United States Patent	12394282
Kind Code	B2
Date of Patent	August 19, 2025
Inventor(s)	Schlingmann; Andy

Automated teller machine and method for detecting tampering with the automated teller machine

Abstract

An automated teller machine comprises at least one RGB light source, which is disposed on an operating side of the automated teller machine and emits an RGB mixed light, and an optical RGB sensor for sensing the RGB mixed light emitted by the RGB light source, the optical RGB sensor being disposed at a distance from the RGB light source. Furthermore, the automated teller machine comprises a control unit, which is designed such that the control unit detects tampering with the automated teller machine on the basis of the emitted and the sensed RGB mixed light.

Inventors:	**Schlingmann; Andy (Enger, DE)**
Applicant:	**Wincor Nixdorf International GmbH** (Paderborn, DE)
Family ID:	**1000008763223**
Assignee:	**DIEBOLD NIXDORF SYSTEMS GMBH (Paderborn, DE)**
Appl. No.:	**17/919689**
Filed (or PCT Filed):	**April 15, 2021**
PCT No.:	**PCT/EP2021/059793**
PCT Pub. No.:	**WO2021/223971**
PCT Pub. Date:	November 11, 2021

Prior Publication Data

Document Identifier	**Publication Date**
US 20240296707 A1	Sep. 05, 2024

Foreign Application Priority Data

DE	102020112413.9	May. 07, 2020

Publication Classification

Int. Cl.: **G07F19/00** (20060101); **G07D11/14** (20190101); **G07D11/225** (20190101); G07D11/60 (20190101)

U.S. Cl.:

CPC **G07F19/209** (20130101); **G07D11/14** (20190101); **G07D11/225** (20190101); **G07F19/205** (20130101); **G07F19/2055** (20130101); **G07F19/207** (20130101); G07D11/60 (20190101)

Field of Classification Search

USPC: None

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Primary Examiner: Johnson; Sonji N

Assistant Examiner: Taylor; April A

Attorney, Agent or Firm: Black McCuskey

Background/Summary

BACKGROUND

1. Field of the Invention

(1) The invention relates to an automated teller machine having at least one RGB light source and an RGB sensor for monitoring regions of the automated teller machine and to a method for

detecting tampering with the automated teller machine.

2. Description of Related Prior Art

(2) Regions of automated teller machines, in particular operating elements or output regions, can be manipulated by criminal third parties by various measures, for example, by cash trapping measures. A cash trapping element, which in particular emulates a closure element in a visually similar manner, is arranged here in the output region such that an operator cannot remove banknotes from the output compartment even when the closure element is opened. The cash trapping element often gives the impression of a closed closure element to an operator or bank customer, wherein with the aid of the cash trapping element, criminal third parties can remove banknotes requested by the operator from the output region.

(3) Solutions are known from the prior art in which camera units monitor the automated teller machine. From document DE 10 2011 010 737 A1, for example, recording an image of the automated teller machine at predetermined time intervals and/or after movement of objects in the region in front of the machine with the aid of a camera and comparing this image to a setpoint image is known. It can be ascertained via the image comparison whether objects were attached in an unauthorized manner to the automated teller machine.

(4) These solutions have the disadvantage that equipping the automated teller machine with camera units is linked to high costs and the image comparison has to be carried out with the aid of complex image processing methods.

SUMMARY

(5) It is the object of the invention to specify an automated teller machine having at least one RGB light source and an RGB sensor for monitoring regions of the automated teller machine and a method for detecting tampering with the automated teller machine, so that occasions of tampering with the automated teller machine can be reliably detected.

(6) This object is achieved by an automated teller machine as recited in the independent claim(s). Advantageous refinements are specified in the dependent claims.

(7) The automated teller machine comprises at least one RGB light source, which is arranged on an operating side of the automated teller machine and emits an RGB mixed light, and an optical RGB sensor arranged at a distance from the RGB light source for registering the RGB mixed light emitted by the RGB light source. Furthermore, the automated teller machine comprises a control unit which is designed such that it detects tampering proceeding from the emitted and registered RGB mixed light. In this way, tampering with the automated teller machine is detected particularly reliably. In particular, cash trapping elements in front of an output compartment are detected particularly quickly and reliably. Furthermore, tampering with the monitoring assembly comprising the RGB light source, the RGB sensor, and the control unit is prevented or at least made more difficult. RGB stands for the RGB color space, in which a mixed color is generated by the additive mixing of three base colors (red, green, blue). An RGB sensor typically registers in this case each of the base colors (RGB) using an associated element which registers the brightness of the light of one of the base colors (RGB) in each case. The RGB sensor therefore has at least three elements in a sensor assembly and an equal number of elements which each register one base color (RGB). The RGB mixed color results due to the ratio of the brightness of the individual base colors (RGB) to one another. The element in particular comprises a photodiode. In particular, the RGB sensor comprises 1 to 20 sensor assemblies each having three photodiodes.

(8) It is advantageous if the control unit is designed such that it actuates the RGB light source to vary at least one property of the emitted RGB mixed light according to a preset pattern. The emitted light is thus coded and tampering with the emitted light by third parties is made more difficult.

(9) It is particularly advantageous if the RGB sensor registers the property of the emitted RGB mixed light. In this way, the RGB mixed light is reliably detected.

(10) It is particularly advantageous if the property of the emitted RGB mixed light is a brightness

or a ratio of components R, G, and B. In this way, the RGB light source can be actuated particularly flexibly.
(11) It is advantageous if the RGB light source comprises an optical element which directs the emitted RGB mixed light directly or indirectly onto the RGB sensor and/or that the RGB light source comprises an optical element which scatters the emitted RGB mixed light. In this way, the RGB light source and the RGB sensor can be arranged and used particularly flexibly.
(12) It is advantageous if the at least one RGB light source is arranged such that it at least partially illuminates a region of the operating side of the automated teller machine or generates a light effect to highlight a region of the operating side or indicates an operating status of the automated teller machine. In this way, the RGB light source is arranged particularly inconspicuously on the operating side of the automated teller machine and is not perceived as a monitoring element.
(13) It is particularly advantageous if multiple RGB light sources are arranged in a strip shape in or around the region. In this way, the RGB light sources can be arranged particularly flexibly on operating elements of the automated teller machine.
(14) It is advantageous if the operating side comprises a display unit, an input and/or output compartment, and/or an input unit. In this way, operating elements of the automated teller machine are particularly easy to operate for an operator.
(15) It is particularly advantageous if the RGB sensor is arranged inside the output compartment and registers the RGB mixed light when the output compartment is open. In this way, tampering with the automated teller machine is detected particularly reliably and the risk of tampering with the RGB sensor is reduced.
(16) It is advantageous if the RGB sensor is arranged on the operating side, in particular inside an output region, and registers the RGB mixed light. In this way, a cash trapping element can be detected particularly reliably.
(17) It is advantageous if at least one optical element reflects the RGB mixed light emitted by the RGB light source onto the RGB sensor and the RGB sensor registers the reflected RGB mixed light. In this way, the RGB light source and the RGB sensor can be arranged particularly flexibly.
(18) It is advantageous if the automated teller machine comprises multiple optical RGB sensors. In this way, tampering can be detected particularly reliably.
(19) It is advantageous if the optical RGB sensor is arranged such that it registers the RGB mixed light of only one RGB light source or a group of RGB light sources. A particularly reliable registration of the RGB mixed light by the RGB sensor is thus ensured and the sensitivity of the RGB sensor with respect to interfering light is reduced.
(20) It is advantageous if the control unit establishes tampering if the control unit does not identify the RGB mixed light registered by the sensor at least partially as the RGB mixed light emitted by the RGB light source. In this way, an assembly for monitoring a region of the automated teller machine is particularly secure from tampering.
(21) In the method for detecting tampering with an automated teller machine, with the aid of at least one RGB light source, which is arranged on an operating side of the automated teller machine, an RGB mixed light is emitted and with the aid of an optical RGB sensor arranged at a distance to the RGB light source, the RGB mixed light emitted by the RGB light source is registered. Tampering is detected proceeding from the emitted and registered RGB mixed light. In this way, tampering with the automated teller machine is detected particularly reliably. In particular, cash trapping elements in front of an output compartment are detected particularly quickly and reliably. The same advantages are achieved by the method as by the device as claimed in claim **1**. Furthermore, the method can be refined in the same manner as described above for the device, in particular by the features specified in the dependent claims.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) Further features and advantages result from the following description, which explains embodiments in more detail in conjunction with the appended figures. In the figures:
(2) FIG. **1** shows a schematic illustration of an automated teller machine,
(3) FIG. **2** shows an assembly for monitoring an output region of the automated teller machine as shown in FIG. **1** according to a first embodiment,
(4) FIG. **3** shows a schematic illustration of a sensor unit, which can be arranged in the output region alternatively or additionally to the sensor unit as shown in FIG. **2**,
(5) FIG. **4** shows an assembly for monitoring the output region according to a second embodiment,
(6) FIG. **5** shows an assembly for monitoring the output region according to a third embodiment,
(7) FIG. **6** shows the automated teller machine as shown in FIG. **1** in a status in which a cash trapping element is arranged in the output region,
(8) FIG. **7** shows a schematic cross section of the automated teller machine having a further embodiment of the cash trapping element,
(9) FIG. **8** shows a schematic cross section of the automated teller machine having an alternative further embodiment of the cash trapping element,
(10) FIG. **9** shows an arrangement for monitoring the output region according to a fourth embodiment.

DETAILED DESCRIPTION

(11) FIG. **1** shows a schematic illustration of an automated teller machine **100** having a head module **150** and a safe module **160**. A banknote handling unit (not visible in FIG. **1**) for the output of banknotes to be counted out to an operator is arranged in the interior of the head module **150**. Multiple cash boxes (not shown) can be accommodated in the safe module **160**. In particular items of operating information can be output to the operator via a display unit **152** in the head module **150**. The display unit can be a touchscreen, via which the operator can operate the automated teller machine **100**. Furthermore, the automated teller machine **100** can comprise further operating elements, for example, a keyboard and/or a so-called encrypting pin keypad, for secure identification of the operator.

(12) The head module **150** comprises an output region **12**, which is delimited by four delimitation walls **16**, **18**, **20**, and **22** and, in the closed state shown in FIG. **1**, by a closure element **14**, also called a shutter. The distance L between the delimitation walls **16** and **20** has in particular a value in the range of 18 cm to 25 cm. The distance H between the delimitation walls **22** and **18** has in particular a value in the range from 8 cm to 25 cm. In FIG. **1**, the shutter **14** is shown in a closed state.

(13) All operating elements, display units, and the output region **12** of the automated teller machine **100**, with which the operator interacts during use, are typically arranged on one side of the automated teller machine **100** and oriented so that they are reachable by the operator. This side is the operating side of the automated teller machine **100**.

(14) Behind the closed shutter **14**, an output compartment (not visible in FIG. **1**) is arranged, in which a banknote or a stack of banknotes is provided for removal by the operator. The output compartment is therefore arranged inside the output region **12**. After the banknote or the stack of banknotes is provided in the output compartment, the shutter **14** is moved with the aid of a drive unit (not shown) from the closed position shown in FIG. **1** into an open position, in which the operator has access to the output compartment and the banknotes located therein through the output region **12**. In the closed state of the shutter **14**, the output compartment is arranged on one side and the output region **12** is arranged on the other side of the shutter **14**.

(15) Alternatively, the automated teller machine **100** is used both for the paying in of banknotes by an operator and also the paying out of banknotes to an operator and is also referred to as a recycling automated teller machine.

(16) FIG. **2** shows a first embodiment of an assembly **110** for monitoring an output region **12** of the automated teller machine **100**. The lower delimitation wall **22** comprises a region **24** translucent to light, in particular to visible light. In an alternative embodiment, the entire delimitation wall **22** can be produced from a translucent material. Alternatively, all delimitation walls **16**, **18**, **20**, **22** can also be produced from a translucent material. A sensor unit **112**, which: is designed as a reflection light barrier, is arranged in or behind the delimitation wall **22**. The sensor unit **112** comprises an emitter **114** and a receiver **116**, which are arranged adjacent to one another. In other embodiments, a reflection light barrier can additionally or alternatively be provided, the emitted light of which is not reflected to the receiver of the light barrier without an element arranged in the output region **12**, but rather only when an element is arranged in the output region. The detection of the element thus takes place with the aid of the transmitted light principle.
(17) A light beam **118** emitted by the emitter **114** is reflected back to the receiver **116** at a reflector **120**, which is integrated in the delimitation wall **18** opposite to the delimitation wall **22**. The reflector **120** has a reflectance, i.e., a ratio between reflected and incident radiation, of least at 50%. In particular a retroreflective film is used as the reflector **120**. Retroreflective films can have a reflective substrate, in which small glass beads having a size of approximately 50 μm are incorporated. These are covered in particular by a transparent colored film for coverage or camouflage. In an alternative embodiment, the delimitation wall **18** is formed or coated such that without a special reflector, it has a sufficient reflection property for reflecting the light beam **118**, so that it reaches the receiver **116**.
(18) In FIG. **2**, only one reflection point A**1**, at which the light beam **118** is reflected, is shown for simple illustration. In practice, the light beam **118** is reflected on a surface which is dependent on the bundling of the emitted light beam **118**. After the reflection of the light beam **118** at the reflector **120**, at least a part of the reflected light beam **118** is incident on the receiver **116**, which detects the incident, reflected light of the light beam **118**. The sensor unit **112** is arranged in particular at a distance D**1** from the shutter **14** of 0 mm to 10 mm, preferably of 3 mm to 5 mm, in particular of 5 mm. The sensor unit **112** is furthermore arranged and oriented such that the reflection point A**1** in particular has a distance D**2** from the front side of the head part of the automated teller machine of 0 mm to 50 mm, preferably of 5 mm to 10 mm, in particular of 5 mm.
(19) The emitter **114** and the receiver **116** of the sensor unit **112** can, alternatively to the configuration shown in FIG. **2**, also be arranged with greater distance in relation to one another along the delimitation wall **22**, so that, as long as the sensor **114** and the receiver **116** are oriented on the reflection point A**1**, the output region can be monitored essentially over its width. Furthermore, multiple sensor units **112** can be arranged in the output region **110**.
(20) The sensor unit **112** can alternatively be arranged in one of the other delimitation walls **16**, **18**, **20**, wherein the reflector **120** is arranged on the respectively opposite delimitation wall or an adjoining delimitation wall and the emitter **114** and the receiver **116** are each oriented on the same reflection point A**1**.
(21) The arrangement of an element in the output region **12** between the sensor unit **112** and the reflector **120** causes an interruption of the light beam **118**, which is detected by the receiver **116**. The sensor unit **112** generates a detection signal from the point in time of the detection of the interruption and transmits the detection signal to a control unit of the automated teller machine **100**. In the normal operating state of the automated teller machine **100**, the light beam **118** is only interrupted for short periods of time in the range of 1 to 10 seconds, for example, during the removal of banknotes from the output region **12** by the operator.
(22) However, the light beam **118** can also be interrupted if criminal third parties tamper with the output region **12**, for example, in the course of so-called cash trapping measures. In the so-called external cash trapping measures, a cash trapping element is arranged in the output region **12**. This cash trapping element in particular emulates the shutter **14** in a visually similar manner and conceals the shutter **14** such that an operator cannot remove banknotes from the output

compartment even if the shutter **14** is open. The cash trapping element often gives the impression of a closed shutter **14** to an operator.

(23) FIG. **6** shows the automated teller machine **100** in a state in which a cash trapping element E is arranged in the output region **12** and conceals the shutter **14**. Known cash trapping elements E comprise means which prevent closing of the shutter **14** open behind the cash trapping element E. Alternatively or additionally, the cash trapping elements comprise means to which one or more banknotes provided in the output compartment adhere. If the automated teller machine **100** is actuated by the operator to output banknotes, the shutter **14** does open, but the cash trapping element E prevents the access to the output compartment. As soon as the operator leaves the automated teller machine **100**, the criminal third parties remove the cash trapping element E from the output region **12** and thus obtain access to the banknotes.

(24) In the described tampering of the automated teller machine **100** with the aid of the cash trapping element E, the light beam **118** of the sensor unit **112** is interrupted over a longer period of time, in the range of minutes or hours. The duration, during which the detection signal is transmitted to the control unit, i.e., while the light beam **118** is interrupted, is thus an indicator of a tampering state of the automated teller machine **100**. The tampering state is ascertained in particular if the duration of the transmission of the detection signal to the control unit exceeds a preset limit value, for example, in the range between 1 minute and 5 minutes.

(25) FIG. **3** shows a schematic illustration of a sensor unit **122**, which can be arranged alternatively or additionally to the sensor unit **112** in the output region **12**. The sensor unit **122** is also designed as a reflection light barrier and is distinguished from the sensor unit **112** in that the light beam **128** is not deflected at a reflector film, but rather at a prism assembly **140** designed as a reflector element. The emitter **124** and the receiver **126** are arranged in or behind the lower delimitation wall **22** and the prism assembly **140** is arranged in or behind the opposite delimitation wall **18**. The prism assembly **140** deflects the light beam **128** emitted by the emitter **124** so that at least a part of the light beam **128** is received by the optical receiver **126**. If a body is located between the sensor unit **122** and the prism assembly **140**, the light beam **128** is interrupted.

(26) FIG. **4** shows an assembly **210** for monitoring an output region **12** of an automated teller machine **200** according second embodiment. Elements having identical structure and identical function have the same reference signs. Two sensor units **212**, **222**, which are designed as one-way light barriers, are arranged in or behind the delimitation wall **22**. The sensor units **212**, **222** each comprise an emitter **214**, **224** integrated in or behind the lower delimitation wall **22** and a receiver **216**, **226**, which is arranged opposite to the emitter **214**, **224** and is arranged in or behind the delimitation wall **18**. The emitters **214**, **224** each emit a light beam **218**, **228**, which is detected by the receiver **216**, **226**.

(27) In the second embodiment according to FIG. **4**, the sensor units **212**, **222** each generate a detection signal as soon as an interruption of the respective light beam **218**, **228** is detected. As explained in conjunction with the first embodiment, the tampering status is ascertained in dependence on the duration of the detection signal, wherein in the second embodiment the tampering status is ascertained if the duration of the transmission of both detection signals exceeds the preset limit value, for example, in the range between 1 minute and 5 minutes. This in particular prevents an object randomly placed by the operator on the delimitation wall **22**, which only interrupts one of the two light beams **118**, **218**, from triggering a detection of the tampering status of the automated teller machine **200**.

(28) FIG. **5** shows an assembly **510** for monitoring an automated teller machine **500** according to a third embodiment having two sensor units **512** and **520**, which are designed as reflection light scanner units. The sensor units **512** and **520** each comprise an emitter **514**, **524** and a receiver **516**, **526**, which are arranged in or behind the delimitation wall **22**. The emitters **514**, **524** each emit a light beam **518**, **528**. A scanning plane T**1** delimits the maximum range of the sensor unit **512**, the scanning plane T**2** delimits the maximum range of the sensor unit **520**. In FIG. **5**, to simplify the

explanation, an object O is arranged between the scanning plane T**1** and the sensor unit **512**. The light beam **518** is reflected at the object O and received by the receiver **516**, which outputs a detection signal to the control unit. The light beam **528** of the sensor unit **520**, in contrast, is not reflected between the scanning plane T**2** of the sensor unit **520**, so that the sensor unit **520** does not output a detection signal to the control unit. The control unit ascertains the tampering status of the automated teller machine **500** in particular if both sensor units **512**, **520** output a detection signal and if the duration of the transmission of the two detection signals to the control unit exceeds the preset limit value, for example, in the range between 1 minute and 5 minutes.
(29) FIG. **6** shows by way of example the automated teller machine **100** in a status in which the cash trapping element E is arranged in the output region **12** and conceals the shutter **14**.
(30) FIG. **7** shows a schematic cross section of the automated teller machine **700** having a further embodiment of the cash trapping element E**1**. The cash trapping element E**1** is an essentially straight cover plate, which is arranged in front of the shutter **14** such that the output region **12** is concealed in a shape-terminating manner by the cash trapping element E**1**. The cash trapping element E**1** is preferably arranged flush with the front panel of the automated teller machine **700** in this case. FIG. **8** shows the automated teller machine **700** having an alternative, box-shaped embodiment of the cash trapping element E**2**, which is arranged as a front structure in front of the output region **12**.
(31) The automated teller machine **700** comprises a first sensor unit **712** and a second sensor unit **812**. The first sensor unit **712** is arranged such that a cash trapping element E, E**1**, E**2** arranged in the output region **12** is detected in a detection range of the sensor unit **712**, wherein the direction of the extension of the detection range of the sensor unit **712** is identified by the arrow **714** directed toward the shutter **14**. The second sensor unit **812**, in contrast, is arranged such that a shape-terminating cash trapping element E**1** or a box-shaped cash trapping element E**2** is detected in a detection range of the sensor unit **812**, wherein the direction of the extension of the detection range of the sensor unit **812** is identified by the outwardly directed arrow **814**.
(32) The sensor units **712**, **812** can each be designed according to the above-described embodiments as a reflection light barrier, as a one-way light barrier, and/or as a sensor unit for outputting and detecting a continuous or pulsed laser beam.
(33) In embodiments according to FIGS. **2** to **8**, the emitters **114**, **124**, **214**, **224**, **514**, **524** comprise light sources, which emit light of a single wavelength or a limited wavelength range. The wavelength is not variable here and corresponds to a specific light color.
(34) The light sources of the emitters **114**, **124**, **214**, **224**, **514**, **524** can alternatively in particular be an RGB light source, preferably an RGB-LED light source. The RGB light source can emit an RGB mixed light. An RGB LED is a combination of 3 LEDs, one of each base color red (R), green (G), or blue (B), in particular an RGB-LED assembly. These 3 LEDs can be arranged in the same housing or can be 3 individual LEDs which are arranged in direct spatial vicinity in relation to one another such that the human eye perceives the emitted light as mixed light. The RGB LED can emit an RGB mixed light in various RGB mixed colors, in which the individual LEDs for R, G, and B are actuated so that the ratio of the emitted light intensity of the individual LEDs is varied. Various further mixed colors can thus be mixed from the three base colors (RGB) by additive color mixing and the RGB mixed light can be generated.
(35) In the embodiment according to FIGS. **2** to **8**, the emitter **114**, **124**, **214**, **224**, **514**, **524** emits light of a constant, nonvariable light color. Alternatively, the emitter **114**, **124**, **214**, **224**, **514**, **524** can generate a variable RGB mixed light, for example, with the aid of the RGB LED. This enables a color change of the light emitted by the emitter **114**, **124**, **214**, **224**, **514**, **524**.
(36) Furthermore, it is provided that at least one property of the light emitted by the emitter **114**, **124**, **214**, **224**, **514**, **524**, in particular of the light beam **118**, **128**, **218**, **228**, **518**, **520**, **818**, **828** emitted in the direction of the receiver **116**, **126**, **216**, **226**, **516**, **526**, **816**, **826** or the reflector **120** is varied over a time curve according to a preset or random pattern in order to improve the tampering

security of the respective sensor unit **112**, **122**, **212**, **222**, **512**, **520**, **712**, **812**. The property of the light can comprise the light color and/or the brightness here. The light thus coded is registered by the receiver and the properties of the registered light are compared to the properties of the emitted light by the control unit. In the event of a deviation of the registered light from the emitted light, a tampering status is ascertained by the control unit. This can take place alternatively or additionally to the ascertainment, described further above, of a tampering status starting from a detection signal. The receiver **116**, **126**, **216**, **226**, **516**, **526** is designed for this purpose so that it can register the RGB mixed light, for example, the receiver is an RGB sensor.

(37) In the above-explained embodiments, the emitter **114**, **124**, **214**, **224**, **514**, **524** comprises a single light source.

(38) FIG. **9** shows an assembly **810** for monitoring an output region **12** of an automated teller machine **800** according to a fourth embodiment in which the emitter comprises multiple light sources. These light sources are arranged, for example, behind an optical element of the delimitation wall **22**. The light emitted by the light sources is scattered by the optical element and radiated uniformly outward; the impression of a planar light source **30** thus results. The reference sign **830** shows by way of example a light beam of the planar light source **30**. This planar light source **30** can be arranged, for example, in a strip shape in the output region **12**. Multiple planar light sources **30** can be arranged here on one or more delimitation walls. The planar light sources **30** in particular comprise multiple RGB light sources here, for example, LED bands.

(39) In particular in conjunction with RGB LEDs emitting variable RGB mixed light, the emitter designed as a planar light source **30** is typically perceived by the operator as a design element and can be used, for example, to illuminate the output region **12** and/or to signal operating states of the automated teller machine **800**. Additionally to these functions, the light sources **30** are furthermore used as an emitter of a sensor unit. The receiver **816**, **826** has to be able to register the RGB mixed light here, for example, the receiver is an RGB sensor. The light beams **818**, **828** emitted in the direction of the receivers **816**, **826** are registered thereby. Alternatively, the use of a reflector according to the embodiment as shown in FIG. **2** is possible, which reflects the light beams emitted in the direction of a reflector and then the light beams are detected with the aid of a receiver.

(40) As described further above, a detection signal is generated as soon as an interruption of the respective light beam is detected. Furthermore, it is possible to vary properties of the light emitted by the planar light source **30** over a period of time and to thus increase the tampering security of the assembly **810**.

(41) In addition, monitoring other elements which are arranged on the operating side of the automated teller machine **100**, in particular operating elements of the automated teller machine **100**, is provided. For this purpose, sensor units, each comprising an emitter and a receiver, are arranged around or in the elements to be monitored. Monitoring multiple regions of the automated teller machine simultaneously is provided.

(42) In one preferred embodiment, the sensor units **112**, **122**, **212**, **222**, **512**, **520**, **612** are not actuated when the shutter **14** is open. This in particular prevents a detection signal from being generated upon each money withdrawal. In one particularly preferred embodiment, two or more described embodiments are combined with one another.

(43) Alternatively, it is possible that the receiver or receivers are arranged inside the output compartment and in particular only register the light emitted from an emitter arranged outside the output compartment when the shutter **14** is open. The control unit then ascertains tampering if a receiver arranged inside the output compartment does not register light emitted by the emitter even when the shutter **14** is open. This is the case in particular if a cash trapping element E conceals the shutter **14** and no light radiates into the output compartment when the shutter **14** is open.

(44) In an alternative embodiment, alternatively or additionally to the described sensor units, brightness sensors can be used. A first brightness sensor is preferably integrated in the shutter **14**, and a second brightness sensor is arranged outside the output region **12**. The brightness sensors

transmit measured values of the ambient brightness to the control unit. The control unit compares brightness curve of the first brightness sensor and that of the second brightness sensor and ascertains the tampering status if the duration, during which the measured values the preset limit value, is exceeded, for example, in the range between 1 minute and 5 minutes.
(45) An assembly behind the delimitation wall **16** to **22** is preferably an assembly on the side of the delimitation wall **16** to **22** facing away from the output region **12**.
(46) In one particularly preferred embodiment, the control unit actuates the automated teller machine **100**, **200**, **500**, **700**, **800** from the point in time of ascertaining the tampering status in a fault operating mode. In the fault operating mode, the automated teller machine **100**, **200**, **500**, **700**, **800** cannot be actuated by the operator to output banknotes. In one preferred embodiment, the automated teller machine **100**, **200**, **500**, **700**, **800** is switched off automatically from the point in time of ascertaining the tampering status and an error message is output to a central control unit of the bank or a service provider. Furthermore, the automated teller machine can be automatically controlled from the point in time of ascertaining the tampering status so that partial functions are switched off. For example, a paying-out function of the automated teller machine can be switched off; other partial functions which cannot be manipulated by the cash trapping element still remain active. These partial functions can be a paying-in function or a display of the account balance.

Claims

1. An automated teller machine comprising: an output compartment with an output region for outputting notes of value; a closure element moveable between an open position and a closed position and closing the output compartment when in the closed position; wherein the output region is delimited in part by a first delimiting wall and a second delimiting wall, the first delimiting wall and the second delimiting wall facing each other on opposite sides of the output region; wherein the output region which is further delimited by the closure element when the closure element is in the closed position; an arrangement for monitoring the output region with at least one sensor unit arranged and configured to detect a cash trapping element arranged in the output region wherein the at least one sensor unit includes: an optical element positioned in the first delimiting wall and having a strip shape, a plurality of light receivers positioned in the second delimiting wall, and a plurality of light emitters positioned behind the optical element, wherein light emitted by the plurality of light emitters is scattered by the optical element and radiated uniformly outward, wherein the light emitted by the plurality of light emitters is receivable by the plurality of light receivers, wherein the at least one sensor unit is configured to emit a detection signal in response to the plurality of light receivers not receiving the light emitted by the plurality of light emitters; and a control unit configured to receive the detection signal and to detect a tampering proceeding in response to receiving the detection signal.
2. The ATM of claim 1 wherein each of the plurality of light emitters comprise red-green-blue (RGB) light sources.
3. The ATM of claim 1 wherein the plurality of light receivers are recessed from a front edge of the output region five to ten millimeters.
4. The ATM of claim 1 wherein the output region is further delimited in part by a third delimiting wall and a fourth delimiting wall, the third delimiting wall and the fourth delimiting wall facing each other on opposite sides of the output region, and the optical element extends fully between the third delimiting wall and the fourth delimiting wall.