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(54) An apparatus for withdrawing and depositing valuable papers.

(57) A bank-note dispensing and/or deposit apparatus for vehicular customers, comprising an externally accessible opening (35), transport means for feeding bank-notes to/from the opening (35), and button-banks (32, 34) card-reader, detecting means and signalling means.

The opening (35), the button-banks (32, 34) and the transport means are arranged in an extendable arm (101), which is automatically extended and retracted in dependence on the presence of a vehicle. The arm is also provided with a further detecting means (12, 30), effective to steer the arm in its outward, vertical and lateral movements. This further detecting means comprises two units, one unit (12) for detecting the presence of a vehicle and in automatic operation a unit (30) for controlling and steering movement of the arm (101).

A third detecting means for controlling the return movement of the arm (101) when retracted to its starting position.

The free end of the arm (101) is provided around its outer edge with a strip of resilient material and a pressure-sensitive control means.

In one modification of the invention there is provided a handle by means of which the arm (101) can be extended, and a spring is tensioned when a latch is released by the further detecting means (12).

A safety latch is released should the extended arm be subjected to a pressure greater than a pre-determined pressure.

EP 0 193 505 A2

0193505

An apparatus for withdrawing and depositing valuable papers.

TECHNICAL FIELD

The present invention relates to an apparatus for the withdrawal and/or the deposit of valuable papers, such as bank-notes, cheques, etc., particularly intended for use by vehicle-carried customers, hereinafter referred to as vehicular customers.

BACKGROUND PRIOR ART

There are known to the art apparatus which comprise a withdrawal opening and/or a deposit opening accessible to a customer, transport means effective to transport valuable documents, papers, etc., between a storage space and the withdrawal opening and/or the deposit opening, and requisite button-banks, card-readers, detecting/sensing and signalling means for enabling appropriate transportation of valuable papers to and from the withdrawal and/or deposit opening.

DISCLOSURE OF THE INVENTION

Withdrawal apparatus, or bank-note dispensing apparatus, intended for vehicular customers are encumbered with a number of drawbacks. In the case of certain apparatus of this kind, it is necessary for the driver of a vehicle to stop in the close proximity of the apparatus in order to be able to reach the same while remaining seated in his/her vehicle, with the accompanying risk of causing damage to the vehicle. In addition, the procedures which must be carried out, e.g. insertion of a bankers card, insertion of a personal code and the sum required, removal of the card and the cash and the receipt, cannot be performed in comfort whilst seated in a vehicle. These difficulties are accentuated when the vehicle is a left-hand drive vehicle and the driver is right-handed.

Another drawback with known apparatus of this kind is that dispensing and/or deposit apparatus intended mainly for vehicular customers are positioned at such a low level as to cause discomfort when used by pedestrian customers, who must stand in front of the apparatus when making a withdrawal or a deposit. The object of the invention is to eliminate these drawbacks and disadvantages.

Accordingly, there is provided in accordance with the invention an apparatus for the withdrawal and/or deposit of valuable papers and intended chiefly for use by vehicular customers, said apparatus including an extendable arm construction which is provided at its free end with a withdrawal and/or deposit opening, button-banks and a card-insertion aperture. Outward extension of the arm is contingent on the presence of a vehicular customer in front of the apparatus. The extent to which the arm is extended, the height of the free end of the arm above a given horizontal level and the lateral angle of the arm relative to the vertical can be controlled in correspondence with the presence of the customer as the arm is extended, by means of a sensor arrangement provided in the free end of the arm (thermal radiation).

Other characteristic features of the invention are disclosed in the following claims.

The apparatus described briefly above can be placed in a fixed location at a height convenient for a standing person of average height, and, through the agency of the flexible and individually adaptable arm, can be manipulated comfortably by a vehicular customer, irrespective of where the customer stops his/her vehicle in front of the apparatus, within certain limits of course.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in more detail with reference to the accompanying drawings, in which

Figure 1 illustrates an apparatus according to the invention in its inactive, rest position;
Figure 2 illustrates the apparatus with the arm extended to the proximity of a customer;
Figure 3 illustrates the free end of the extended arm in detail; and
Figure 4 is a plan view of the apparatus illustrated in Figure 3.

PREFERRED EMBODIMENT

Figure 1 illustrates an apparatus 10 intended for the withdrawal of bank-notes, i.e. a bank-note dispensing apparatus, and shows the apparatus in its inactive mode. The apparatus is intended for vehicular customers, i.e. customers who remain seated in their automobile when using the apparatus, and is placed at a height above ground level such that its button-banks, card-insert aperture and withdrawal opening can be reached comfortably by the driver of a vehicle 11 parked in front of the apparatus. As described hereinafter, the apparatus 10 may alternatively be placed at a higher level, so that it can be operated comfortably by a pedestrian customer while standing upright in front of the apparatus.

In addition to having button-banks, card-reader and a withdrawal opening, the apparatus also incorporates a transport mechanism effective to transport bank-notes from a storage station (20 in Figure 2) located within the apparatus, and detecting and signalling means which enable bank-notes to be fed reliably and correctly from the storage station to the withdrawal opening. These components and arrangements are well known to the art, and are disclosed for example in U.S. Patent Specification 4,066,253, and hence will not be described in further detail.

As described in more detail hereinafter, the apparatus 10 has a telescopically extendable arm and a further sensing or detecting means for controlling movement of the

arm, and therewith its free lengthand the angle of the arm relative to the vertical, in dependence on the presence of a vehicular customer in front of the apparatus. This further detecting means comprises two units, of which one is constructed to sense the presence of a vehicle in front of the apparatus and to activate the other of said units in response thereto. The vehicle sensing unit is indicated in Figure 1 by a broken line and is referenced 12.

Figure 2 illustrates the situation in which the vehicle-sensor 12 has detected the presence of the vehicle 11 in front of the apparatus 10 and has activated the aforesaid other unit (30 in Figure 3), so as to cause the arm 101 to be extended to a position in which the driver of the vehicle 11 can comfortably reach the free end of said arm.

The apparatus is mounted in a wall 21, within which the storage station 20 (safe) is located. In the Figure 2 embodiment, the telescopically extendable arm 101 is shown to be extended approximately horizontally, although the arm can also be raised and lowered somewhat at an angle to the horizontal, as indicated by the positions referenced 101' and 101". This raising and lowering of the arm in the vertical plane is made possible by a bellow-construction 102 in the arm 101, and is controlled by the unit 30 in the detector means, in response to heat radiated from the customer.

As beforementioned, the bank-note dispensing apparatus 10 is placed at a height which can be reached comfortably by a vehicular passenger. When the apparatus is normally intended for pedestrian customers, it may be suitably to place the apparatus on a higher level. In the case of a pedestrian customer standing in front of the apparatus, the arm will extend to the position shown in Figure 1 and will remain in

this position, while the customers makes his/her withdrawal. In the case of a vehicular customer, however, the arm will extend approximately to the position referenced 101".

In Figure 3 the arm 101 is shown to be brought to a position in which it can be reached comfortably by the customer seated in the vehicle 11 (Figure 1), this customer having already inserted the amount required through the illustrated upper button-bank 32, and has proved his/her identity by inserting his/her bankers card in the card reader 33 shown to the right, and has inserted his/her personal code number through the lower button-bank 34. The ordered number of bank-notes 31 has been fed to the withdrawal opening 35, and is ready to be removed therefrom. Removal of the bank-notes from the withdrawal opening is detected by a third detecting means, which immediately initiates and steers return movement of arm 101 to its inactive, starting position (Figure 1).

The detecting means 12 arranged in the road and effective to sense or detect the presence of a vehicle can be replaced with a unit having a similar function arranged on the free end of the arm 101, i.e. a unit which detects the arrival of a vehicle, and activates the unit 30 for controlling movement of the arm 101.

As illustrated in Figure 4, the arm 101 can also be moved sideways, as shown by the arm positions referenced 101''' and 101''''. The further detecting means 12-30 is arranged to control extension of the arm 101, so that the arm is extended to a suitable length either perpendicularly from the wall, obliquely to the left or to the right, depending on the position of the vehicle in front of the apparatus.

Many variants of the invention are conceivable. For example, the further detecting means 12 may be constructed such that in the presence of a vehicle there is activated

a start means which can be reached by a customer seated in the vehicle. When the start means is activated by the customer (e.g. a button is pressed) the arm is extended outwardly, either through a constant distance (1 in Figure 4) or to a position in which the free length of the arm and the respective angles of the arm in the horizontal and vertical planes are controlled by the presence of the customer through the detecting means (by the heat radiated from the customer). Guide means for steering an object towards a heat source are known per se and need not therefore be described here. Preferably, the outer edge of the free end of the arm comprises a strip of resilient (soft) material, such as rubber, having incorporated therein a pressure-sensitive means effective to stop outward movement of the arm when meeting a mechanical obstacle (wing mirror of the vehicle or a like obstacle) during said outward movements of the arm.

In the aforegoing the invention has been described with reference to an apparatus by means of which a customer can make a withdrawal from his/her account, i.e. a bank-note dispensing apparatus. It will be understood, however, that the invention can also be applied in apparatus intended for depositing bank-notes or other valuable papers, or in apparatus which are intended both for withdrawal and depositing purposes, without departing from the scope of the invention. Such complex apparatus are known per se from, for example, the U.S. Patent Specification 4,447,714.

A further modification resides in the provision of a handle on the free end of the extendable arm 101, by means of which handle the arm can be extended towards a vehicle located in front of the apparatus. Normally, the arm is latched in its inwardly inserted position, so as to prevent it from being extended by vandals and the like. This latch is only released when a passing vehicle has activated the unit 12 of the further detecting means, therewith enabling the driver of the vehicle to extend the arm and

carry out his/her withdrawal. When extending the arm a spring is tensioned, which upon completion of the withdrawal (or deposit) is automatically released and therewith causes the arm to be retracted to its starting position. When this modification is incorporated, the aforedescribed further unit 30 becomes obsolete.

Normally, sideways movement of the arm is restricted to a sector which can be considered to represent a comfortable manouvering and gripping position for a vehicular passenger, the limit of this sideways movement being determined by a safety latch. Should, however, the pressure on the arm 101 exceed a pre-determined value for some reason or other, for example, because the vehicle is driven away before the arm has been retracted, the latch is released and the arm will accompany movement of the vehicle, so as to avoid damage to the vehicle and to the arm.

CLAIMS

1. An apparatus intended for the withdrawal and/or deposit of valuable papers, such as bank-notes, cheques etc., and particularly intended for vehicular customers, said apparatus incorporating a withdrawal and/or deposit opening (35) accessible to the customer; transport means effective to transport valuable papers between a storage space and the withdrawal and/or deposit opening, and requisite button-banks (32,34), card-reader (33) and detecting and signalling means for enabling the transportation of valuable papers to and from the withdrawal and/or deposit opening (35), characterized in that the withdrawal and/or deposit opening (35), the button-bank (32,34), a card-insertion opening (33), and parts of the transport means are arranged in connection with an extendable arm (101).

2. An apparatus according to Claim 1, characterized in that the extendable arm (101) is arranged to be extended towards a vehicle in dependence on the presence of the vehicle in front of the apparatus.

3. An apparatus according to Claim 2, characterized in that in addition to the withdrawal and/or deposit opening (35), the button-banks (32,34) and the card-insertion aperture (33), the free end of the extendable arm (101) is also provided with a further detecting means (30) arranged to control the extension of the arm (101) in its length, height and lateral directions in dependence of a customer located in front of the apparatus.

4. An apparatus according to Claim 3, characterized in that the further detecting means (12,30)comprises two units, of which one unit (12) is constructed to detect the presence of a vehicle in front of the apparatus and to activate the remaining unit (30) upon detecting such presence; and in that the remaining unit (30) is arranged

when activated, to effect control of the outward movement of the arm (101) in dependence on the customer seated in the detected vehicle.

5. An apparatus according to any one of Claims 2-4, characterized in that a third detecting means is arranged to detect completion of a withdrawal or deposit procedure, and to cause the arm (101) to be retracted to its starting position immediately upon detection of a completed procedure.

6. An apparatus according to Claim 2, characterized by a second detecting means (12) for detecting the presence of a vehicle in front of the apparatus and activation of a start means in response to the detection of said vehicle, said start means being accessible to a customer seated in the detected vehicle, the free end of the arm having provided around its outer edge a strip of resilient material (rubber) having incorporated therein a pressure-sensitive means effective to stop outward movement of the arm when meeting a mechanical object.

7. An apparatus according to Claim 1, characterized in that the extendable arm (101) is provided on its free end with a handle by means of which the arm (101) can be extended towards a vehicle located in front of the apparatus.

8. An apparatus according to Claim 7, characterized in that the free end of the extendable arm (101), in addition to the aforesaid withdrawal and/or deposit opening (35), the button-banks (30,34) and the card-insertion opening (33), is also provided with a further detecting means (12) arranged to release the arm, which is normally latched in its retracted position, so as to enable the arm to be extended by means of the handle.

9. An apparatus according to Claim 7 or 8, characterized in that it includes a means (e.g. a spring) for automati-

cally retracting the arm (101) upon completion of the withdrawal and/or deposit of valuable papers from or into the apparatus.

10. An apparatus according to any one of Claims 1-9, characterized in that it includes a safety latch which when the arm (101) is subjected to pressure greater than a pre-determined value, is released and therewith releases the arm for movement in the direction travelled by the vehicle in front of the apparatus, therewith decreasing or eliminating risk of damage to the arm or to the vehicle should the vehicle move away before the arm has been retracted.

11 An apparatus according to any one of Claims 1-9, characterized in that the extendable arm is a telescopic arm.

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Fig. 1

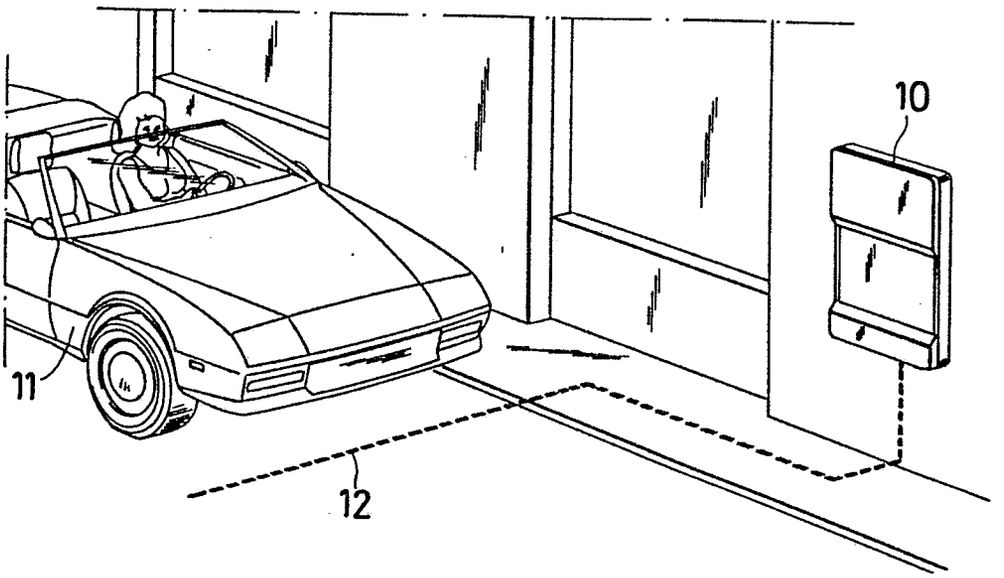

Fig. 2

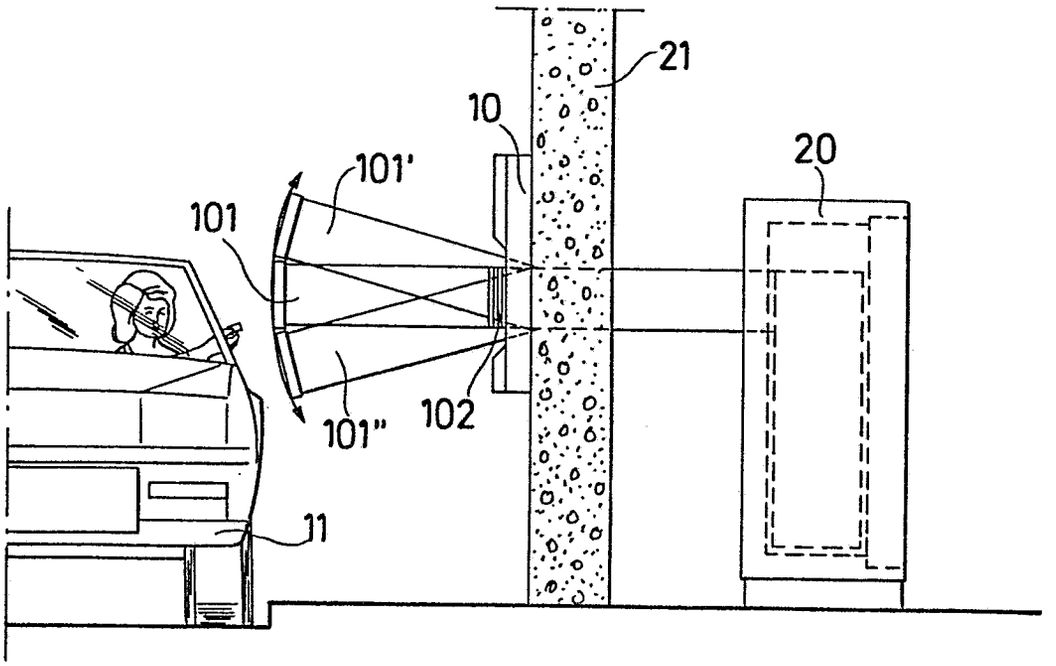

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Fig. 3

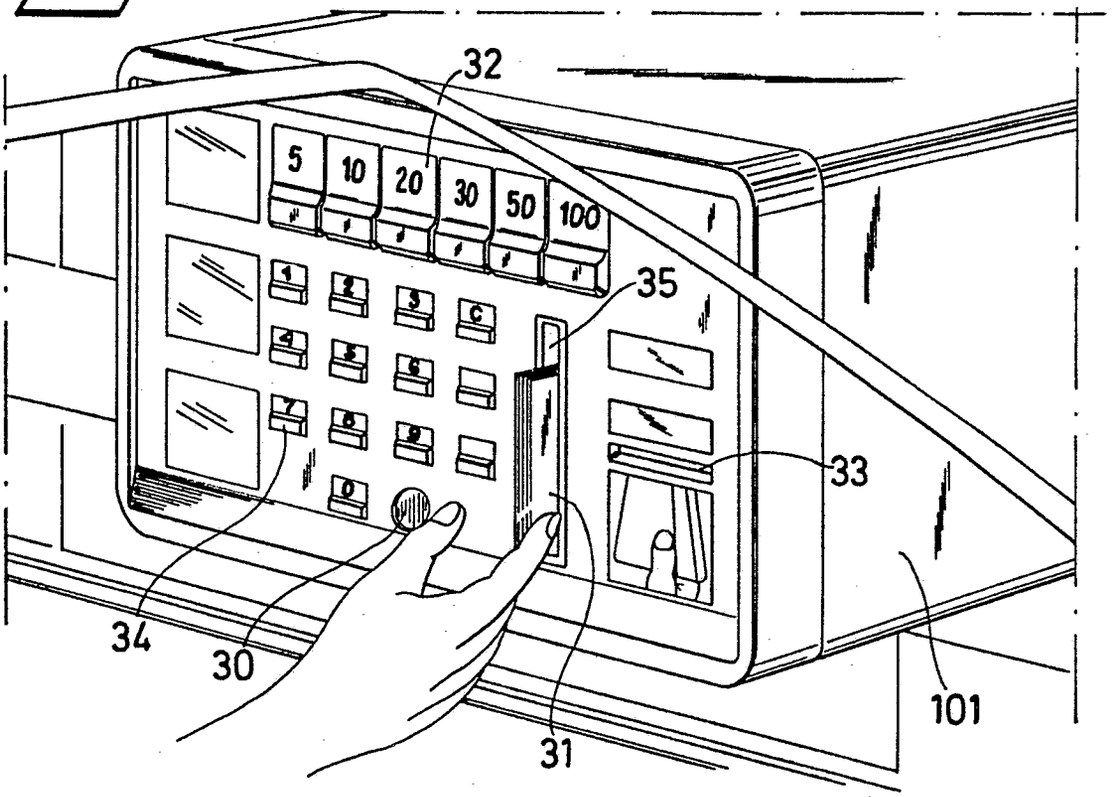

Fig. 4