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(54) Counterfeit document detector.

(57) A banknote examining device comprises a slot (2) formed in a tabletop (1) beneath which there is mounted a UV-lamp displaced in relation to the slot (2). Part of a banknote (11) inserted into the slot will be irradiated with UV-radiation and a teller is able to ascertain the genuineness of a banknote by checking fluorescent security print thereon.

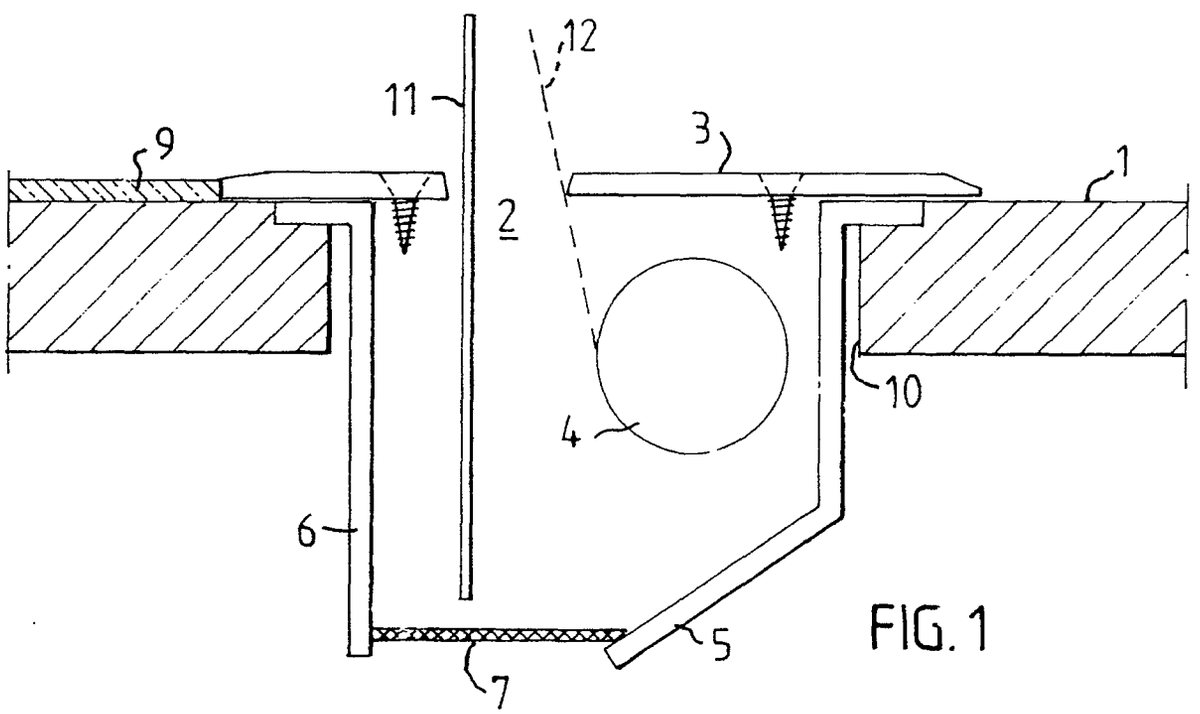


FIG. 1

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A BANKNOTE EXAMINING ARRANGEMENT

In order to facilitate recognition of counterfeit banknotes and valuable document, such as cheques, it has long been standard practice to provide banknotes with UV-fluorescent characteristics in addition to incorporating in the paper such characteristics as a watermark, filaments and the like capable of being discerned with the naked eye. For instance, the banknote serial number of a Swedish 100-crown banknote and a Swedish 500-crown banknote is printed with fluorescent ink. The 500-crown banknotes also have a solely fluorescent print in Gothic style. The banknotes of other countries also often embody similar characteristics, at least in the case of high denomination banknotes.

In recent times, there have been introduced onto the market colour copying apparatus which are able to produce forgeries which appear very convincing to the naked eye. Although bank officials have always been very much on their guard against counterfeit banknotes, etc., there is a great need for means which will enable banknotes and the like valuable documents to be checked quickly and simply with the aid of UV-illumination at the teller's desk.

Known to the art is a banknote examining device which has the form of a small box which is open along one long side thereof and which has mounted at its bottom a milky-glass plate which is illuminated from beneath with conventional light for the purpose of checking watermarks, and which has a screened UV-lamp mounted at the top of the box. These two illuminating device can be ignited and extinguished separately. A banknote examining device of this kind is almost indispensible in practice for banks or post offices, particularly when accepting foreign banknotes.

A known banknote examining device of this kind, however, is not suitable for arrangement in a normal teller location, primarily because modern teller locations are already cluttered with other apparatus, such as computer equipment and the like.

It is therefore an object of the present invention to provide a non-bulky banknote examining device which can be used comfortably and which will not be noticed by a customer, so as to cause irritation at the thought of being suspected. The concept is one of enabling banknotes where the watermark appears doubtful, due to the presence of grease spots or dirt, to be quickly checked under UV-light, before accepting the banknote. Thus, the intention is not to be able to examine actual border-line cases, since in cases such as these the teller is justified in leaving the teller location and examining the banknote in a more suitable apparatus, e.g. an apparatus of the kind mentioned in the introduction.

This object and other objects of the invention and advantages afforded thereby are achieved with a banknote examining apparatus having the characteristic features set forth in the following Claim 1.

The invention will now be described in more detail with reference to non-limiting exemplifying embodiments thereof and with reference to the accompanying drawings. Figure 1 is a sectional view of a banknote examining device. Figure 2 illustrates the device from above. Figure 3 illustrates a modified banknote examining device.

Figure 1 illustrates a banknote examining device mounted in position. Provided in a tabletop 1 is an opening 10 over which a fitting 3 is secured, said fitting presenting a slot 2 which has a width of from 10 to 15 mm. Mounted beneath the fitting is a UV-lamp 4 of tubular form, said lamp being displaced laterally beneath the fitting and directed towards the teller. Walls 5 and 6 define a space beneath the table, and a grid 7 or the like is provided beneath the table for the purpose of preventing an inserted banknote from falling. The grid, however, will allow such articles as paper clips, for instance, to pass therethrough. Part of an inserted banknote 11 will be irradiated by the UV-lamp 4 within a zone above the slot 2, which is defined through the shadow edge 12 determined by one edge of the slot. Part of the banknote is therewith irradiated with light and a genuine banknote can be recognized by the fluorescence emitted by the security print which the teller knows shall be found on the banknote. The check is thus carried out quickly and can be made routine with at least all banknote of higher denominations.

Figure 2 illustrates, while using the same reference numerals, a banknote examining device from above, provided with a fitting 3 and let-into the tabletop or slightly raised above the tabletop. Instead of using a metal fitting, a wear-durable plastic sheet can be arranged above a slot formed in the table.

Figure 1 also shows part of a black sheet 9 of plastic or glass located adjacent the fitting 3. This black sheet enables a watermark to be seen with the aid of the overhead lighting. This avoids the cost and trouble incurred by a light box, since a watermark can be seen clearly against comparable contrasts although complementary, since thinnings in the paper are visibilized as dark areas instead of as light areas.

In accordance with a modified embodiment, a fluorescent plate can be disposed beneath the insertion slot on the opposite side to the UV-lamp, so as to enable observations to be made by seeing or looking through the document (for watermarks,

etc.). When no banknote is inserted, the fluorescent plate will be illuminated by the UV-lamp and then shines with visible light. A banknote held against this light can then be viewed in penetrating light. When the banknote is then inserted into the insertion slot, it will shadow the fluorescent plate therewith interrupting its illumination. This enables the fluorescence of the banknote itself to be observed. This device enables the watermark and fluorescent marking of a banknote to be checked with the aid of a single discharge lamp of the UV-kind.

This principle of using a dual-function lamp can also be utilized in a lamp which is mounted in a box above a table or the like (e.g. as described in DE-A-25 26 819), wherein there is required only one single lamp, a UV-lamp, which carried out two mutually different functions in combination with a fluorescent screen which can be shadowed by a inserted banknote.

Figure 3 illustrates a further development of the invention in which the UV-lamp and associated screen can be raised from the top of the table, thereby enabling a greater part of a banknote to be irradiated when considered necessary. Although not shown, this movability of the device may be achieved by rotatably mounting the device on a horizontal pivot axle which extends on one side edge at right angles to the slot, although the movability of said device can also be achieved with vertical guides, in accordance with sliding drawer principle, or with the aid of movable flaps. The UV-lamp can be arranged to follow the screening wall 5, so that no UV-radiation will impinge on the service personnel.

A UV-lamp of from 4 to 6 watts can well be left permanently ignited in view of the fact that such lamps have a burning time of 2000 hours, although the lamp may, of course, also be provided with a switch.

The invention enables a teller to check the genuineness of a banknote quite discretely, without knowledge of the customer, which is a valuable facility both with respect to honourable but perhaps sensitive customers and also with respect to forgerers where it is desirable to give an alarm quietly and discreetly.

Claims

1. A banknote examining device for checking UV-fluorescing security print and the like with the aid of a UV-lamp intended for illuminating a banknote and screened against direct radiation, **characterized** by a slot (2) formed in a table, through its tabletop (1), wherein the UV-lamp (4) is mounted beneath and to one side of the slot (2) formed in said tabletop, such that an externally visible part of a banknote (11) inserted into the slot is irradiated with UV-radiation from the UV-lamp.

2. A device according to Claim 1, **characterized**in that the slot is configured in a fitting (3) which is mounted so that its upper surface lies substantially flush with the upper surface of the tabletop.

3. A device according to Claim 1 or 2, **characterized** in that a black covering (9) is located adjacent the slot (3) on the upper surface of the tabletop.

4. A device according to any one of the preceding Claims, **characterized** in that the UV-lamp can be raised to a position above the tabletop and is provided with a screen (5) which, in said raised position, shields against direct viewing.

5. A device according to any one of the preceding Claims, **characterized** in that there is arranged on the opposite side of the slot (2) with respect to the position of the UV-lamp (4) a fluorescence plate which is intended to be shadowed by an inserted banknote but, when illuminated by the UV-lamp, to generate visible light through the slot (2) so that the banknote can be seen through.

6. A device for checking UV-fluorescent security print and the like with the aid of a UV-lamp intended for illuminating a banknote and screened against direct radiation, and including illuminating means for visible light, therewith to enable a banknote to be seen through for the purpose of checking watermarks and the like, **characterized** in that the illuminating means for visible light comprise a surface which fluoresces in visible light and which is irradiated by the UV-lamp and which is shadowed by means of a banknote inserted between the UV-lamp and said means, thereby enabling one and the same light source to be used for both checking purposes.

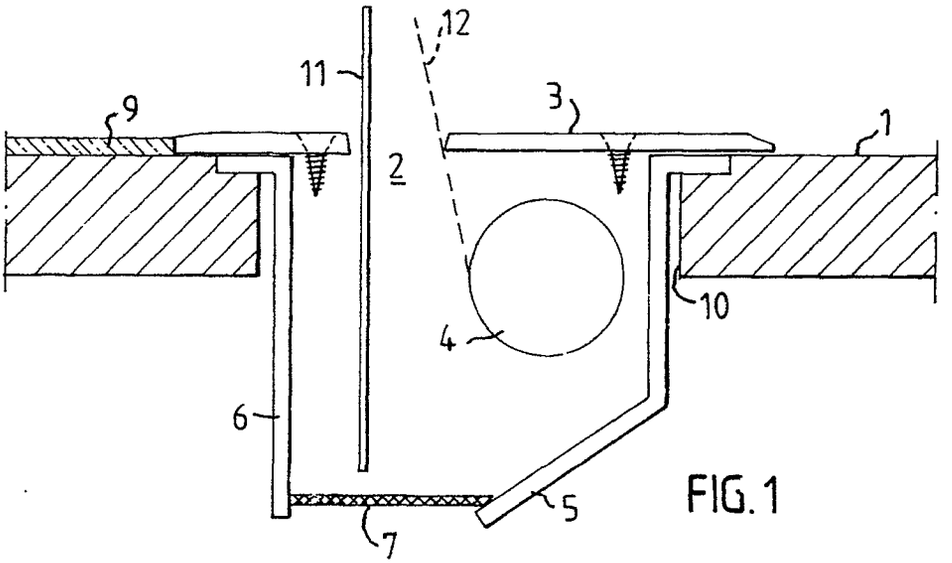


FIG. 1

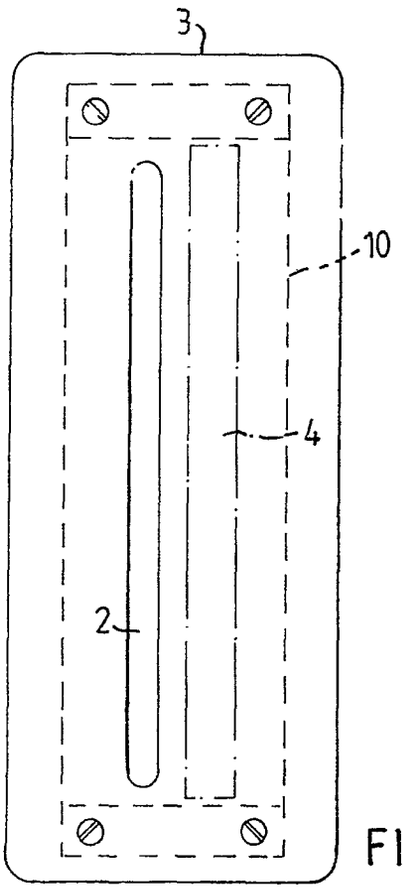


FIG. 2

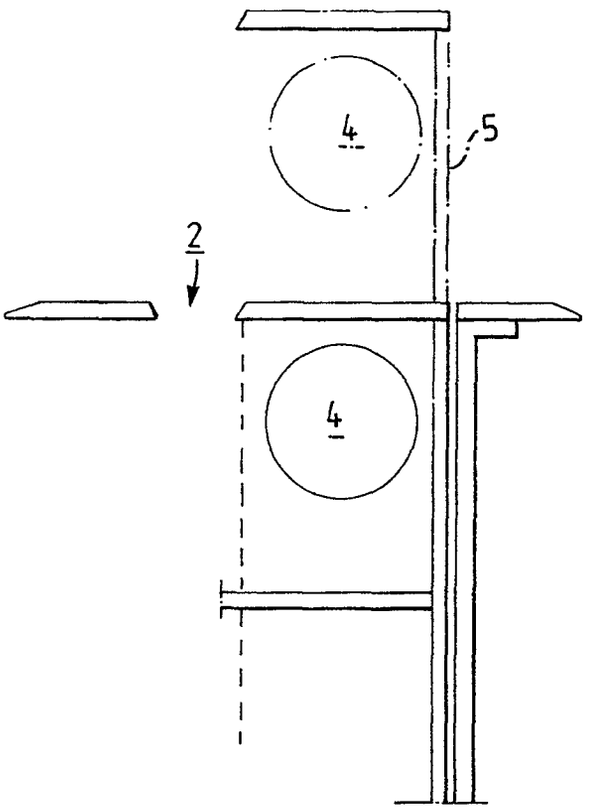


FIG. 3