drawers (D-n), each included in a point of sale (141) of the plurality of points of sale (141, 220); and
 - iii. a number of electronic coin pools (PL-n), each included in a financial institution (142) of the number of financial institutions (142); and
- c. transaction means (52-1 + 52-8 + 52-10) for the transfer of a selectable number of said electronic coins (180-1), from a source stored-value device selected from said plurality of stored-value devices (91-S) to another, target stored-value device selected from said plurality of stored-value devices (91-S), said transaction means (52-1 + 52-8 + 52-10) being operative to recording the serial number (24-n) of each one of said selectable number of electronic coins (180-1) in said target stored-value device and to erase said serial number (24-n) from said source stored-value device,

- d. wherein each of said electronic coins (180-1) belongs to one of a plurality of electronic coin types (P-1 ... P-15), each of said plurality of electronic coin types (P-1 ... P-15) having a different denomination of an integer number of said elementary monetary unit;
- e. wherein said transaction means (52-1 + 52-8 + 52-10) comprise transaction selection means (52-1) operative, upon receiving an amount to be paid, and upon a selected point of sale interfacing with a selected payment card, and according to the amount of electronic coins (180-1) belonging to each of said plurality of electronic coin types (P-1 ... P-15) stored in the electronic coin purse (P-n) of said selected payment card, to automatically select, for each electronic coin type of said plurality of electronic coin types (P-1 ... P-15):
 - i. a first group of a non-negative number of electronic coins (180-1) from said electronic coin type to be transferred from the electronic coin purse (P-n) of said selected payment card to the electronic coin drawer (52-0) of said selected point of sale (PAY); and
 - ii. a second group of a non-negative number of electronic coins from said electronic coin type to be transferred from the electronic coin drawer (52-0) of said selected point of sale to the electronic coin purse (P-n) of said selected payment card (CHANGE); and
- f. wherein said transaction means periodically performs, for each of said plurality of electronic coin types, an adjustment to a predefined amount

of electronic coins, stored in the electronic coin drawer, by transferring electronic coins between the electronic coin drawer of said selected point of sale and at least one electronic coin pool of said number of electronic coin pools,

- g. wherein, for each of said plurality of electronic coin types, a predefined number of allowed repetitions for any serial number (24-n) of electronic coins (180-1) belonging to said plurality of electronic coin types is allowed and wherein the at least one electronic coin pool (PL-n) comprise security means configured to count the number of repetitions of each of said serial number (24-n) of electronic coins (180-1) belonging to said electronic coin type and stored in the at least one electronic coin pool, and configured to identify and report serial numbers (24-n) whose repetition exceeds said predefined number of allowed repetitions."

Claim 15:

"A method for the establishment, storage and transfer of electronic monetary values in amounts which are an integer multiple of an elementary monetary unit, within a monetary system having a plurality of stored-value devices (91-S) to electronically store monetary values therein, said plurality of stored-value devices (91-S) including a plurality of payment cards (140) with electronic coin purses (P-n), a plurality of points of sale (141, 220) with electronic coin drawers (D-n), and a number of electronic coin pools (PL-n), each included in a financial institution (142) of a number of financial institutions (142), said method comprising the steps of:

generating a selectable plurality of electronic coins (180-1) each having the denomination of an electronic coin type and a serial number (24-n);

depositing, in each of said plurality of stored-value devices (91-S), a group of a non-negative number of electronic coins (180-1), the serial number (24-n) of each electronic coin deposited in a storage device written onto this storage device;

performing transactions by transferring selectable electronic coins (180-1) of selectable electronic coin types (P-1 ... P-15) from a selected source stored-value device to a selected target stored-value device, both selected from said plurality of stored-value devices (91-S), by writing the serial number (24-n) of each of said selectable electronic coins (180-1) onto said target stored-value device and erasing said serial number (24-n) from said source stored-value device; and

determining an integer number of the elementary monetary unit for each of said electronic coins (180-1) belonging to one of a plurality of electronic coin types (P-1 ... P-15), each of said plurality of electronic coin types (P-1 ... P-15) having a different denomination of an integer number of said elementary monetary unit;

wherein said performing transactions, upon receiving an amount to be paid, upon a selected drawer interfacing with a selected purse, and according to the amount of electronic coins (180-1) belonging to each of said plurality of electronic coin types (P-1 ... P-15) stored in said purse, further comprising the step of:

automatically calculating and selecting, for each electronic coin type of said plurality of electronic coin types (P-1 ... P-15):

a first group of a non-negative number of electronic coins (180-1) from said electronic coin type to be transferred from the electronic coin purse (P-n) of said selected payment card (51) to the electronic coin drawer (52-0) of said selected point of sale; and

a second group of a non-negative number of electronic coins (180-1) from said electronic coin type to be transferred from the electronic coin drawer (52-0) of said selected point of sale to the electronic coin purse (P-n) of said selected payment card (51);

the method further comprising

performing periodically, for each of said plurality of electronic coin types, an adjustment to a predefined amount of electronic coins stored in the electronic coin drawer, by transferring electronic coins between the electronic coin drawer of said selected point of sale and at least one electronic coin pool of said number of electronic coin pools; and

defining, for each of said plurality of electronic coin types, a predefined number of allowed repetitions for any serial number (24-n) of electronic coins (180-1) belonging to this electronic coin type; and counting, for each electronic coin type, in the at least one electronic coin pool, the number of repetitions of each serial number (24-n) of electronic coins (180-1) belonging to said electronic coin type and stored in the at least one electronic coin pool, and identifying and reporting serial numbers (24-n) whose repetition exceeds said predefined number of allowed repetitions."

IV. The appellant argued essentially as follows in relation to inventive step:

Document D1 was considered to be the closest prior art. The periodic adjustment (feature f.) rendered the security means for detecting repetitions (feature g.) more efficient. Furthermore, the flow of electronic coins in two directions (feature e.) produced a change of the electronic coins in the coin drawer at each transaction. As a consequence, the electronic coins in the coin pool were eventually changed thus rendering the checking even more effective. Moreover, the inventive system required less storage capacity and less bandwidth. The problem of the invention was how to monitor centrally the electronic stored value system that was used for electronic money transfer and for system level reconfirmation of transaction-level security.

In examples such as the one shown in D1 coins were transferred from a buyer to a merchant only, but there was no return of electronic coins from the merchant to the buyer. Furthermore, none of the systems of the examples suggested to introduce different denominations of an integer number of an elementary unit. In these systems there was also no need for return change to improve security because security was implemented through other means. It was counterintuitive to introduce in electronic payments a mechanism of having to pay with entities that did not sum up to the exact amount to be paid and thus required return change. The invention had the surprising effect of improving efficiency and security in electronic transactions.

Features d., e., f. were not disclosed by any one of the documents on file.

The claimed subject-matter involved therefore an inventive step.

Reasons for the Decision

1. Admissibility

The appeal is admissible.

2. Main request - amendments

Independent claims 1 and 15 are based on original claims 1, 5, 9 and on original claims 18, 22, 26 respectively, each time in combination with the original description and drawings (page 16, lines 20-24; Figure 14).

Dependent claims 2 to 14 and 16 to 21 are based on original claims 2, 3, 6, 7, 8, 10 to 17, 19, 20, 23 to 25, and 27.

The description has been brought into conformity with the amended claims without extending beyond the content of the application as filed.

Accordingly, the board is satisfied that the amendments comply with the requirements of Article 123(2) EPC.

3. Main request - novelty

3.1 Document D1

3.1.1 Document D1 discloses (see column 5, line 16 to column 11, line 30; claims 1 and 14; Figure 1) an electronic payment method and system involving chip cards. Issuers of access titles use initial management cards IMC and distribute master management cards MMC and operating cards OC, which are personalized for them, to service operators. Furthermore, slave consumption cards CC are issued to consumers.

The master management cards MMC are used for selling booklets of vouchers by copying them to the consumption cards CC and comprise a sales array of vouchers. A consumption card CC comprises booklets of vouchers embodied by dedicated files. A booklet of n vouchers is generated by writing in the dedicated file a set identifier, a period of validity, a bunch of secret keys, and the n vouchers.

The consumption operation involves mutual authentication between the consumption card CC and the operating card OC by use of one of the secret keys. The operating card OC fixes the number of vouchers required. The numbers of the vouchers are revealed and copied to the operating card OC upon their consumption and may then be erased in the consumption card CC.

3.1.2 Using the wording of claim 1 of the main request document D1 discloses a countable electronic monetary system for the transfer of electronic money (vouchers), the transfer of electronic money (vouchers) made

between two selected ones from a plurality of payment cards (consumption cards CC), a plurality of points of sale (operating cards OC of the service operators) and a number of financial institutions (management cards MMC personalized for the issuers of access titles), the countable electronic monetary system comprising:

- a. a plurality of electronic coins (vouchers), each electronic coin having a serial number (number of the concerned voucher);
- b. a plurality of stored-value devices, each for storing electronic coins (vouchers) from said plurality of electronic coins, comprising:
 - i. a plurality of electronic coin purses (dedicated files in the consumption cards CC), each included in a payment card of the plurality of payment cards (consumption cards CC);
 - ii. a plurality of electronic coin drawers (files in the operating cards OC), each included in a point of sale of the plurality of points of sale (operating cards OC); and
 - iii. a number of electronic coin pools (files in the management cards MMC), each included in a financial institution of the number of financial institutions (management cards MMC personalized for the issuers of access titles); and
- c. transaction means for the transfer of a selectable number of said electronic coins (fixed by the operating card OC), from a source stored-value device (dedicated file in the consumption card CC) selected from said plurality of stored-value devices to another, target stored-value device (file in the operating card OC) selected from said

plurality of stored-value devices, said transaction means being operative to recording the serial number (number of the voucher) of each one of said selectable number of electronic coins (vouchers) in said target stored-value device (voucher is copied to operating card OC upon consumption) and to erase said serial number from said source stored-value device (voucher is erased in the consumption card CC after consumption).

3.1.3 The following features of claim 1 of the main request are not disclosed in document D1 (see point IV. above):

- the transfer of electronic money being in amounts which are an integer multiple of an elementary monetary (part of feature α .);
- features d., e., f., and g. .

The subject-matter is therefore new over document D1.

3.1.4 The remaining prior-art documents are not closer to the subject-matter of claim 1 of the main request than document D1. Independent method claim 15 corresponds essentially to system claim 1. Claims 2 to 14 and 16 to 21 are dependent on claims 1 and 15, respectively.

Accordingly, the subject-matter of claims 1 to 21 is new (Article 52(1) EPC and Article 54(1) EPC 1973).

4. Main request - inventive step

4.1 Independent claims 1 and 15

Independent system claim 1 differs from claim 1 as refused primarily in that feature f. has been added. A corresponding amendment has been effected in relation to independent method claim 15.

4.2 Closest state of the art

4.2.1 In the decision under appeal the examining division held that the subject-matter of claim 1 then on file lacked an inventive step when starting from document D1. The appellant also regards document D1 as the closest prior art.

Indeed, document D1 is conceived for the same purpose as the invention and has the most relevant technical features in common with it. Document D1 is therefore regarded as the closest state of the art.

4.3 Objective technical problem

4.3.1 In the appealed decision it was argued that the problem to be solved by features d., e. and g. was related to the technical implementation of administrative requirements, in particular in relation to the barter trade principle.

According to the appellant the objective technical problem was how to monitor centrally the electronic stored value system that was used for electronic money

transfer and for system level reconfirmation of transaction-level security.

- 4.3.2 The problem as defined by the appellant has been formulated already in the application as filed (description of the application, page 2, first paragraph).

However, in the system of document D1 (see column 7, second paragraph; claim 1, last feature) the service operator sends the vouchers to a central system for endorsement in order to recover payment for his services. This involves the comparison of the vouchers on the operating card with those on the management card for authentication. The above problem has therefore already been solved in the system of document D1.

- 4.3.3 On the other hand, the invention is not concerned with the barter trade principle but with an electronic monetary system in which the electronic money is transferred in amounts which are an integer multiple of an elementary monetary unit (see feature α . of claim 1). This is however not considered to be significant for the assessment of inventive step. What is important are the technical effects of the differing features.

In this respect it is noted that the use of different electronic coin types having different denominations (feature d.) and allowing a predefined number of repetitions for any serial number of electronic coins (part of feature g.) both reduce the storage requirements and thus render the system more efficient. Furthermore, counting the number of repetitions of the serial number at the financial institution (part of

feature g.) allows to detect fraud thus allowing to maintain a certain level of security. As the electronic coins are transferred from a drawer to a purse (feature e.) and the electronic coins in a drawer are periodically adjusted by transferring electronic coins between a pool and a drawer (feature f.), the flow of electronic coins is increased. In this way more electronic coins are checked at the financial institution thus making the security check more effective.

4.3.4 In view of the above, it is regarded to be the objective technical problem of the invention to improve the efficiency and security of the system for the transfer of electronic money.

4.4 Obviousness

4.4.1 In the appealed decision the examining division was of the opinion that implementation of administrative requirements in relation to the barter trade principle and to fraud detection would lead the skilled person to features e. and g., respectively. No surprising effect could be established. Furthermore, features which were known from the world of physical money would not contribute to an inventive step when implemented electronically.

4.4.2 In the system of document D1, the vouchers are - upon their consumption - revealed and copied from the consumption card CC to the operating card OC. Subsequently, the service operator sends the recovered vouchers to a central system for endorsement in order to recover payment for his services.

It is neither foreseen in the system of document D1 that vouchers are passed from an operating card OC to a consumption card CC nor that vouchers are passed from a management card MMC to an operating card OC. Nor is it foreseen that a consumer sends vouchers to a central system to recover their values. Furthermore, such functionalities would add considerable complexity to the system of document D1.

4.4.3 Moreover, the system of document D1 provides a means for payment between service providers and consumers, e.g. for telephone services. The system of initial management cards IMC, master management cards MMC, consumption cards CC and operating cards OC represents a closed system of limited extent. For example, in the detailed description of an embodiment it is stated (see document D1, see column 7) that the sale was limited to about 30000 vouchers, each coded by 16 bits. In such a relatively small system there is no need for saving storage capacity and the skilled person would not consider using vouchers having non-unique numbers thereby deteriorating the security of the system.

4.4.4 Furthermore, none of the features d., e., f. and g. have been disclosed in any one of the prior-art documents on file.

4.4.5 In view of the above the skilled person would neither be led to copying features which were known from the world of physical money into the system of document D1 nor to using vouchers having non-unique numbers.

Rather, in order to provide an efficient and secure system the skilled person would ensure that the vouchers have unique numbers and their values are such that they are able to exactly compensate for the services provided by the service operator.

- 4.4.6 Therefore, the subject-matter of claim 1 of the main request involves an inventive step. Independent method claim 15 corresponds essentially to system claim 1. Claims 2 to 14 and 16 to 21 are dependent on claims 1 and 15, respectively.

Accordingly, the subject-matter of claims 1 to 21 involves an inventive step (Article 52(1) EPC and Article 56 EPC 1973).

5. Main request - other requirements of the EPC

In order to comply with the requirements of Article 84 EPC 1973, the description has been brought into conformity with the amended claims.

6. Conclusion

In view of the above the main request is allowable. Therefore, it is not necessary to consider the auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to grant a patent in the following version:
 - claims 1 to 21 as filed with letter dated 18 March 2013;
 - description pages 4, 6, 11, 17 and 24 as filed with letter dated 18 March 2013; description pages 3, 5, 7-10, 12, 14-16, 18, 19, 25, 28, 29, 32, 34, 35, 37-40, 42-47, 49 and 51 as filed with letter dated 12 February 2013; original description pages 1, 2, 13, 20-23, 26, 27, 30, 31, 33, 36, 41, 48, 50, 52 and 53;
 - original drawing pages 1/31 to 31/31.

The Registrar:

The Chairman:

S. Sánchez Chiquero

G. Eliasson