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(54) **PROCESS AND EQUIPMENT FOR MONITORING A LIVE POKER GAME OR TOURNAMENT**

(57) Process for monitoring a live poker game or tournament that, applicable to automatically know, at every moment and in real time of whom the turn is and how much remaining time he has available to make a decision, which cards are on the table (2) and which cards each player is presenting to know who is the winner and how many chips he gets or how they are distributed the pots in the case that there is more than one; and how many cards each player is betting in each action and how many chips he has in his possession at every moment, that comprises a stage of receiving information from a microphone and a camera, a stage of processing data and a stage of communicating states and/or results to the central server computer (9) for their distribution. The object of the patent is likewise an equipment to monitoring a live poker game or tournament that comprises a ceiling sensor to acquire information on what is occurring at the table, a croupier computerized board (6), a mouse for counting chips, a microphone (8) to transmit the sound to the computer of the table and allow the voice recognition, the said set of elements of each table (2) being electronically connected to each other, in a wireless mode and/or by means of wiring.

FIG. 1

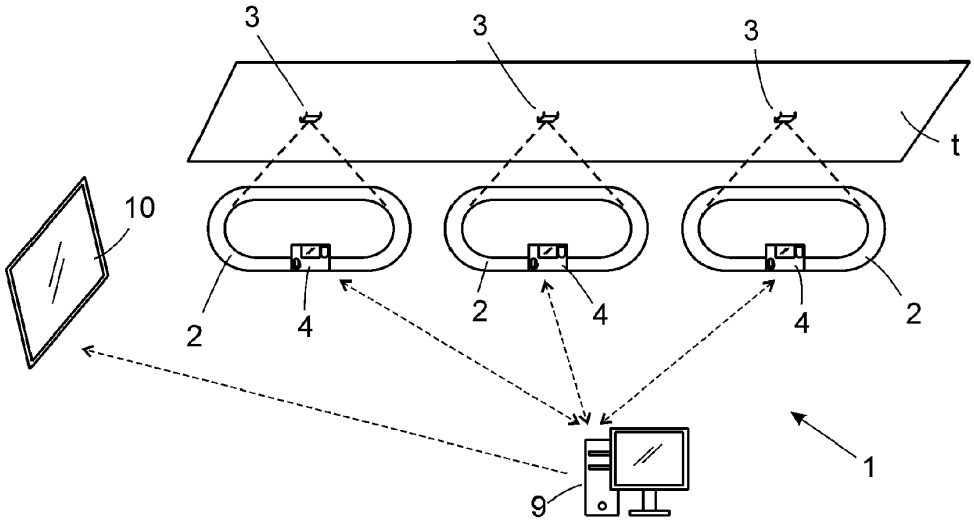

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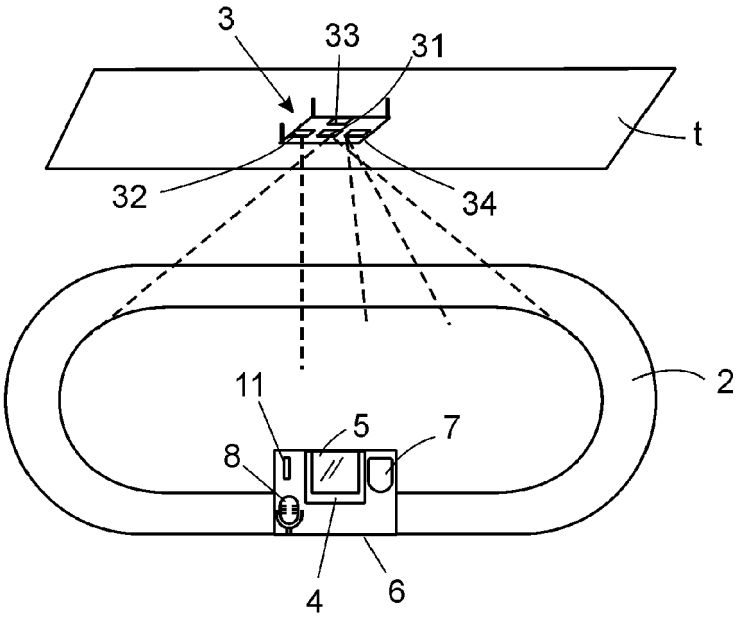
FIG. 2



Description

OBJECT OF THE INVENTION

[0001] The invention, as stated in the title of this specification, refers to a process and an equipment for monitoring a live poker game or tournament.

[0002] The object of this invention refers to a monitoring process the aim of which is to be able to control in real time the state of the different game tables, of a casino or similar establishment, where a poker game or tournament is occurring. Namely, to know at every moment and in real time of whom the turn is and how much time he has left available to make a decision, which cards are on the table and which cards each player presents or to know who is the winner and how many chips he gets, or how they are distributed in the event that there is more than one pot, as well as how many chips each player is betting at each action and how many chips he has at every moment, the second objective of the invention being the equipment to carry out the said process of automatic monitoring.

FIELD OF APPLICATION OF THE INVENTION

[0003] The field of application of this invention is within the sector of casinos and gambling houses, it comprises at the same time the field of the industry engaged in manufacturing electronic equipment for monitoring and controlling activities in real time.

BACKGROUND OF THE INVENTION

[0004] As it is known, there exists different varieties of poker, although in this invention, we will take as example that known as "Poker Texas Hold'em" because it is the most worldwide extended variant, to explain the proceeding.

[0005] In addition, it will be possible to play in the cash mode or in the tournament mode. The difference is that in the cash mode, the amount of a money one is disposed to play is exchanged for chips within a range allowed by the casino at each game table. The player sits at a table to play. When he finishes the chips or he is tired, he takes his chips and leaves the table. In the event of tournaments, the player buys a ticket giving him access to the tournament and receives in exchange an amount of chips common to all the players. He plays until he has no more chips and he is eliminated. In the event of remaining in the first positions, he will receive a prize depending on the final position he achieves in the tournament.

[0006] In the card game named Poker Texas Hold'em in a live casino, several players are facing each other with the objective of obtaining the combination of cards having the higher possible value. For this, each player can choose:

- Two face down cards distributed in his hand and three of the five that will remain aligned and face up on the table that will be common for all the participants.
- One of his cards and four of the five community cards.
- The five community cards and, therefore none of his.

[0007] The 52 cards that the full French deck possesses are used. The Ace can be used in the straight combinations as the smallest card before 2 (Ace, 2, 3, 4 and 5) or as the highest after K (10, J, Q, K and Ace).

[0008] The games normally will commence with at least 4 participants. Before commencing, the places at the table will be allotted by drawing lots among the players interested to participate.

[0009] Once it has commenced, the Pit Boss will be who will allot the new places.

[0010] The Casino will set for each table the initial amount or Rest with which the players participate and the number of Replacements, likewise he will set the minimum sum for a new player be included in the game. The player will be bound to make a replacement when he has no more chips or when he leaves the table.

[0011] In each hand, there exists a big blind and a small blind, they are the minimum obliged bets for 2 of the players of each "hand".

[0012] In addition, the casino states for each game the cost or rate, that remains for each hand that is played or on the cost of the entry to a tournament.

[0013] The Casino also sets the type of bet for each table or tournament, that normally are:

- "Split limit", will be played in the first two intervals of bets with the lowest limit and the following ones, with the highest.
- "Pot with limit", the bet will be limited by the pot.
- "Pot without limit", we will find no limit for the maximum bet, the minimum cannot be lower than the authorized and conspicuously exposed on the table.

[0014] When playing is started at one table, it is drawn who is the player who will commence as if he was the dealer and a marker or button is allotted to him. Position from which the game starts.

[0015] At each new hand, the croupier will advance one position the button.

[0016] The player next to the "button" is bound to bet the "small blind" and the following player, the "big blind". Optionally, the game can have been configured in order that in addition each player provides a fraction of the "big blind" named "Ante".

[0017] After shuffling and cutting the cards, the croupier commences to distribute one card by player, up to a total of 2 to each. The participants may not touch their cards until the distribution is finished.

[0018] A first round of bets commences, starting next to the player that bet the big blind commencing thereafter. The player can:

- Fold and go out of the game clearly stating "no-go" and putting his cards face down on the table, that will be withdrawn by the croupier without the rest of the participants can see them.
- Check, saying "I check" when his turn arriving, he decides not to bet. In the event that some other participant carries out a raise, the check player shall have to cover or increase the bet if he is willing to go on playing.
- Cover or match the bet placing in the Pot the amount necessary to match the maximum bet.
- Raise the bet of any other player, placing in the Pot the chips sufficient to achieve it.

[0019] Every time when the player makes a decision, it is narrated by the croupier to make sure that there are no doubts for the rest of the players.

[0020] At the end of the first turn of bets, the croupier uncovers three new cards at the center of the table, that are named "community cards" for all the players.

[0021] Thereafter, another round of bets is commenced, starting by the player next to the one having the "button".

[0022] Once completed, the croupier shows a fourth community card.

[0023] Another round of bets starts.

Once completed, the croupier shows the fifth and last community card.

[0024] The final round of bets commences.

[0025] At the end of the hand, the winner wins the pot. In the event that there are several pots, it occurs when some player put all his chips, they will be distributed as it pertains to the winning player or players for each pot. In case of tie in a pot, the pot will be distributed in equal shares among the winning players who have a tie for that pot.

[0026] Differentiating features of the "tournaments" with respect to the "cash" games.

[0027] Normally, the tournament has a structure formed by levels. Every now and then it is progressed to next level. As the level is progressing, the blinds also raise and thus a pressure is generated for the players.

[0028] In the tournaments, the players have to adapt their strategy according to the phase in which they are, the types of players of their table, their amount of chips or "stack" with respect to the other ones, etc.

[0029] Normally, if the chips are lost before reaching a given level, one or several buybacks are allowed in total. After that level, neither buybacks are allowed nor new registrations of players.

[0030] Thereafter, there is the most extended phase of the tournament, that consists of increasing as much as you can your chips and not being eliminated before the "bubble of prizes". Normally, the prizes of the tournaments are distributed between the 10%-20% of the total of players that later are eliminated, exponentially according to the final position of the ranking. The last bubble occurs to reach the final table, where the prizes are really interesting, and can mean over half the total prize of the tournament.

[0031] The terminology to refer to the point at which a hand is located is as follows:

- *Pre Flop.* Actions that occur before the first 3 community cards are shown.
- *Flop.* When the first 3 community cards are distributed on the table.
- *Turn.* When the fourth community card is distributed on the table
- *River.* When the fifth community card is distributed on the table
- *Showdown.* When the players disclose their cards at the end of the hand to know the best combination and therefore the winner (or winners).

[0032] With the objective of defensing the interests of all the players thus assuring the good development of the games, it is expressly forbidden:

- To touch the community cards.
- Playing by pairs or the players collusion: it is not allowed to play the Pot jointly or to voluntarily share it.
- Buy or add chip to one's rest to increase it during one hand. It is neither allowed to keep chips of the rest.
- The players lending chips to each other
- To make comments between players about the moves during their progress.

[0033] The differences of games configuration in "cash" mode and "tournament" mode are as follows.

[0034] All the characteristics are predefined by the casino before the player decides to participate in the game, in the following table the most usual cases appear:

	Game in "cash" mode	**Game in "tournament" mode**
Entry cost	-	Tournament ticket ex. 50€
Small blind	Variable	Variable
Big blind	Double of the small blind	Double small blind
Ante	Fixed amount	Proportion on blind
Levels	-	The blinds go up at each level
Rake	% by hand for the casino	% on the tournament ticket
Break	-	Every hour or every 90 minutes
Time by turn of player	Until another player complains	Normally from 30 seconds and 2 minutes
Extra time cards	-	Variable according to the configuration of the tournament
Ranking	They are not generated	The chips of the players having more chips or reference players are counted at guess.
Stat. Summary of the game	-	-
Registration	Free while it is fit	Before and during the the tournament, provided that it is before the limit Level for it
Distribution of prizes	You fold when you want and your exchange the chips that are left against money	You play until you are eliminated, the prizes are only obtained by who exceed the "bubble of prizes" that use to be from 10 to 20% of the top ranking.

[0035] The objective of this invention therefore, is to develop a process and a monitoring and controlling equipment to be able to know, at every moment and in real time, what occurs at each of the tables of a casino in which poker games are in progress.

[0036] On the other hand, and with reference to the current state-of-the-art, at least the applicant is not aware of the existence of any other process or equipment having a similar application showing same or similar technical characteristics to those appearing and that are claimed herein.

EXPLANATION OF THE INVENTION

[0037] The monitoring process and equipment of a face-to-face poker game or tournament that the invention proposes is configured as the suitable solution to the objective previously stated, the characterizing details that distinguish it appearing in the final claims attached to this description.

[0038] Concretely, what the invention proposes, as it has been said, is a process and an equipment applicable to control, in real time, the state of one or more poker games that are being played in the different game tables of a casino or a similar establishment and which allows to know, at every moment and in real time:

- of whom the turn is and how much remaining time he has available to make a decision;
- which cards are on the table and which cards each player is presenting to know who is the winner and how many chips he gains or how they are distributed in the case that there is more than one; and
- how many cards each player is betting in each action and how many chips he has in his possession at every moment.

[0039] With this, the advantages and benefits obtained are multiple:

- The casinos will be able to configure a timer by turn without the croupier manual interaction as it already exists in the game online.
- With the use of the automatic timers, neither the croupier nor the players have to manually operate anything which

could mean over 90 manual pulses for each hand of the game.

- Thanks to the timers and the automatic chips counting, more hands can be played by hour.
- The data automatically generated can be displayed on the table, in the screens of the casino, cell phones of the players or internet.
- The commissions of the games are accounted in "cash" mode in order that the value is immediately known and without human errors.

[0040] In addition, with regard to the players, the advantages are:

- Best experience for the user. Sometimes, some players spend more time than required and ask the croupiers to count the chips of the rivals, which makes that other players are bored or distracted. The full information on chips can be displayed on the table.
- It allows to adapt the game strategy. Knowing your position in the ranking and knowing the quantity of the rival chips helps to determine the strategy as it is done in the game online.
- It allows to obtain the history of your game, to be able to assess it later on.

[0041] As for the casino, the advantages it provides to it are also significant:

- Everything meaning an improvement of the user's experience is profitable to the casino.
- Having an automatic timer available by turns, reduces lost times.
- Knowing at every moment how many chips he is betting and how many each player possesses reduces times in counting and human errors.
- Reducing average times by hand, thanks to the fact there is the automatic chronometer and it is not required to count chips. At the tables of "cash", the casino receives a commission for each hand thus, if more hands are played by hour, the income by table and hour increase.
- Anti fraud and/or humans errors control on the chips, at any moment it is possible to detect whether an undue chip transfer occurred between players, to the pockets, etc.
- As operating a chronometer at each turn is avoided, having the commissions accounted and the chips, player and bet control at every moment means less stress for the croupiers and therefore best working conditions.
- Instant remote control for the casino of profitability by table.
- Automatic generation of data and contents, that can be distributed in real time, televisions, social networks, cell phones of the players, etc. to improve the experience, productivity and/or marketing.

[0042] For all this, and more specifically the process object of the invention comprises the data automatic generation and their communication by means of:

- A main desktop computer, located on each table, at the bottom of the croupier board, that possesses a connection point available in order to connect it to a set of sensors provided at the said table and from which it receives, in real time, some of the following data:
  - detection of cards and button by a ceiling sensor
  - reception of the video, when the croupier uses a chips counting mouse,
  - reception of sound captured by a microphone for voice recognition of the actions of the players narrated by the croupier.
  - data of the state of the tournaments, levels or remaining time by level, from a central server computer of the local network of the tables.
- The information gathered by the desktop computer is processed and states of the game are changed for this table, such as chronometers, turn, sequence of the game, state, bets levels, etc.
- Thereafter, it notifies to the remaining devices the new states of the game and it orders updating the information in the output devices, when applicable, such as:
  - Notifying to the local server of the casino the states of the game and players of the table to allow the distribution of data in screens of the casino, management tools, phone cells, internet, etc.
  - Displaying the changes in the screen of the table device
  - Notifying the ceiling sensor any information that has to be displayed on the table (enlarged reality).

[0043] For all this, the monitoring equipment comprises, preferably, the following elements:
At each table:

- A ceiling sensor that, in turn, preferably possesses:
    - A mini camera. It must span the width of the table and have a resolution and sharpness sufficient to be able to interpret the cards.
    - A mini laser to measure the distance. Used in the calibration process to measure a distance used in the table calibration process to be able to measure the distance between the sensor and the table in straight line and thus, knowing the distance, the position and the size of the objects and the table.
    - A mini processor. It processes the images of the camera for detecting cards and other objects. In addition, it communicates with the table and manages the laser and the projector of enlarged reality.
    - A mini projector. It displays the images provided to it by the sensor itself.
- A croupier computerized tray preferably provided with, in turn:
    - Touch screen. It allows monitoring and interacting with the information gathered from the sensors and/or acceding/interacting with the table application.
    - Main desktop computer. It possesses an access point to which the sensors of its table are connected. It processes the heaviest tasks such as counting chips from the images received from the mouse and the chips moves by voice recognition of actions of the croupier and/or the players. It informs the croupier on any datum or anomaly by means of the screen and/or the ceiling sensor, if it is necessary to display information; it processes messages received from the central server computer that coordinates all the tables, whilst it updates to it the states of the table, players and chips at every moment.
    - Microphone of the croupier that is connected to the board via USB cable or Bluetooth. Channel of audio input for processing and recognizing the actions of the players by the desktop computer. This recognition is that generating the information necessary to control the chips flow and the timers of the players.
    - A chips counting mouse. It possesses a camera, light and a button, it is connected with the desktop computer at the request of the croupier: the light is turned on and transmits by WIFI the video of the chips the croupier is focusing, when he pushes the button, it gives the instruction to the desktop computer for counting, that after some tenths of second it will provide, displayed by screen and/or displayed on the table, the total of points of the chips.

[0044] The tray of the croupier, preferably, possesses the following characteristics:

- Its size and shape correspond to the standard trays of the casinos, to facilitate the implementation of the system.
- It possesses small channels, to keep the chips of the croupier.
- It possesses a recess to leave other chips, button or pack of cards
- It possesses a recess, level with the table, at the right upper party that act as "parking lot" for the mouse, to take it out and in without having to lift it. While the mouse is parked on rest, it is charging.
- Recharging can be by means of QI (the mouse has an internal receiver) or by means of a contact pin.
- On its upper part, the touch screen of the croupier and an USB connector for the mouse are located.
- On the internal part, a processor is located having a capacity sufficient to processing images, distributor of different voltages for each device and the mechanism to charge the chips counter mouse.
- On the back lower part it possesses an antenna to offer good signal to the sensors that are connected and to correctly communicate with the point of access of the server of the network of tables.

[0045] To best explain the functionality of each device, we differentiate among the different operating modes it contemplates and that are: calibration mode, in which the sensors are calibrated and train the detectors and mode of game, in which the system is processing image and audio in real time, generating and distributing the related information.

Calibration mode

[0046] The croupier manages the calibrations from the touch screen of the tray of the table and he can choose several functions:

A/Calibrating the table:

[0047] When the croupier decides to calibrate the table, when a new installation is carried out, he must put one card on the table facing the position of each player, ordered from the Ace up, as many positions as the table has.

[0048] He shall put a board of a solid color in the area where the community cards for the players will be located.

[0049] Thereafter, he must start the application to calibrate the table that operates as follows:

- The desktop computer starts the table calibration process of the ceiling sensor.
- The ceiling sensor measures, using laser, the distance from the sensor to the table in straight line, with this already knowing the sizes of the cards that will appear on the table and will help to understand the dimension of the table and the rest of the elements that it has to analyze.
- Thereafter, it detects the cards in an orderly manner, as well as it knows where each player will be sitting, which is the area for showing cards of the player and the shape the table has.
- It also detects the area of community cards to interpret later on the cards of this area for community cards and thus reduce any failure in this sense.
- Once all the details of calibration are obtained, they will be forwarded to the local computer of the table where they are stored and in addition, they are newly forwarded to the central computer that manages the set of tables and/or tournaments.

B/ Calibrating chips:

[0050] Normally, the casinos have one or several games (or sets) of different chips. The calibration is made one by set and serves for all the tables of the casino or when a table has special conditions of ambient light. Anyway, when the casino or the croupier decides to calibrate the chips, first he states which set of chips are involved in the touch screen of the table. Thereafter, he must put a different column of chips for each value of chips of the set and where all the chips of a column have the same value. Thereafter, they must start the calibration application in the screen of his tray, this will activate the "chips counter mouse" in the "chips calibration" mode. The stages are as follows:

- The croupier will choose a chip of the screen having a given value to be calibrated.
- He will place the mouse on the table and before the mountain of chips of the said value, he will push the button and this will operate the mouse camera that will forward by streaming the video to the screen of the croupier.
- When the image is focused, he will newly click the mouse and this later will give instruction to analyze the chips to the desktop computer for concretely that photogram.
- The computer will start a series of algorithms necessary to detect the different chips that are seen in the selected photo. Thereafter, it will the possible common patterns in different chips, as well as the main colors. Summarizing, a set of common characteristics is generated for the chips having these value.
- Thereafter, the croupier repeats the process with another column of chips having another value, and so on until the different values of chips for the set of chips has been analyzed or "calibrated".

[0051] Once the process has been completed, the results will be kept for accounting the chips by means of the use of the mouse during the games.

Mode of game

[0052]

- Example of standard game of Texas Hold'em in "cash" mode where all the sensors are configured as activated: Each time a player is sitting at the table, the player indicates to the croupier with how many chips he is playing, who introduces it in the system by means of the touch screen.

[0053] The croupier indicates only the first time to the system which is the position that the "button" has in order to know where the first hand commences.

[0054] Thereafter, the players next to the button introduce the small blind and the big blind, correlatively. The croupier commences to distribute the cards to the players until each of them has 2 hands.

[0055] If the players did not put the blinds, the system alerts the croupier through the screen.

[0056] In turn, the system knows that all the players already have their cards available, thus, automatically, it starts the chronometer for the first player after the big blind, from that moment on, the projector will show the chronometer as an enlarged reality on the table and thus, everyone will be informed of the time left to the player to make a decision.

After deciding an action, if more players are left to decide, it passes the turn to the following player and the chronometer stops for the current player and starts for the following player. And so on, until all the players have discarded or called the bet.

[0057] When a user decides his action, this action is repeated by the croupier, to make sure that the action and the amount, if applicable, is clear for every player. Thanks to the earphone or lapel microphone that the croupier possesses, the desktop computer has been capable to process the action and therefore to interpret the consequences of this action as for the chips flow is concerned. For example, if the player decided to "raise 100", the system understands that it has to subtract 100 chips of the player and add them to the pot (or pots, when applicable, in the event that other players previously betted all their chips).

[0058] Thereafter, the croupier discloses the first 3 cards in the area of community cards.

[0059] In turn, the system interprets these 3 cards and a new betting round starts, that commences at the next player to the "button". Newly, the system will control each bet to account the chips of the pot(s) and the chips of each player.

[0060] And so on until the "showdown" is started that is the phase in which each player having an option to win shows his cards.

At that moment of the hand, the system has interpreted:

- ◦ the 5 cards located at the common area,
- ◦ the bets each player has done and therefore the changes that occurred in his stack or pile of chips,
- ◦ as well as the pot or pots generated;
- ◦ the players that reached the end of the hand

[0061] Last, it interpreters by order the cards that each player is presenting and it interprets that, if a player is delivering them face down, that means that he has no options to win and decides not to show them. At the end, when all the cards are delivered and/or shown, the system knows:

- ◦ which combination each player had achieved
- ◦ who has won and who is getting the pot,
- ◦ or, in the case of several pots and/or ties, how the pots are distributed.

[0062] The system will show these results in the screen of the croupier and a new enlarged reality will be done with the projector to show on the table the combinations of each player, the winner(s) as well as the gain(s) he/they has(have) obtained.

[0063] Internally, it will update the number of cards of each player. Last, the system will do as follows:

- ◦ Calculate the tip corresponding to the casino, that will be displayed in the screen of the croupier
- ◦ Newly, an enlarged reality with the projector to indicate with a blink the new position where the "button" has to be located with which the possible oversights in this sense will be avoided.

- Example of standard game of Texas Hold'em in the "tournament" mode, where all the sensors are configured as activated.

[0064] The course of the hands in a tournament operates the same as in the "cash" games with some differences as for the changing configuration of the bets and the interest of the players to know the chips of the rest of the payers, not only of their table, for their personal strategies in the course of the tournament.

[0065] That means that, in addition, the system is going to control, show through the screen and project on the tables the changes of level and therefore of the blinds. Likewise, it will inform of the pauses and/or any other change in the structure of the game affecting the croupier and/or the players.

[0066] At every moment, each able knows how many chips each player possesses and it is reported to the central computer that controls all the tables. In the case of tournaments, it is especially useful for the players to know in which position they are in the ranking, how many players he has behind and how many chips they have available. Thus, this information is very useful to adjust his strategy, especially when we are getting close to the "prizes bubble".

- **Other common characteristics for the "cash" and "tournaments" mode game:**

[0067] As we know at every moment how many chips each player possesses and how many chips there are at each table, little ethical cases or even frauds by the players can be detected, in which case, the croupier and/or the person in charge of the poker room or organizer of the tournament will be alerted.

[0068] If at any moment, a player bets many chips on the table, without saying the number, the croupier can make use of the "chips counting mouse" to share the number with all the players. He has only to move the mouse of the croupier board to the table, click to transmit the video to the digital screen, newly click for counting and in tenths of second he will know the total of chips the player has betted. The result will be displayed by the screen and/or projected on the table
(according to the configuration).

[0069] In cases where the sensitivity of the micro cannot be adjusted and/or the ambient noise generates complications, the croupier has the possibility to configurate the system in order that it operates in a supervised mode, that means that all the decisions that appears by screen require an approval from the croupier simply pressing the button of "OK" in the screen.

[0070] If at some stage, the croupier detects some error in the monitored information and displayed by screen and/or projected on the table, he always has the option to change the data of state of the game by means of the touch screen.

DESCRIPTION OF THE DRAWINGS

[0071] To complement the description that is been done and in order to assist to best understand the characteristics of the invention, attached to this specification, as an integral part thereof, there is a drawing in which for illustration and no limitation purpose the following has been represented:

The figure number 1.- It shows a schematic representation of the elements that comprises an example of embodiment of the live poker game or tournament monitoring equipment object of the invention comprises for several tables of a casino.

The figure number 2.- It shows a schematic representation of the elements that the equipment of the invention comprises in a game table, their arrangement can be observed.

PREFERRED EMBODIMENT OF THE INVENTION

[0072] Seen the said figures and according to the numerals adopted, a nonlimiting example of embodiment can be seen of the monitoring equipment of a live poker game or tournament of the invention, which comprises what is described thereafter.

[0073] Thus, as it can be seen in the said figures, the equipment (1) of the invention comprises, at each of the game tables (2) to be controlled of a casino or the like:

- a ceiling sensor (3) installed on the ceiling (t) or an analogous structure, on the game table (2) that comprises a camera (31) and a processor (33) and communication means, so that it acquires, processes and sends the images that are acquired by the camera (31) to detect cards and other objects of the said table.
- a microphone (8) to capture the voice of the croupier and transmit the sound to the desktop computer (4),
- a computerized croupier board (6), that comprises a computer to control the table (4), connecting means (11) to receive information from the microphone (8) and from the ceiling sensor (3) and a screen (5) display to show the information on the state of the live poker game or tournament.

[0074] so that the computerized croupier board (6) processes the information of the ceiling sensor (3) and of the microphone (8) and knows:

- of whom the turn is and how much remaining time he has to make a decision,
- which cards there are on the table (2) and which cards each player is presenting to know who is the winner and how many chips he takes or how the pots are distributed in the case that there is more than one,
- how many chips each player is betting at each action and how many chips he has in his possession at every moment.

[0075] Preferably, the camera (31) of the ceiling sensor (3) is a mini camera installed so that it spans the width of the table (2) on which it is installed and that has a level of resolution and sharpness sufficient to be able to interpret the cards with which it is been playing at the said table.

[0076] Preferably, the ceiling sensor (3) comprises a laser device (32) to measure the distance.

[0077] Preferably, the ceiling sensor (3) comprises a projector (34) adapted to project virtual reality images on the table (2) that the minicomputer of the sensor itself (3) provides to it.

[0078] In addition, in the preferred embodiment, the monitoring equipment comprises a mouse (7) having a camera to acquire and transmit the video with the chips that the croupier is focusing to the desktop computer and allow counting

the chips.

[0079] Preferably, the chips counting mouse (7) possesses a camera, light and a button and is connected with the desktop computer (4) at the request of the croupier: the light is turned on and transmits via WIFI the video with the chips that the croupier is focusing, when he pushes the button. When newly pushing the button, the instruction is sent to the desktop computer in order that it starts the chips counting process.

[0080] Preferably, the croupier board (6) possesses an access recess level with the table, to house the mouse (7), in which it in addition possesses charging means.

[0081] In addition, optionally, a set of tables (2) are electronically connected to each other, in wireless mode and/or by means of wiring, as well as also, by means of WIFI network, to a central server computer (9), so that the computer of each table (4) receives, in real time, at least some datum on the game, such as:

- cards and button detection by its ceiling sensor (3),
- transmission of the video, when the croupier uses his chips counting mouse (7),
- transmission of sound captured by his microphone (8), for voice recognition of the actions of the players narrated by the croupier,
- and data of state of tournaments, levels or remaining time by level from the central server computer (9).
- interaction of the croupier by means of the touch screen.

[0082] The information of the desktop computer (4) is processed by the computer itself that, in turn, makes the related decisions, such as controlling the turn, managing the timer, interpreting what each player betted and the chips flow, what cards are on the table, etc.

[0083] The relevant data on the state of the table and players are sent to the central server computer (9) to update states and stacks of players and ranking, as well as to release the information to other means and/or devices for their analyze and/or display, such as the screens of information of the casino (10).

[0084] Likewise, other data are sent from the desktop computer (4) to the ceiling sensor (3), if it is required that it projects some information on the table (enlarged reality) and/or to the mouse when it requires to change the operating mode.

[0085] On its hand, the system of the monitoring that is carried out with the said equipment, designed to automatically know at every moment and in real time:

- of whom the turn is and how much remaining time he has available to make a decision,
- which cards are on the table (2) and which cards each player presents each player to know who is the winner and how many chips he is getting or how the pots are distributed in the event that there is more than one,
- how many chips each player is betting in each action and how many chips he has in his possession at every moment,

it comprises, some of the following stages:

- a stage of receiving, in a desktop computer (4), at least some data on:
  - cards and button detection by a ceiling sensor (3) located on the said table (2) and with which it is connected,
  - receiving the sound captured by a microphone for the voice recognition of the actions of the players narrated by the croupier and with which the computer (4) is connected,
  - receiving a video for chips counting, when the croupier uses a mouse (7) that is connected to the said computer (4),
  - data of the state of the tournament, levels or remaining time by level, from the central server computer (9);
  - indications of the croupier introduced by means of the touch screen, to configurate and/or correct information.
- a stage of data processing of the desktop computer (4) that generates changes of state of the game at the table and automatically making decisions, such as controlling the turn, managing the timer, interpreting what each player has betted and the chips flow, which cards are on the table, who is the winner, how is/are distributed the pot or pots, etc.
- and a stage of communication of states and/or results towards the central server computer (9) for its distribution to the screens of the casino (10), towards internet, towards the screen (5) display of the croupier board and/or towards the ceiling sensor (3) for the change of operating mode and/or projection of information on the game table.

[0086] In addition, the system comprises an added stage of table calibration, prior to the commencement of the poker game or tournament, comprising:

- Placing a card on the table facing each position of each player, the cards being placed by increasing order and placing a marker in the area where the cards common for the players will be placed.
- The ceiling sensor measures the distance from the table to the sensor in straight line.
- The ceiling sensor detects in an orderly manner the cards, so it knows where each player will be sitting, which is the area to show the cards of each player and the shape the table has.
- The ceiling sensor also detects the area of community cards to later on interpret the cards of the said area.
- Once all the details of calibration have been obtained, they are sent to the local computer of the table where they are stored and in addition, they are re-sent to the central computer that manages the set of tables and/or tournaments.

[0087] And, in a preferred embodiment, in addition, an added stage of chips calibration is contemplated, also prior to the commencement of the poker game or tournament, that comprises:

- Indicating which set of chips is concerned in the touch screen of the table.
- Putting a different column of chips for each chips value of the set and where all the chips of one column have the same value.
- Activating the "chips counting mouse" in the "chips calibration" mode. The croupier will choose a chip from the screen having a given value to be calibrated.
- Positioning the mouse on the table and before the mountain of chips having that value; it will push the button and this will actuate the mouse camera that will send the video by streaming to the screen of the croupier.
- Giving instruction to analyze the chips to the desktop computer for concretely this photogram to generate a set of common characteristics associated to the chips of that value.
- Repeating the process with another column of chips having another value and so on until the different values of the chips for that set of chips has been analyzed or "calibrated".
- Once the process is completed, the results will be kept to account the chips by means of the use of the mouse in the course of the games.

[0088] The nature of this invention being sufficiently described as well as the manner to implementing it, it is not deemed necessary to extend its explanation any longer in order that any person skilled in the art understands its extent and the advantages arising from it.

Claims

1. Process for monitoring a live poker game or tournament that, applicable to automatically know, at every moment and in real time:

- of whom the turn is and how much remaining time he has available to make a decision;
- which cards are on the table (2) and which cards each player is presenting to know who is the winner and how many chips he gets or how they are distributed the pots in the case that there is more than one; and
- how many cards each player is betting in each action and how many chips he has in his possession at every moment.

is characterized in that it comprises:

- a stage of receiving, in a desktop computer (4), at least some data on:

  - cards and button detection by a ceiling sensor (3) located on the said table (2) and with which it is connected,
  - receiving the sound captured by a microphone for the voice recognition of the actions of the players narrated by the croupier and with which the computer (4) is connected,
  - receiving a video for chips counting, when the croupier uses a mouse (7) that is connected to the said computer (4),
  - data of the state of the tournament, levels or remaining time by level, from the central server computer (9);
  - indications of the croupier introduced by means of the touch screen, to configurate and/or correct information.

- a stage of data processing of the desktop computer (4) that generates changes of state of the game at the table and automatically makes decisions, such as turn controller, managing the timer, interpreting what each player has betted and the chips flow, which cards are on the table, who is the winner, how is/are distributed the

pot or pots, etc.
- and a stage of communication of states and/or results towards the central server computer (9) for its distribution to the screens of the casino (10), towards internet, towards the screen (5) display of the croupier board and/or towards the ceiling sensor (3) for the change of operating mode and/or projection of information on the game table.

2. Process for monitoring a live poker game or tournament according to claim 1, **characterized in that** it comprises a stage of table calibration, prior to the commencement of the poker game or tournament, that comprises the following substages:

- placing a card on the table facing each position of each player, the cards being placed by increasing order and placing a marker at the area where the cards common for the players will be placed.
- the ceiling sensor measures the distance from the table to the sensor in straight line.
- the ceiling sensor detects in an orderly manner the cards, when it knows where each player will be sitting, which is the area to show the cards of each player and the shape that the table has.
- the ceiling sensor also detects the area of community cards to later on interpret the cards of the said area.
- once all the details of calibration have been obtained, they are sent to the local computer of the table where they are stored and in addition, they are re-sent to the central computer that manages the set of tables and/or tournaments.

3. Process for monitoring a live poker game or tournament according to any of the preceding claims, **characterized in that** it comprises a stage of chips calibration, prior to the commencement of the poker game or tournament, that comprises the following substages:

- indicating which set of chips is concerned in the touch screen of the table.
- putting a different column of chips for each chips value of the set and where all the chips of one column have the same value.
- activating the "chips counting mouse" in the "chips calibration" mode, the croupier will choose a chip from the screen having a given value to calibrate.
- positioning the mouse on the table and before the mountain of chips having that value; it will push the button and this will actuate the mouse camera that will send the video by streaming to the screen of the croupier.
- giving the instruction to analyze the chips to the desktop computer for concretely this photogram to generate a set of common characteristics associated to the chips of that value.
- repeating the process with another column of chips having another value and so on until the different values of the chips for the set of chips have been analyzed or "calibrated".
- once the process has been completed, the results will be kept to account the chips by means of the use of the mouse in the course of the games.

4. Equipment for monitoring a live poker game or tournament in the different game variants and modalities **characterized in that** it comprises, at each of the game tables (2) of a casino or the like:

- a ceiling sensor (3) installed on the ceiling (t) or an analogous structure, on the game table (2) that comprises a camera (31) and a processor (33) and communication means, so that it acquires, processes and sends the images that are acquired by the camera (31) to detect cards and other objects of the said table.
- a microphone (8) to capture the voice of the croupier and transmit the sound to the computer of the table (4),
- a computerized croupier board (6), that comprises a computer to control the table (4), connecting means (11) to receive information from the microphone (8) and the ceiling sensor (3) and a screen (5) display to show the information on the state of the live poker game or tournament.

so that the computerized croupier board (6) processes the information of the ceiling sensor (3) and of the microphone (8) and knows

- of whom the turn is and how much remaining time he has available to make a decision;
- which cards are on the table (2) and which cards each player is presenting to know who is the winner and how many chips he gains or how they are distributed in the case that there is more than one;
- how many cards each player is betting in each action and how many chips he has in his possession at every moment.

5. Equipment for monitoring a live poker game or tournament according to the claim 4, **characterized in that** the camera (31) of the ceiling sensor (3) is a mini camera installed so that it spans the width of the table (2) on which it is installed and that has a level of resolution and sharpness sufficient to be able to interpret the cards with which

it is been playing at the said table.

6. Equipment for monitoring a live poker game or tournament according to any of the claims 4-5, **characterized in that** the ceiling sensor (3) comprises a laser device (32) to measure a distance.

7. Equipment for monitoring a live poker game or tournament according to any of the claims 4-6, **characterized in that** the ceiling sensor (3) comprises a projector (34) adapted to project virtual reality images on the table (2) that the minicomputer of the sensor itself (3) provides to it.

8. Equipment for monitoring a live poker game or tournament according to any of the claims 4-7, **characterized in that** the monitoring equipment comprises a mouse (7) having a camera to acquire and transmit the video with the chips that the croupier is focusing to the desktop computer and allow counting the chips.

9. Equipment for monitoring a live poker game or tournament according to the claim 8, **characterized in that** the chips counting mouse (7) possesses a camera, light and a button and is connected with the computer of the table (4) at the request of the croupier: the light is turned on and transmits by WIFI the video of the chips the croupier is focusing, when he pushes the button and when he newly pushes the button, he sends the instruction to the computer of the table in order the chips counting process commences.

10. Equipment for monitoring a live poker game or tournament according to any of the claims 8-9, **characterized in that** the croupier board (6) possesses an access recess level with the table to house the mouse (7) and, in addition it possesses charging means.

FIG. 1

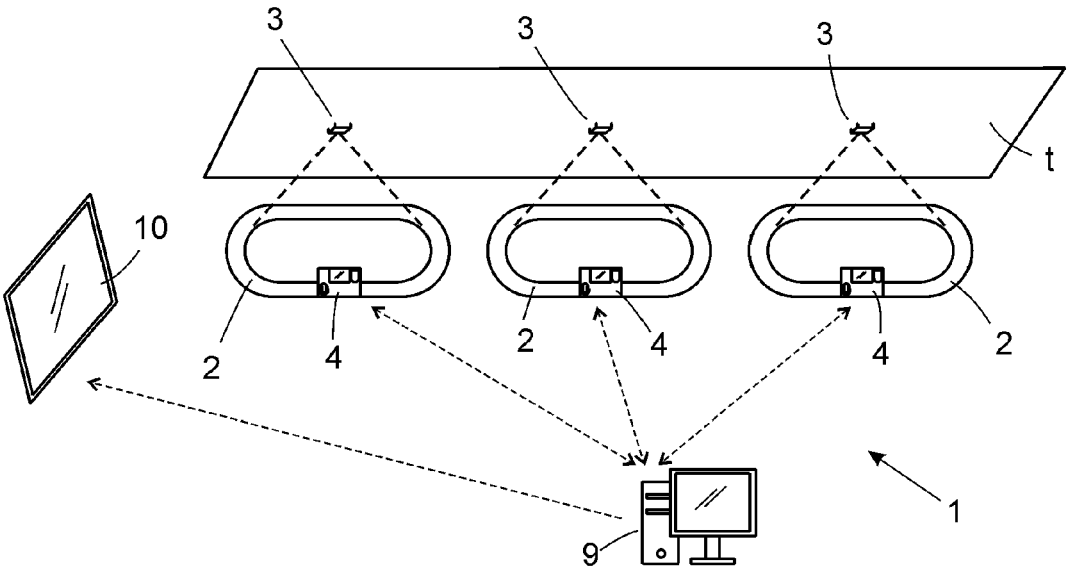
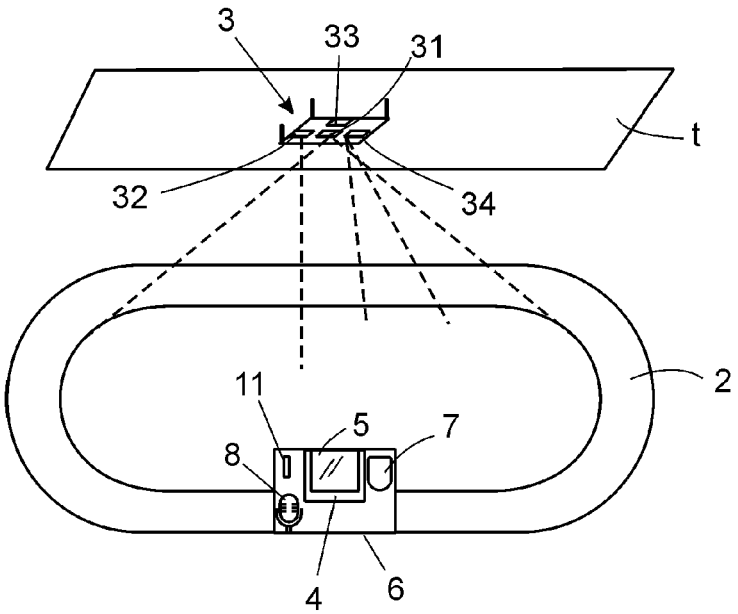


FIG. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 21 38 2398

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2009/131151 A1 (HARRIS ROGER WILLIAM [US] ET AL) 21 May 2009 (2009-05-21) * figure 14 * * paragraph [0009] * * paragraph [0037] * * paragraph [0078] - paragraph [0079] * * paragraph [0101] * * paragraph [0304] - paragraph [0305] * * paragraph [0317] * * paragraph [0114] * * paragraph [0165] * * paragraph [0177] * * paragraph [0499] - paragraph [0503] * * paragraph [0665] * * paragraph [0721] - paragraph [0728] * * paragraph [0773] - paragraph [0777] *	1-10	INV. G07F17/32 A63F1/00
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	18 October 2021	Coquil, David

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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18-10-2021

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