United States Patent [19]

Goodrich

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[54] **COUNTERFEIT DOCUMENT DETECTOR**

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[52] **U.S. Cl.** **250/461,** 250/485, 250/491

[51] **Int. Cl.** **G01d 7/06**

[58] **Field of Search** 250/365, 461, 485; 356/71

[56] **References Cited**

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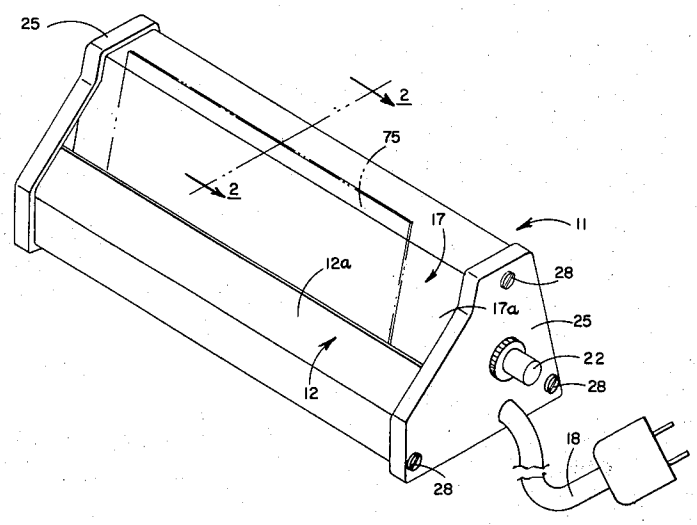
[57] **ABSTRACT**

A housing has a structural portion which forms a light shield and another structural portion adjacent to the light shield which forms an easel suitable for supporting a document to be verified such as currency. An ultraviolet lamp is mounted behind the light shield such that the ultraviolet energy therefrom strikes the currency. Counterfeit currency is readily detected by virtue of a characteristic blue glow that it gives off.

4 Claims, 4 Drawing Figures



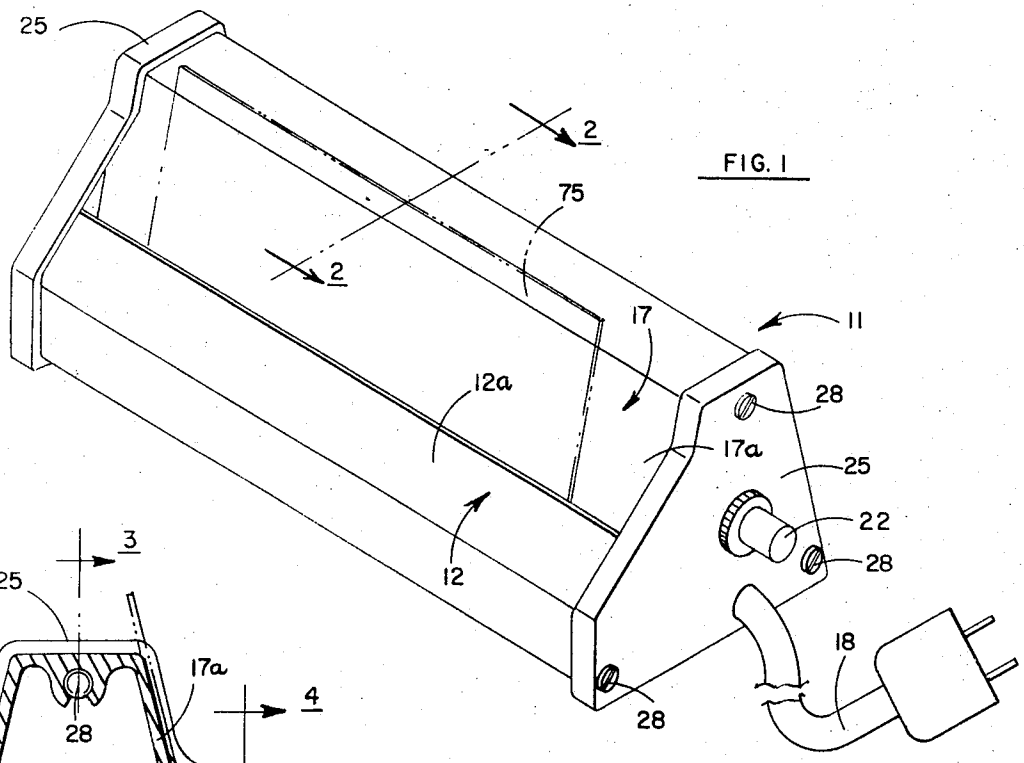


FIG. 1

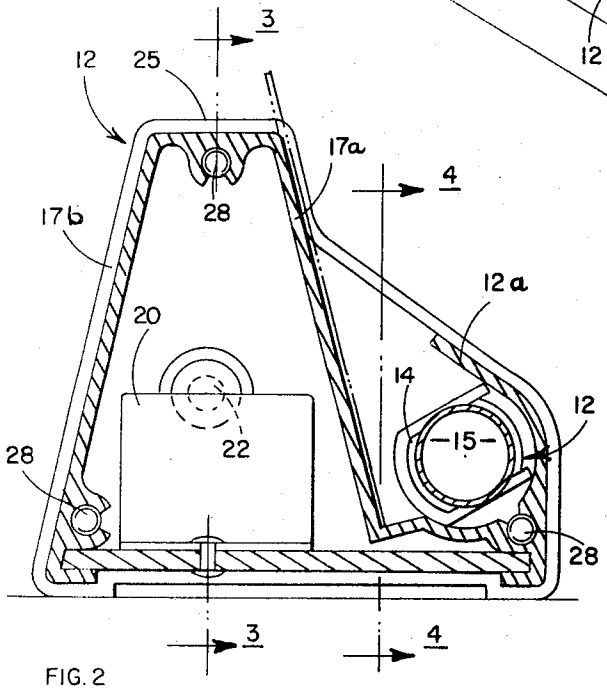


FIG. 2

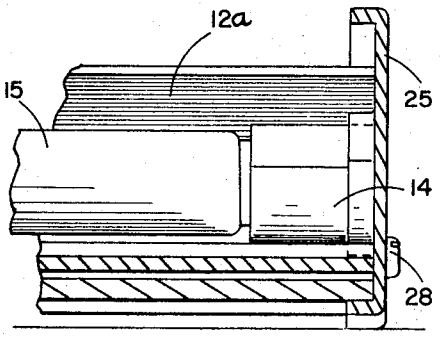


FIG. 4

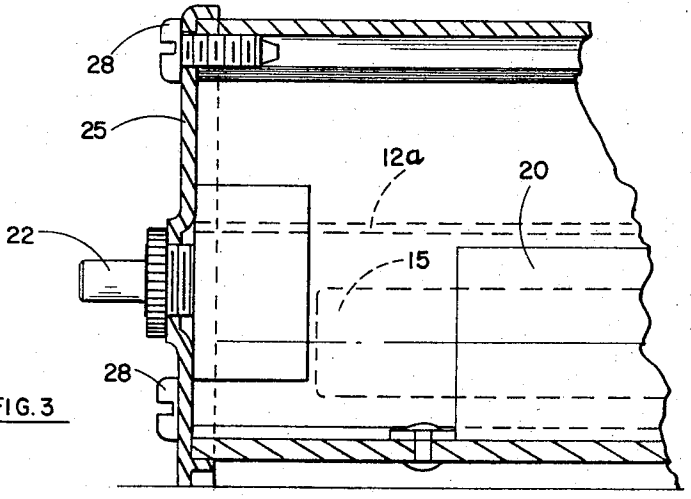


FIG. 3

COUNTERFEIT DOCUMENT DETECTOR

This invention relates to a counterfeit document detector and more particularly to such a device utilizing ultraviolet light in identifying counterfeit currency.

The unwitting acceptance of counterfeit currency has been a problem for many years in view of the difficulty of any but the most expert in telling good money from bad. This is a particular problem in situations where a good deal of currency is rapidly passed, such as in super markets, department stores and banks, in view of the lack of time for the cashier or teller to examine the bills except in a very cursory fashion. Where bills are expertly counterfeited, they tend to pass as real except when examined by experts.

It has been found that most counterfeit currency has a chromamorphic response or color change when it is viewed in ultraviolet light such that it fluoresces with a bluish light glow. This is due to bleach or photochemicals used in the paper used for most counterfeit money. Genuine currency is printed on a special paper manufactured under strict government control which has no bleach or chemicals therein. Thus, genuine currency will not glow in the fashion just described when subjected to ultraviolet light.

The device of this invention provides a simple, convenient device of economical construction to facilitate the examination of bills and other documents under ultraviolet light to verify their authenticity. The device of the invention is of compact construction and can be placed on a counter where it occupies a minimum of space.

It is therefore an object of this invention to facilitate the detection of counterfeit currency and other counterfeit documents.

Another object of this invention is to provide a compact, inexpensive device for enabling the rapid and accurate checking of currency.

Other objects of the invention will become apparent as the description proceeds in connection with the accompanying drawings, of which:

FIG. **1** is a perspective view of one embodiment of the invention;

FIG. **2** is a cross-sectional view taken along the plane indicated by **2—2** in FIG. **1**;

FIG. **3** is a cross-sectional view taken along the plane indicated by **3—3** in FIG. **2**; and

FIG. **4** is a cross-sectional view taken along the plane indicated by **4—4** in FIG. **2.**

Briefly described, the device of the invention comprises a housing with an ultraviolet lamp mounted therein and a switch and transformer for enabling the operation of such lamp from an AC power line. A portion of the casing is shaped to form a light shield for the ultraviolet lamp, this shield directing the light from the lamp towards another portion of the casing which forms an easel on which the currency to be examined can be placed. The easel portion of the casing provides a housing for a transformer for providing power to the lamp. A pair of removable end plates are provided to facilitate assembly of the device, one of these end plates having a lamp switch mounted therein. Currency and other documents can then be placed on the easel with the ultraviolet light directed thereagainst for rapid identification.

Referring now to the figures, the casing **11** has a light shield **12** formed along the front thereof. Supported in the casing behind light shield **12** in a pair of lamp sockets **14** is ultraviolet lamp **15.** The upper portion **12***a* of light shield **12** wraps around lamp **15** so as to direct the light output thereof towards the face **17***a* of easel portion **17** of the casing. Power is provided for lamp **15** through power cord **18** which is connected to the AC power line. The AC voltage is stepped down to an appropriate value for the lamp by means of transformer **20** which is mounted in the easel portion of the casing. The lamp power is switched on and off by means of switch **22** mounted on end plate **25.** End plate **25** is removably attached to the main body of the casing by means of screws **28,** thus facilitating the removal of the plate to repair or replace the various parts.

Easel portion **17** has a flat surface **17a** which is slanted away from lamp **15** and extends from directly opposite the lamp to a line above the edge of shield portion **12***a*. The easel thus provides a convenient support for a bill **25** or other document to be examined. Easel portion **17** also has a wall **17b** which slants away from surface **17***a* and forms the rear wall of the casing. The lower portion of such bill **25** is positioned directly opposite and in close proximity to the lamp in a location where the light emissions thereof are shielded by shield **12** while at the same time these bottom bill portions can be readily viewed from above by an observer. Easel **17** and shield **12** can each be fabricated from single pieces of sheet metal bent to the desired configurations, making for highly simple and economical construction.

As already noted, when a valid piece of currency **25** is exposed to the ultraviolet light, lamp **15,** there is no glow or color change. A counterfeit bill, on the other hand, will glow with a bright blue fluorescent color.

The device of the invention thus provides a simple and economical means which can be mounted on a smaller corner of the counter for checking the validity of currency.

While the device of the invention has been described and illustrated in detail, it is to be clearly understood that this is intended by way of illustration and example only, and is not to be taken by way of limitation, the spirit and scope of this invention being limited only by the terms of the following claims.

I claim:

1. A device for checking the validity of a document comprising:

a casing having a first portion thereof shaped to form a light shield, and a second portion thereof shaped to form an easel for supporting a document to be examined,

an ultraviolet lamp mounted in said casing adjacent to and behind said light shield, said light shield having a part thereof which wraps around said lamp,

said easel portion extending at a slant angle from opposite said lamp away from the lamp to a line above the edge of the wrap-around part of said light shield, said light shield directing the light from said lamp towards said easel portion, and

means for selectively energizing said ultraviolet lamp,

whereby a document to be examined can be placed on said easel such that the bottom portions thereof lie opposite said lamp and shielded by said light shield to receive a substantial portion of the light output of the lamp, yet viewable from above.

2. The device of claim 1 wherein said light shield extends along a front edge of said casing and said easel includes a flat, front portion positioned opposite said light shield and slanted away from said shield and the back portion which forms the rear wall of the casing.

3. The device of claim 1 and further including end plates removably attached to the opposite ends of said casing.

4. The device of claim 1 wherein said means for selectively energizing said lamp comprises a power line, a transformer mounted in said casing beneath said easel, and an electrical switch mounted in one of said end plates for connecting power from said power line to said transformer.

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