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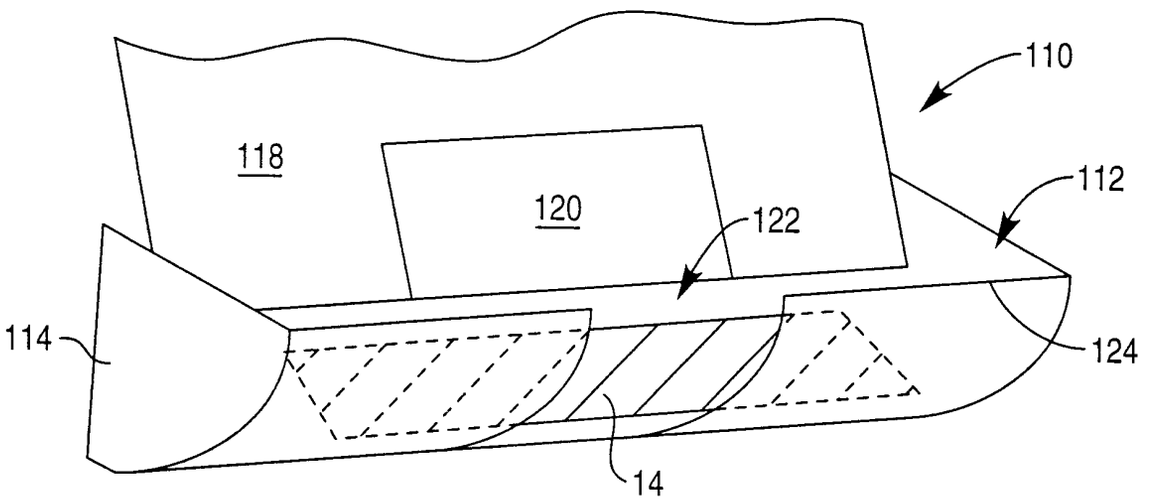
(54) Self-service terminal

(57) An ATM (100) having a dispensing tray (110) is described. The dispensing tray (110) has a concave surface (116) for receiving bank notes (14) dispensed by the ATM (100). The tray has a slot (122) for improving access to the bank notes (14). The ATM (100) also has an optically transparent window (120) located in a front panel (118) for providing visual access to the bank notes (14) being dispensed so that a user knows if notes (14) have been dispensed by the ATM (100). Any obstruction placed in the tray (110) will be readily observed by a user because of the concave surface (116) of the tray (110) and the slot (122) defined by the tray (110). Any obstruction placed behind the front panel (118) will be readily observed by a user through the window (120).

FIG. 3



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Description

[0001] The invention relates to improvements in or relating to a self-service terminal (SST). In particular, the invention relates to an SST, such as an Automated Teller Machine (ATM), having an improved dispenser tray for presenting valuable media to a user.

[0002] Some low-cost ATMs have a dispensing tray for presenting valuable media, such as currency, to a user. One configuration of dispensing tray conventionally used is shown in Fig 1A. A tray 10 is located beside a dispensing slot 12 of an ATM, so that bank notes 14 are dispensed from the ATM, through the slot 12, and onto a planar surface 16 of the tray 10.

[0003] One problem arising from the use of such a tray 10 is the possibility of fraud. This may occur if a third party places a sheet of material (such as cardboard) 18 at an angle over part of the tray 10 (at the position shown by the dotted line in Fig 1A). The material 18 is shown in position in Fig 1B.

[0004] When the material 18 is in position and a legitimate user requests a currency dispensing facility, the sheet of material 18 obscures the dispensed notes 14 (shown in dotted line in Fig 1B) from the user's view, so that the notes 14 are delivered to planar surface 16 of the tray 10 but beneath the material 18. The legitimate user may walk away from the ATM because he/she assumes that no bank notes have been dispensed due to a fault with the ATM. The third party may then return and remove both the sheet of material 18 and the dispensed bank notes 14 obscured by the material 18.

[0005] It is an object of the invention to reduce the possibility of this type of fraud occurring.

[0006] According to the invention a self-service terminal for dispensing valuable media into a dispensing tray is characterised in that the tray has a non-planar surface for holding valuable media delivered thereto.

[0007] By virtue of the invention, a non-planar surface is provided which makes it more difficult to balance a sheet of material in the tray.

[0008] Preferably, the non-planar surface is generally arcuate. Conveniently, the generally arcuate surface is concave.

[0009] Preferably, the tray has a slot for facilitating collection of the valuable media. The tray may have a plurality of slots.

[0010] Preferably, the slot is defined at an edge of the tray (front edge) opposite to the front surface of the SST, and the slot is located towards the centre of the front edge of the tray. One advantage of having a slot in the tray is that a user can access a top side and an underside of the media which is dispensed. An advantage of having the slot near to the centre of the front edge is that the valuable media which is dispensed will straddle the slot. Another advantage of having a slot in the tray is that if any obstruction, such as a sheet of material, is placed in the tray, then the obstruction may be easily removed because the slot may give access to an underside of the obstruction.

[0011] Preferably, the SST has an optically transparent window for providing visual access to the valuable media.

[0012] Preferably, the window is located above the tray so that a user can observe the valuable media as the media is moving towards the non-planar surface.

[0013] Preferably, the window is located for providing visual access to the valuable media as the media is at rest on the non-planar surface.

[0014] Conveniently, the window is a PERSPEX™ panel. The advantage of having a transparent window is that if the media is blocked so that it does not reach the tray then the user may see part of the media and the cause of the blockage.

[0015] According to the invention a dispensing tray for use with a self-service terminal is characterised in that the tray has a non-planar surface for holding valuable media delivered thereto.

[0016] Fig 1A shows a prior art design of dispensing tray and Fig 1B shows that tray modified for fraudulent purposes.

[0017] An embodiment of the invention will be described, by way of example, with reference to the rest of the accompanying drawings in which:

Fig 2 is a schematic diagram of an SST in the form of an ATM having a dispensing tray in accordance with one embodiment of the present invention;

Fig 3 is an enlarged view of the dispensing tray of the ATM of Fig 2;

Fig 4 is a plan view of the dispensing tray of Fig 3;

Fig 5 is an enlarged view of a portion of Fig 3, and

Fig 6 is a cross-sectional view along line 6-6 of the dispensing tray of Fig 4 and part of the ATM operating mechanism.

[0018] Referring to Figs 2 to 6 of the drawings, Fig 2 shows an SST 100 (in the form of an ATM) according to one embodiment of the invention. The ATM 100 has a user interface 102 incorporated in its front surface 103. The user interface 102 includes a display 104, a key pad 106, a card reader slot 108, and a dispenser tray 110.

[0019] Fig 3 shows in more detail the dispenser tray 110. The tray 110 is made of polycarbonate material and is in the form of a channel having an open top 112, closed ends 114, and an arcuate inner surface 116 (Fig 6). In this embodiment, the tray is approximately 25cm long (between closed ends 114), 15cm wide, and 8cm deep.

[0020] The tray 110 is located beneath a sloping front panel 118 so that the panel 118 projects into the top 112 of the tray 110. The front panel 118 is made of plastics material and incorporates an optically transparent win-

dow 120 made of PERSPEX™.

[0021] The tray 110 is recessed into the front of the ATM 103 so that approximately two-thirds of the tray 110 projects out of the front surface 103. In use, currency is delivered onto the arcuate inner surface 116 by a currency delivery mechanism (shown in dotted lines in Fig 4).

[0022] The tray 110 has a slot 122 near the centre of its front edge 124 and extending from front edge 124 towards the front surface 103. The slot 122 measures approximately 4cm wide; although any convenient width of slot 122 may be used.

[0023] Referring to Figs 4 and 6, the currency delivery mechanism 130 is shown delivering bank notes 14 to the tray 110 by means of three rotating belts 132 driven by gears and pulleys (not shown). Three bank notes 14a,b,c are shown, each at a different stage of delivery. Note 14a is located on the belts 132 and is being transported towards front panel 118. Note 14b has been projected from the mechanism 130 and will be guided by front panel 118 as it falls towards the tray surface 116. Note 14c is at rest on the tray surface 116 awaiting collection by a user.

[0024] The dispensing tray 110 has a guide surface 134 depending from its rear edge for guiding notes towards a receptacle (not shown). If the notes 14 falling from the mechanism 130 are deflected (for example by an obstruction) so that the notes 14 miss the tray surface 116, then as the notes 14 fall they are guided by surface 134 to land in the receptacle.

[0025] A user of the ATM 100 would observe note 14b through the window 120, and would also observe at least part of note 14c through the open top 112 of the tray 110.

[0026] If a third party attempted to defraud an ATM user by placing an obstruction on the interior surface 116 of the tray 110 then the user could remove the obstruction. The presence of the slot 122 would alert the user to the presence of the obstruction and would assist the user in removing the obstruction because the slot 122 would enable the user to gain access to the underside of the obstruction.

[0027] Fig 5 shows what a user would observe if an obstruction 140 was placed behind the front panel 118. Part of a note 14 is blocked by the obstruction 140, but at least part of the note 14 and the blockage 140 are visible through the window 120. Thus, the user would realise that the ATM 100 has attempted to dispense the notes requested but has been hindered from doing so by an obstruction 140.

[0028] The invention has the advantages that if a third party places an obstruction (such as a piece of card) in the tray 110 then the obstruction is obvious from the shape of the inner surface 116 and the slot 122. If an obstruction is placed behind the front panel then the obstruction is evident because the notes 14 and/or the obstruction are visible through the window 120. The window provides visual access to the notes as they are being delivered to the tray, so the user observes that notes have been dispensed, even if part of the tray 110 has been covered. In addition, the presence of guide surface 134 and a receptacle (not shown) ensures that if notes 14 are deflected by a large angle (which may occur if an obstruction is present beneath or behind the front panel 118) then the notes will land in the receptacle, which is not accessible to a user of the ATM 100. These advantages reduce the possibility of fraudulent behaviour.

[0029] Various modifications may be made to the above described embodiment within the scope of the invention. For example, in other embodiments, the tray may be made of materials other than polycarbonate, such as other plastics material, metals, metal alloys or such like. The tray may be used in SSTs other than ATMs, for example in kiosks selling flight coupons, share certificates, or such like. In other embodiments, the front panel and/or the tray may be optically transparent. In other embodiments, the tray may have a plurality of slots to ensure that any obstruction located in the tray is more noticeable. In other embodiments, the tray may have different dimensions to those described above. The dimensions of the tray may be determined by the size of the valuable media to be dispensed by a particular SST.

Claims

1. A self-service terminal (100) for dispensing valuable media into a dispensing tray (110), characterised in that the tray (110) has a non-planar surface (116) for holding valuable media (14) delivered thereto.

2. A terminal according to claim 1, wherein the non-planar surface (116) is generally arcuate and has a concave portion.

3. A terminal according to claim 1 or 2, wherein the tray (110) has at least one slot (122) for facilitating collection of the valuable media (14).

4. A terminal according to claim 3, wherein the at least one slot (122) is defined at an edge (124) of the tray adjacent to a user, and the at least one slot (122) is located towards the centre of that edge (124).

5. A terminal according to any preceding claim, wherein the terminal further comprises an optically transparent window (120) for providing visual access to the valuable media (14).

6. A terminal according to claim 5, wherein the window (120) is located for providing visual access to the media (14) when the media (14) is moving towards the non-planar surface (116).

7. A terminal according to claim 5 or 6, wherein the window (120) is located for providing visual access to the valuable media (14) when the media (14) is at rest on the non-planar surface (116).

8. A terminal according to any preceding claim, wherein the dispensing tray (110) has a guide surface (134) depending from a rear edge of the tray (110) for guiding any media items missing the tray (110) towards a receptacle which is not accessible to a user.

9. A dispensing tray (110) for use with a self-service terminal (100), characterised in that the tray (110) has a non-planar surface (116) for holding valuable media (14) delivered thereto.

FIG. 1A
PRIOR ART

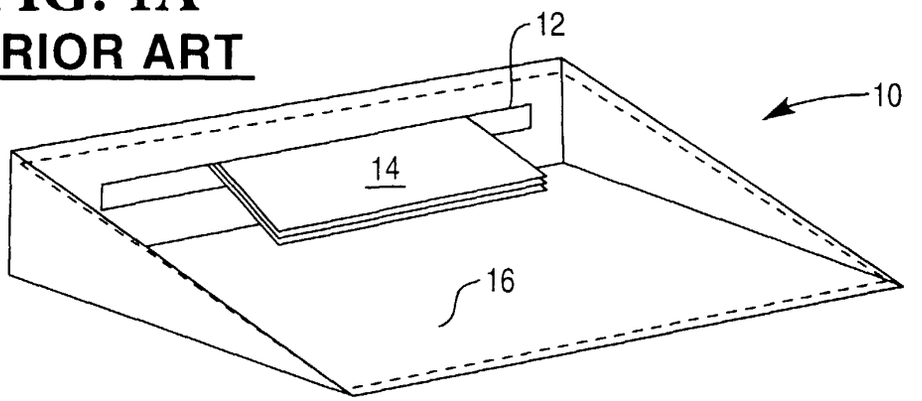
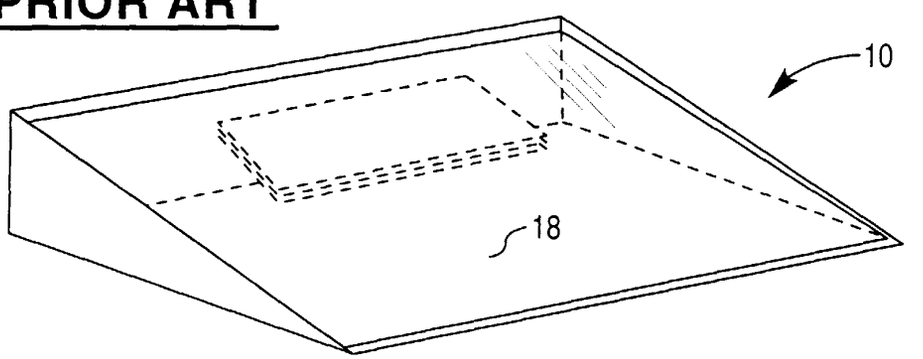


FIG. 1B
PRIOR ART



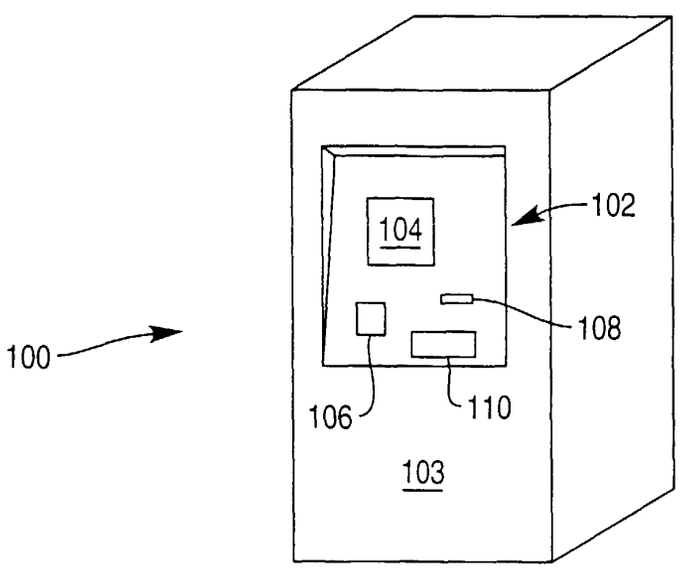


FIG. 2

FIG. 3

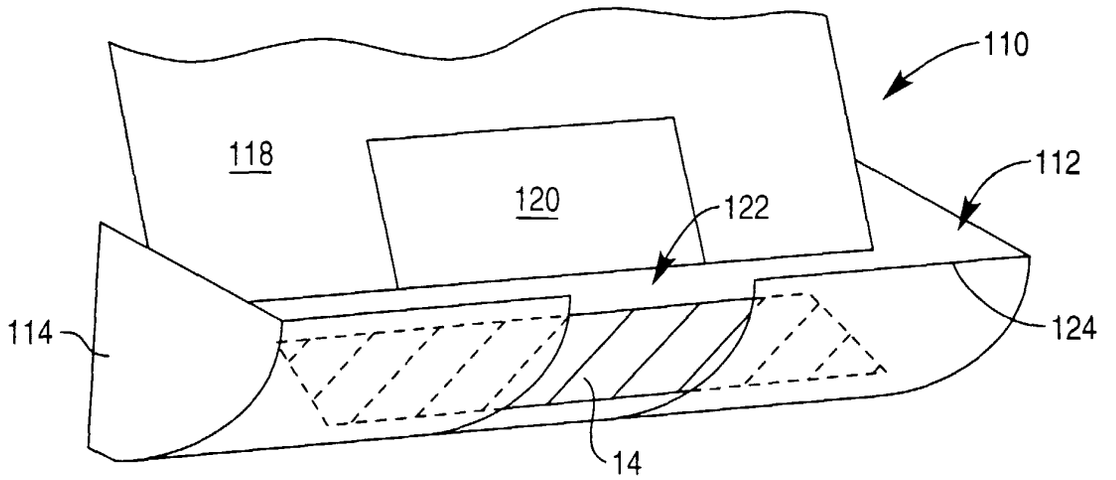

110
118
120
122
112
114
124
14

FIG. 4

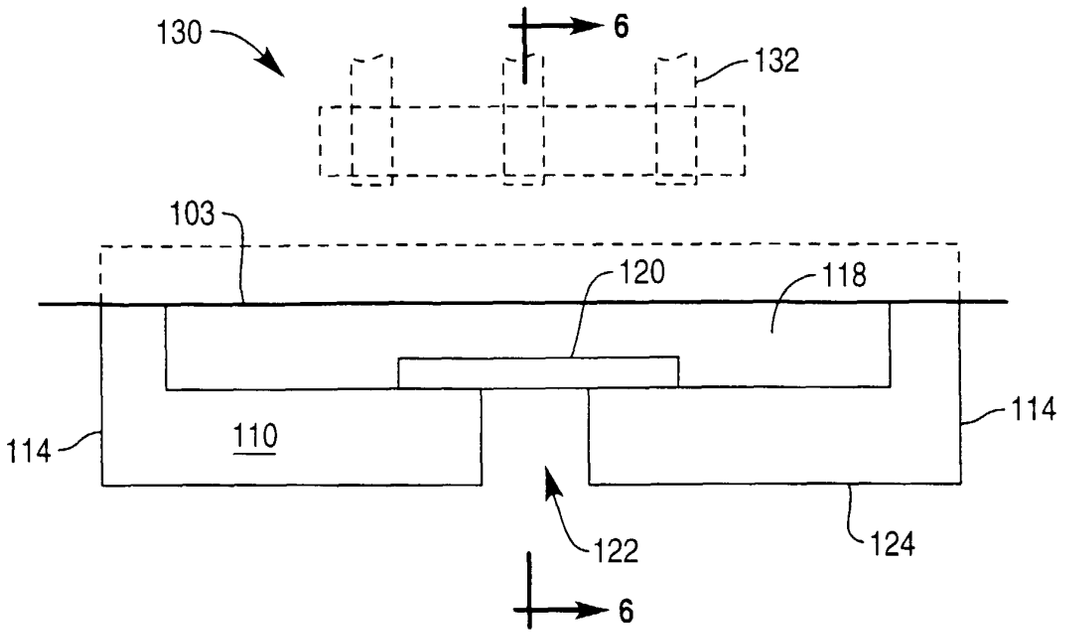

130
6
132
103
120
118
114
110
114
122
124
6

FIG. 5

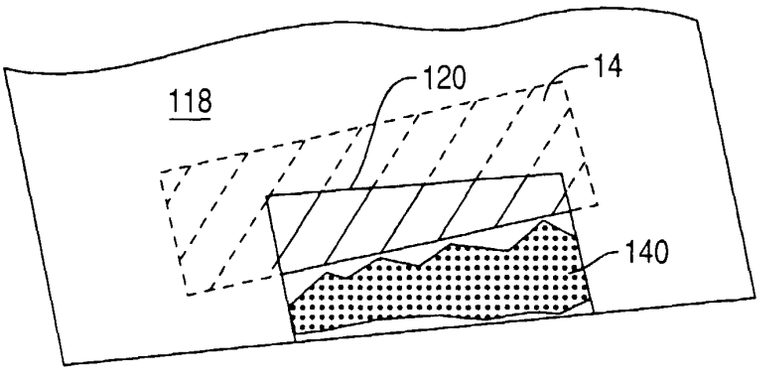
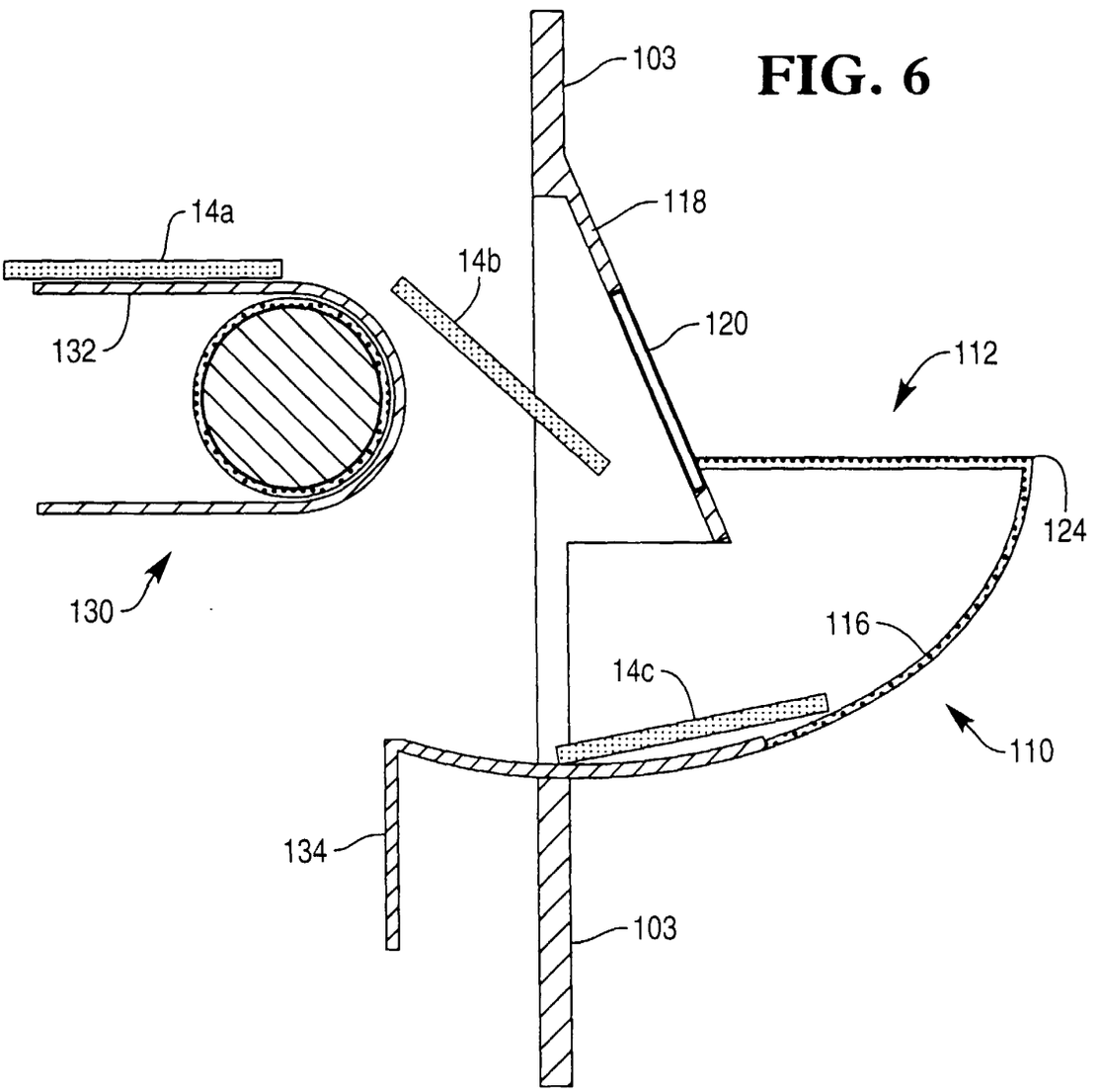

118
120
14
140

FIG. 6


103
118
14a
14b
120
112
132
124
130
116
14c
110
134
103