

Equipment for transporting chips and chip carrier structure therefor

The present invention relates to equipment for transporting chips carrying information, in particular gaming chips for casinos and gaming rooms. The invention is applicable in particular to moving gaming chips from a place of storage of gaming chips, for example a vault, to a place of use of the gaming chips, for example a gaming table.

The expression "gaming chip" or "casino chip" means a disk or plate representing a face or other value. Chips are generally fabricated from scratch-resistant rigid plastics material and feature varied patterns in terms of design and color to form a more or less complex decoration and to reduce the risk of fraudulent reproduction and/or falsification.

To facilitate the management and tracing of chips, and to reduce further the risk of fraud, certain chips carry coded information. There is integrated into the body of the chip an electronic circuit with a memory for storing information relating to the chip, in particular its identification code or number and its numerical value. Chips equipped with an electronic circuit with a memory are known as "electronic memory chips" or "electronic circuit chips". Depending on the chip design, the electronic circuit is of the PROM or EEPROM type or may even take the form of a microprocessor associated with a memory. Other chips carry coded information, in particular for optical reading, for example a bar code or color code marked on the faces and/or the edge of the chip (edge marking saves time by direct reading of stacked chips); it should be noted that coding chips for RFID reading and for optical reading are not mutually exclusive.

Chips are often stored in trays or racks that conventionally serve as local reserves of chips at the money changing desks and/or gaming tables. A rack contains chips exchanged for cash, for example, or for chips of different face value, etc. It is also possible to take from a rack the chips necessary to pay a winning play and to place in a rack chips of losing plays. The number of chips in a rack changes and consequently the overall value of the chips in the rack varies.

To facilitate tracking the chip content of the rack and in/out movements of chips, in order to monitor such movements more closely and thereby to combat fraud more effectively, application WO 97/30414 in the name of the Applicant has already proposed providing the rack with chip storage columns and with reading and/or writing means able to communicate with the chips stored in said columns. The reading means include ferrite antennas at the top of the columns or slanted loop antennas under the columns. By using anti-collision algorithms, the communication unit is able to read/write all the chips of one or more stacks of 20 chips.

However, racks of the above kind are limited by relatively small capacities (generally 100 chips maximum, consisting of five columns or stacks each of 20 chips). Moreover, these racks with combined chip reading stations designed for localized use of chips with an electronic circuit with a memory are not suitable for secure transportation, even within a closed enclosure in a casino or gaming room of larger batches of chips, for example batches from 800 to 1200 chips, such example being not limiting on the invention.

There is therefore a need for equipment for transporting chips carrying coded information, in particular gaming chips, in particular between a place of storage and one or more places of use, that avoids counting and/or manual verification before and after transporting batches of chips transported in large quantities.

To this end, the invention proposes equipment for transporting chips carrying coded information, in particular gaming chips, in particular between a place of storage and at least one place of use, said equipment including a movable structure carrying chips arranged in columns or stacks and at least one first docking station for the carrier structure in said place of storage, said docking station integrating all or part of at least one station for reading the coded information carried by the chips of at least one column or stack to determine or verify the content of at least one batch of chips present in the carrier structure, in particular to draw up or to check an inventory thereof. The docking station is advantageously adapted to determine or verify the content of at least one batch of chips present in the carrier structure, in particular to draw up or to check an inventory thereof.

According to a first variant of the invention, the chip transport equipment includes in said place of use a second docking station for the carrier structure identical to or compatible with the first docking station. It is therefore possible in particular to verify the chip content of the carrier structure when it reaches the place of use of the chips, for example a gaming table.

The chip transport equipment is advantageously specifically adapted to transport operations when the place of storage is defined by a secure central store for gaming chips or a vault of a casino or gaming room or by a teller counter of a casino or gaming room. It is equally advantageous if the place of use is defined by a change or gaming table of a casino or gaming room.

According to an advantageous variant of the chip transport equipment of the invention the carrier structure takes the form of a closed and optionally lockable enclosure.

Thus the invention uses the carrier structure, which is itself portable, for the secure transport within a gaming room or a casino of large quantities of chips (in

practice appropriate to the load that a casino croupier can carry, consisting of the combination of the carrier structure and the chips, which are usually placed beforehand in simple plastics material racks), representing, for example, the capacity of around ten racks of chips, without having to provide the racks carried by the carrier structure with reading means, as will become apparent in the remainder of the explanation of the invention.

In a preferred embodiment of the invention, the chip transport equipment is characterized in that the carrier structure has a plane base adapted to receive at least one rack of chips in parallel columns. In one variant of the invention, the carrier structure is advantageously adapted to receive at least one plurality of stacked removable racks of chips in parallel columns. In one particular variant the carrier structure is adapted to receive two stacks of chip racks disposed one on each side of a separating partition fastened to said plane base and provided with holding means for the croupier transporting the carrier structure. To facilitate loading and unloading chip racks the carrier structure includes a removable lid disposed on said plane base and adapted to enclose the rack or racks and the chips they contain. Thus the carrier structure is arranged, whilst remaining transportable by a croupier, to provide a secure transport capacity from 800 to 1200 chips, much greater than the rack described in the application WO 97/30414.

The chip transport equipment of the invention advantageously includes at least one read station adapted to read coded information on or in each chip in the same column or stack of chips, in particular information identifying the chip and/or information regarding the face value of the chip.

According to a first way of reading chips (optical reading) used in the chip transport equipment of the invention, said at least one read station is of the type with a video camera or cameras oriented to read coded information on the edge of chips stored in columns or stacks.

According to another way of reading chips (contactless RFID reading) used in the chip transport equipment of the invention, said at least one read station is of the type with RFID contactless radio-frequency reception adapted to read coded information in a memory of a chip with an electronic circuit. Said at least one read station advantageously includes a read or read/write unit including an analog section with one or more antennas and a digital processing section with a microprocessor.

In a variant of the chip transport equipment of the invention with an RFID reading station, the latter is of the type with at least one wide-loop antenna adapted to be disposed facing the tops of the columns and stacks of chips present in said carrier structure, said antenna being either totally integrated into the docking station or the

carrier structure or divided between the docking station and the carrier structure. The wide-loop antenna advantageously includes a plurality of individual loops coaxial with one or more wire turns, the individual loops having substantially identical active areas and being electrically connected in series.

5 To enhance the reliability of the reading of chips contained in a carrier structure of large capacity (for example with stacks comprising 5 or 6 racks of 100 chips), the RFID read station includes a plurality of adjacent wide-loop antennas each including a plurality of said coaxial individual loops connected to the read or read/write unit via multiplexing means.

10 In one particular embodiment of the invention with a carrier structure with a plane base referred to above, at least one wide-loop antenna individual loop is integrated into a wall of the lid of the carrier structure and electrically connected by contact to the docking station via said plane base in a series circuit with the other individual loops of the same antenna.

15 In another particular variant of the invention with a carrier structure with a plane base described above, at least one wide-loop antenna individual loop is integrated into the separator partition of the carrier structure and electrically connected by contact to the docking station via said plane base in a series circuit with the other individual loops of the same antenna.

20 In a further advantageous variant of the chip transport equipment of the invention, the carrier structure integrates a read/write electronic circuit in particular of the contactless RFID type with memory, hereinafter referred to as the label circuit, adapted in particular to communicate without contact with the docking station and to store in particular the identification of the carrier structure and/or the content and/or
25 the inventory of at least one batch of chips or of all of the chips present in the carrier structure. The label circuit is advantageously attached to an external face of said plane base of the carrier structure so as to be able to communicate with a docking station or a read or read/write station that is independent and portable or associated with a gaming, cash or change table or with a chip sorter or with any other casino or
30 gaming room equipment.

 The invention also relates to diverse variants of a chip carrier structure with integrated antenna(s) for gaming chip transport equipment of the invention defined hereinabove.

35 The invention also relates to diverse variants of a chip carrier structure with a label circuit for gaming chip transport equipment of the invention defined hereinabove.

 Other objects, features and advantages of the present invention will become

apparent on reading the following description with reference to the appended drawings of a preferred embodiment of the invention, provided by way of non-limiting example, in which drawings:

5 - figure 1 is a diagrammatic perspective view of the chip carrier structure (shown open) used in an RFID type reading chip transport equipment of the invention;

- figure 2 is a diagrammatic view partly in section in the plane XOY of an RFID type reading chip transport equipment of the invention including the type of carrier structure shown in figure 1, shown closed, and

10 - figure 3 is a diagrammatic view partly in section (in the plane XOY) of a variant of the type of carrier structure shown in figure 2 with two wide-loop antennas.

In the figures, which are not limiting on the invention, the various items are not necessarily represented to scale. Identical reference numbers are used in the various figures to designate identical or similar items. Dimensions are indicated by way of example only.

15 The gaming chip carrier structure 10 shown in figure 1 has a plane base 12 adapted normally to be disposed in a horizontal position and divided by a median plane vertical partition 13 firmly fixed by any appropriate means to the plane base 12. The upper edge of the partition 13 is provided with holding means for the carrier structure, here a handle 15 in one piece with the partition. Each half-base 12a and
20 12b is adapted to accommodate racks 16 of gaming chips containing parallel columns of chips. By way of non-limiting example, the racks 16 are adapted to be stacked (see figure 2), are made from a rigid transparent plastics material and have a capacity of 100 chips 24 (there are five parallel columns 26 each of 20 chips), the racks 16 being disposed to place the columns 26 of chips perpendicular to the plane of the partition
25 13 for reasons connected with reading the chips 24 that will become apparent later. The racks 16 have separator walls to define therein sections 27 for storing chips (not shown in the figure) and having the general shape of a trough with a U-shaped bottom. This is known in the art. The storage sections may be column sections when they extend horizontally or quasi-horizontally, as is the case of the sections 27 of the
30 carrier structure 10 described here (figure 2 shows columns 26 of ten chips 24 (instead of 20) for convenience and to clarify the drawing), or stack sections when they extend vertically, as in the case of vertical dispenser racks (conforming to a different embodiment of the invention that is not shown).

35 The carrier structure also has a lid 14 shown open and removed from the plane base 12. The lid 14 has the general shape of a parallelepiped open at the bottom with four lateral faces 18a, 18b, 20a and 20b and an upper face 22 through which passes an opening 23 to allow the handle 15 to project from the lid 14 when the

latter is covering the base 12 and the chip racks 16 stacked therein, the carrier structure being then closed, as shown in figure 2 (the lower edges of the lateral faces then bear on the top of the plane base 12). Thus the carrier structure 10 defines a closed enclosure for the transported gaming chips, that is optionally locked by any appropriate locking means (not shown). By way of non-limiting example, the carrier structure 10 is made from a non-metallic material, for example from rigid plastics material that is usually transparent in the case of the lid 14.

In addition to the carrier structure 10, the chip transport equipment includes at least one docking station 28 integrating in whole or in part a reading station 30 adapted to read coded information carried by the chips 26. Figure 2 shows diagrammatically a docking station 28 of this kind situated, for example, on the table top 31 of a cash, change or gaming table or on a counter of a central chip store (for example a casino vault), equipped with the carrier structure 10, in the closed position, everything being shown partly in section in the median vertical plane XOY perpendicular to the partition 13.

The reading station 30 includes antenna means 32, possibly associated with an antenna selection or multiplexing interface (not shown) and with an electronic read/write unit 34 including means for reading the memory of the chips and means for writing the memory of the chips. Without departing from the scope of the invention, a simplified version of the dialog electronic unit comprises only means for reading the chip memory, its structure and operation being similar to those described hereinafter in the case of the read/write unit 34.

The invention uses improved gaming chips including a "contactless" electronic identification device. To be more precise, each chip 24 includes an electronic circuit 36 whereof the memory contains coded information specific to the chip to enable it to be identified and authenticated by an appropriate unit (a reading unit or a read/write unit operating in read mode). In the simplest version, the electronic circuits (not shown) of the chips are of the microcircuit type and equipped with a non-reprogrammable memory (for example of the PROM type) with a unique identification code on 32 bits or 64 bits generally comprising the serial number of the chip or the chip batch (its face value and other information concerning the chip such as the casino name, etc. may be stored in a database external to the chips, accessed by means of the serial number of the chip or the batch number). Whichever type of memory is used in the chip, the identification electronic circuit 36 of the chip further comprises a sender/receiver with a peripheral circular coil antenna that is also embedded in the chip and adapted to be energized by inductive coupling from the external antenna of the read station or the read/write station (in the present example

this refers to the antenna 32 of the read/write station 30).

5 In a more sophisticated version, the chip codes can be changed and the chips are equipped with reprogrammable memory (for example of the EEPROM type) that can be read and written. This ability to modify the information contained in the memory increases the security of the electronic chip, in particular by enabling the authentication parameters to be changed. Similarly, it is possible to customize certain areas of the memory and then to configure them reversibly or otherwise in a defined read-only or read/write memory area (the information concerning the chip stored in this way in its memory may include, by way of non-limiting example, in addition to the serial number of the chip or the batch number, the face value of the chip, the casino name, the fabrication number of the chip and its date of fabrication, etc.). In an optional and even more sophisticated version, the chip is optionally equipped with a microprocessor able to carry out complex processing and transactions such as, for example, monitoring the dialog between the chip and the electronic read or read/write station, so that such dialog is authorized only after mutual authentication, involving the entry of password type codes and/or cryptography keys into the chip and the electronic unit (in particular for encrypting data during its transfer between the electronic unit and the chip).

10 Moreover, the electronic circuit 36 of the chips 26 is adapted to allow simultaneous reading and/or writing of a plurality of chips or to discriminate between the chips, so that it can work on stacked gaming chips. In the embodiment of the invention described by non-limiting example, the dialog unit integrating the discrimination function is adapted to capture the identity of a first chip in a batch of chips 24 situated in the radiated field of the antenna, in the present example a row of chips placed in a column 24 of a rack 16. It is then possible to dialog with this first chip and to perform the required read and/or write operations, and then to deactivate the chip by sending it a command to go to a standby state. The dialog unit continues its interrogations in search of other chips in the active area of the antenna to capture all the chips present in succession. After capturing and/or processing the last chip, the dialog unit sends a command to reactivate all of the chips in the column. This chip discrimination function is also known as an anti-collision function.

25 The structure and the mode of fabrication of the chips with an electronic circuit with memory are not described in detail here. By way of non-limiting example, the application EP-A-0694872 in the name of the Applicant describes several types of chip structures usable in the context of the present invention.

35 Turning again to figure 2, the read station 34 for the chips 26 includes an analog section 50 with an antenna and a digital processing section 52 with a

microprocessor. In the non-limiting example shown in figure 2, the analog section includes a single antenna 32 for reading chips 24 present in the carrier structure 10, the antenna 32 being of the wide-loop type (having an active area at least equal to several times the face surface area of a chip 24, whereof the diameter is substantially 40 mm to 50 mm) and including a plurality of individual coaxial loops of equivalent active area, connected electrically in series to define a single equivalent antenna; in the present example, this refers to the three individual loops 41, 42 and 43, with one or more copper wire turns of approximately 0.5 mm diameter. To be more precise, the individual loops 41 and 43 are integrated into the lateral faces 18a and 18b and the individual loop 42 is integrated into the partition 13, the turns of generally circular or polygonal shape covering substantially all of the internal surface of the faces 18a and 18b and of the partition 13 in order to be able to read all the columns 26 of chips 24 present in the carrier structure 10 (the individual loops 41, 42 and 43 of the antenna 32 face the tops of the columns of chips stored in the racks 16). These copper wire turns, the electrical wire connections 45 and 46 between individual loops and the wire line 47 are placed and glued into corresponding grooves or slots (not shown) in the faces 18a and 18b, the partition 13 and the plane base 12. To provide electrical continuity of the antenna 32 and connect it to the connection line 40 of the analog section 38, there are provided, firstly at the interface between the lid 14 (carrying the individual loops 41 and 43) and the upper face of the plane base 12, two pairs of electrical contacts 48 and 49, for example of the metal leaf spring type (shown diagrammatically in figure 1 by small circles), and, secondly, at the interface between the lower face of the plane base 12 and the table top 31 of the docking station, a pair of electrical contacts 50.

The "contactless" read/write unit 34 consists of the analog section 38 and a digital processing section 52 which comprises a microprocessor that generates, interprets and processes signals exchanged with the electronic memory chips. The digital section 52 also controls an interface for sequentially selecting chip reading antenna(s) (not shown), for example of the multiplexing type when the unit 28 is used with a plurality of antennas (as shown in figure 3 and described hereinafter). It also includes an oscillator that generates the carrier frequency (for example 125 kHz) of the radio-frequency signal sent to the antennas, a time and date circuit capable of specifying the time and the date of each event, PROM for storing the processing sequences of the microcontroller, EEPROM for storing the processed data and exchanging data with the electronic chips, and an RS232/485 serial interface for connection to a server computer (not shown), either in point-to-point mode or in network mode. In particular, the digital section is able in read mode or in read/write

mode to read and/or store and/or check the chip content of the carrier structure and to draw up or check an inventory thereof in bulk and in separate batches.

5 The digital section 52 is connected to input peripheral devices (for example a keyboard 54) and/or output peripheral devices (for example a visual display 56 and/or a printer and/or an audible warning device). The keyboard 54 is used, for example, to enter into the system information on the carrier structure 10 present on the docking station 28 or on the several sets of chips contained therein, the identity of the docking structure used, indications as to the intended transport, in particular the point of departure (for example the storage facility) and the destination (for example the place of use, such as a gaming, change or cash table), the identity of the operative loading or unloading the carrier structure, information on the corresponding accounting transaction, etc.

15 Similarly, the display (or printer) can display (or print) any or all of the following information specific to the inventory of the chip content of the carrier structure: the total number of chips present in the carrier structure, the number of chips per value and/or per batch, the overall value contained in the carrier structure, the transport indications, etc.

20 The analog section 38 includes an analog-to-digital converter (ADC), a modulator and an amplifier. On the basis of signals, commands and information coming from the digital section 52, it generates an amplitude-modulated radio-frequency analog signal that conveys power, data and a synchronization signal to the electronic memory chips via the selected antenna. The electronic chips 24 are of the read or read/write passive type (with no internal energy store). The antenna 32 must therefore provide the energy necessary for the operation of the electronic circuit of the chip as well as transmit the data. The working distances between the antenna (individual loop) and the chips are defined as a function of the magnetic flux necessary for correct operation of the electronic circuit of the chip and therefore depend on the inductance, the geometry of the antenna and the antenna current. The faces of the chips 24 integrating the coils of the electronic circuits 36 are preferably parallel to the individual loops 41, 42, 43, 60 and 62 shown in figures 2 and 3.

25 In some cases, and in particular in the case of carrier structures of large capacity, with five and six layers of stacked racks 16, to improve the reliability of reading the chips it is advantageous to provide a plurality of antennas in parallel and/or to facilitate the division into batches of the content of the carrier structure. By way of non-limiting example, figure 3 shows a variant of the figure 2 carrier structure in which the antenna 32 is replaced by two antennas 58 and 59 connected electrically in parallel, each having three individual loops of which only the loops 60 and 62

30

35

integrated into the face 18a of the lid 14 can be seen, the loops 60 and 62 being virtually back-to-back to cover the whole of the internal surface of the face 18a. In practice, as shown in figure 3, the loop 60 of the bottom antenna 58 covers the lower three levels of the stack of chip racks 16 and the loop 62 of the top antenna 59 covers the three upper levels of the stack of chip racks 16. Similarly, each antenna 58 and 59 is connected to the analog section 38 by a respective electrical connection line 61 and 63 and via appropriate electrical contacts in a similar manner to that described above with reference to figure 2 (the analog section 38 being moreover provided with multiplexing antenna selection means).

Optionally, but highly advantageously, the carrier structure 10 integrates a contactless read/write electronic circuit of the RFID type with memory, hereinafter referred to as the label circuit 64, adapted to communicate without contact with the docking station (via a loop antenna 66 appropriately connected to the analog section 38 by the connecting line 67 shown in dashed line) and to store in particular the identification of the carrier structure 10 and/or of the content and/or the inventory of at least one batch of chips or all of the chips present in the carrier structure 10. As shown in figure 2, the label circuit 64 is attached to the external face of the base plate 12 of the carrier structure 10 so that it is able to communicate with the docking station via the antenna 66 integrated into the tabletop 31 (the loop of the antenna 66 being perpendicular to the individual loops 41, 42, 43 of the antenna 32 to avoid any read or read/write interference between the label circuit and the chips 24). Moreover, this arrangement of the label circuit 64 authorizes reading and/or reading/writing of the memory of the label circuit outside the docking station, for example by an independent read or read/write station that is either portable or associated with a gaming, cash or change table or with a chip sorter or with any other casino or gaming room equipment.

Of course, without departing from the scope of the present invention, the shape, number, disposition and location of the antennas of the carrier structure and/or their individual loops and of the interface with the docking station are liable to be adapted as a function of fabrication constraints and/or diverse specifications indicated by casino operators. Similarly, it is possible within the context of the invention to read/write the memory of the label circuit by means of a simple electrical connection.

Neither is the invention limited to chip transport equipment with a carrier structure integrating all the individual loops of wide-loop antennas, which, in variants of the invention that are not shown, are totally or partly integrated into the docking station, appropriately disposed in parallel planes in the case of a plurality of individual

loops of the same antenna, for example in parallel vertical panels (not shown) attached to the tabletop 31 and adjoining the faces 18a and 18b, with the individual loop integrated into the median partition 13.

5 Nor is the invention limited to chip transport equipment with a carrier structure and with removable racks that are stacked and/or have a median partition. In a variant that is not shown the carrier structure has shelves for storing chips in parallel columns or stacks on a plurality of horizontal levels or in a plurality of vertical planes and one or more wide-loop antennas appropriately disposed or arranged to be able to read all of the chips contained in the carrier structure.

10 Moreover, the invention is not limited to the geometrical shape of the carrier structure 10 described above but encompasses other types of portable chip transport structures, preferably forming a closed enclosure and adapted to accommodate a large quantity of gaming chips in columns or stacks, possibly equipped with wide-loop RFID antennas, such as cases, briefcases, boxes, etc.

15 Neither is the invention limited to RFID reading of coded information carried by the chips. In a variant that is not shown the coded information is carried by the edge of the chips (for example in the form of a bar code or a color code) and is read by video cameras disposed at the docking station on either side of the carrier structure with transparent walls, the cameras being disposed to be able to read an
20 entire column or stack at a time, and possibly slantwise relative to the column or stack. On the other hand, this type of equipment for reading chips optically may be equipped with an RFID reading label circuit analogous to the circuit 64 described above or with a label circuit read by means of an electrical connection.

CLAIMS

1. Equipment for transporting chips carrying coded information, in particular gaming chips, in particular between a place of storage and at least one place of use, said equipment including a movable structure (10) carrying chips (24) arranged in columns (26) or stacks and at least one first docking station (28) for the carrier structure (10) in said place of storage, said docking station (28) integrating all or part of at least one station (30) for reading the coded information carried by the chips (24) of at least one column (26) or stack to determine or verify the content of at least one batch of chips present in the carrier structure (10), in particular to draw up or to check an inventory thereof.

2. Chip transport equipment according to claim 1, characterized in that said docking station (28) is adapted to determine or to verify the content of all chips (24) present in the carrier structure (10), in particular to draw up or to check an inventory thereof.

3. Chip transport equipment according to claim 1 or claim 2, characterized in that it includes in said place of use a second docking station for the carrier structure identical to or compatible with the first docking station.

4. Chip transport equipment according to any one of claims 1 to 3, characterized in that said place of storage is defined by a secure central store for gaming chips or a vault of a casino or gaming room or by a teller counter of a casino or gaming room.

5. Chip transport equipment according to any one of claims 1 to 4, characterized in that said place of use is defined by a change or gaming table of a casino or gaming room.

6. Chip transport equipment according to any one of the preceding claims, characterized in that the carrier structure (10) takes the form of a closed and optionally lockable enclosure.

7. Chip transport equipment according to any one of the preceding claims, characterized in that the carrier structure (10) has a plane base (12) adapted to receive at least one rack (16) of chips in parallel columns.

8. Chip transport equipment according to claim 7, characterized in that the carrier structure (10) is adapted to receive at least one plurality of stacked removable racks (16) of chips in parallel columns.

9. Chip transport equipment according to claim 8, characterized in that the carrier structure (10) is adapted to receive two stacks of chip racks disposed one on each side of a separating partition (13) fastened to said plane base (12) and provided with holding means (15).

10. Chip transport equipment according to any one of claims 7 to 9, characterized in that the carrier structure (10) includes a removable lid (14) disposed on said plane base (12) and adapted to enclose the rack or racks (16) and the chips (24) they contain.

5 11. Chip transport equipment according to any one of the preceding claims, characterized in that said at least one read station (30) is adapted to read coded information on or in each chip (24) in the same column (26) or stack of chips, in particular information identifying the chip and/or information regarding the face value of the chip.

10 12. Chip transport equipment according to claim 11, characterized in that said at least one read station is of the type with a video camera or cameras oriented to read coded information on the edge of chips stored in columns or stacks.

15 13. Chip transport equipment according to claim 11, characterized in that said at least one read station is of the type with RFID contactless radio-frequency reception adapted to read coded information in a memory of a chip (24) with an electronic circuit (36).

20 14. Chip transport equipment according to claim 13, characterized in that said at least one read station (30) includes a read or read/write unit (34) including an analog section (38) with one or more antennas and a digital processing section (52) with a microprocessor.

25 15. Chip transport equipment according to claim 14, characterized in that said at least one read station (30) is of the type with at least one wide-loop antenna (32, 58, 59) adapted to be disposed facing the tops of the columns (26) and stacks of chips present in said carrier structure (10), said antenna (32, 58, 59) being either totally integrated into the docking station (28) or the carrier structure (10) or divided between the docking station and the carrier structure.

30 16. Chip transport equipment according to claim 15, characterized in that said wide-loop antenna (32, 58, 59) includes a plurality of individual loops (41, 42, 43, 60, 62) coaxial with one or more wire turns, the individual loops having substantially identical active areas and being electrically connected in series.

 17. Chip transport equipment according to claim 16, characterized in that said read station includes a plurality of adjacent wide-loop antennas (58, 59) each including a plurality of said coaxial individual loops connected to the read or read/write unit (38) via multiplexing means.

35 18. Chip transport equipment according to any one of claims 15 to 17 in combination with claim 10, characterized in that at least one wide-loop antenna individual loop (41) is integrated into a wall (18a) of the lid (14) of the carrier structure

and electrically connected by contact to the docking station (28) via said plane base (12) in a series circuit with the other individual loops (42, 43) of the same antenna.

5 19. Chip transport equipment according to any one of claims 15 to 17 in combination with claim 9, characterized in that at least one wide-loop antenna individual loop (42) is integrated into the separator partition (13) of the carrier structure (10) and electrically connected by contact to the docking station via said plane base (12) in a series circuit with the other individual loops (41, 43) of the same antenna.

10 20. Chip transport equipment according to any one of claims 11 to 19 in combination with claim 2, characterized in that the carrier structure (10) integrates a read/write electronic circuit in particular of the contactless RFID type with memory, hereinafter referred to as the label circuit (64), adapted in particular to communicate without contact with the docking station (28) and to store in particular the identification of the carrier structure (10) and/or the content and/or the inventory of at least one
15 batch of chips (24) or of all of the chips (24) present in the carrier structure (10).

21. Chip transport equipment according to claim 20 in combination with any one of claims 7 to 10, characterized in that the label circuit (64) is attached to an external face of said plane base (12) of the carrier structure so as to be able to communicate with a docking station (28) or a read or read/write station that is
20 independent and portable or associated with a gaming, cash or change table or with a chip sorter or with any other casino or gaming room equipment.

22. Carrier structure (10) for chips with integrated antennas (32, 58, 58) for gaming chip transport equipment according to any one of claims 15 to 19.

25 23. Carrier structure (10) for chips with a label circuit (64) for gaming chip transport equipment according to either claim 20 or claim 21.