

PATENT ABSTRACTS OF JAPAN

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(54) FLUORESCENT PATTERN DETECTOR AND POSTAL MATTER PROCESSOR USING THE DETECTOR

(57)Abstract:

PROBLEM TO BE SOLVED: To efficiently detect a fluorescent pattern by detecting light from the fluorescent pattern of an object to be detected which is excited by excitation light with plural wavelengths and recognizing a fluorescent pattern of the object based on a detection signal.

SOLUTION: In the case of detecting the fluorescent pattern of an object 10 to be detected which is moved in an arrow X direction, an ultraviolet lamp 4 is turned on, 1st excitation light La having 1st proper excitation wavelength is emitted and exited from an outgoing window 2, a light emitting member 5 is excited by the excitation light La, and 2nd excitation light Lb with 2nd proper excitation wavelength is emitted and exited from the window 2. Thereby the fluorescent pattern 11 of the object 10 is excited by respective excitation light La, Lb and light corresponding to the pattern 11 is made incident upon a camera 6 through the window 2 and an aperture part on the center part of a partition plate 3. Consequently a large signal output and a large SN ratio can be obtained by the photoelectric conversion of the camera 6 to be a light detection element and the fluorescent pattern 11 can be efficiently recognized by a recognition part 7.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the mail processing unit which used the fluorescence pattern detection device and this fluorescence pattern detection device.

[0002]

[Description of the Prior Art] Conventionally, in the mail processing unit which processes much mail, Type accumulation of mail etc. which detected the fluorescence pattern which consists of

HAKODO printed by the print medium of an ink-jet printer (IJP) etc. with the fluorescence pattern detection device are performed.

[0003]The conventional example of such a fluorescence pattern detection device is explained with reference to drawing 5 and drawing 6.

[0004]The case 30 which the fluorescence pattern detection device shown in drawing 5 equipped the end with the radiation window 31, and was provided with the diaphragm 32 in which the center section carried out the opening to the inside, The ultraviolet ray lamp 33 which emits light in the excitation light of the fitness excited wavelengths L1 as shown in drawing 6 of the fluorescence pattern 41 of the detecting object 40 arranged between said radiation window 31 and the diaphragm 32, It is arranged in the side rather than the portion in which said diaphragm 32 carried out the opening inside said case 30, The camera 34 which detects the light from the fluorescence pattern 41 of said detecting object 40 excited by the excitation light emitted through said radiation window 31 from said ultraviolet ray lamp 33, The recognition part 35 which recognizes the fluorescence pattern 41 of said detecting object 40 as text etc. based on the detection result of this camera 34 is provided. The detecting object 40 shall move to an arrow X direction in drawing 5.

[0005]

[Problem to be solved by the invention]However, in the case of the conventional fluorescence pattern detection device mentioned above, it is what is exciting the fluorescence pattern 41 of the detecting object 40 only by the excitation light of the single wavelength L1 from the ultraviolet ray lamp 33, The problem that excitation of the fluorescence pattern of detecting objects, such as mail which had the two fitness excited wavelengths L1 and L2 since the luminosity currently adopted was increased in recent years, could not be performed efficiently occurred.

[0006]In light of the above-mentioned circumstances, this invention is a thing.

The purpose is to provide the mail processing unit using the fluorescence pattern detection device and this fluorescence pattern detection device which can detect efficiently the fluorescence pattern of detecting objects, such as mail with excited wavelengths.

[0007]

[Means for solving problem]The fluorescence pattern detection device of this invention which detects a fluorescence pattern with two or more excited wavelengths given to the detecting object is characterized by that the fluorescence pattern detection device of this invention comprises the following.

The excitation device which emits light in the excitation light of two or more wavelength corresponding to the fluorescence pattern of said detecting object.

The optical system unit which consists of a euphotic means to detect the light from the fluorescence pattern of said detecting object excited by the excitation light of two or more wavelength from this excitation device.

A recognition means to recognize the fluorescence pattern of said detecting object based on the detecting signal of said optical system unit.

[0008]Two or more excited wavelengths of the fluorescence pattern given to said detecting object are the 1st and 2nd fitness excited wavelengths, for example, and the 1st excitation part that emits light in the excitation light of the 1st fitness excited wavelengths, and the 2nd excitation part that emits light in the excitation light of the 2nd fitness excited wavelengths can constitute said excitation device.

[0009]The 1st excitation part can constitute the 2nd excitation part with an ultraviolet ray lamp by the light-emitting member which emits light in the excitation light of said 2nd fitness excited wavelengths by the excitation light from an ultraviolet ray lamp.

[0010]The fluorescence pattern detection device of this invention comprises:

The case which equipped the end with the radiation window and was provided with the diaphragm in which the center section carried out the opening to the inside.

The ultraviolet ray lamp which emits light in the excitation light of the 1st fitness excited wavelengths of the fluorescence pattern of said detecting object arranged between said radiation window and a diaphragm.

The light-emitting member which is arranged at the wall surface by the side of the ultraviolet ray lamp of said diaphragm, and emits light in the excitation light of said 2nd fitness excited wavelengths by the excitation light from this ultraviolet ray lamp.

It is arranged in the side rather than the portion in which said diaphragm carried out the opening inside said case, A recognition means to recognize the fluorescence pattern of said detecting object based on the output signal of the photo detector which detects the light from the fluorescence pattern of said detecting object excited by each excitation light emitted through said radiation window, and this photo detector from said ultraviolet ray lamp and a light-emitting member.

[0011]According to the fluorescence pattern detection device of such composition, detection and recognition of detecting objects, such as mail with two or more fitness excited wavelengths, of a fluorescence pattern are efficiently realizable with the simple composition using the light-emitting member which emits light by the excitation light from an ultraviolet ray lamp and this ultraviolet ray lamp.

[0012]Since the mail processing unit of this invention is provided with the fluorescence pattern detection device of composition of having mentioned above, for example, it is being adopted in recent years, the two fitness excited wavelengths L1 and the fluorescence pattern of mail with L2 can be detected efficiently, and it can recognize them.

[0013]Since it is ** with which the mail rework part which gives the fluorescence pattern for discernment to mail by the read station and this mail processing unit itself of the mail in which the fluorescence pattern detection device of composition of having mentioned above was already given to said fluorescence pattern was equipped according to the mail processing unit of this invention, It becomes possible to process efficiently the mail to which the fluorescence pattern for discernment was newly given with the mail which is fed into this mail processing unit, and to which said fluorescence pattern was already given, and this mail processing unit itself.

[0014]

[Mode for carrying out the invention]Below, an embodiment of the invention is described in detail.

[0015]Drawing 1 is provided with the following.

The case 1 which it is an outline sectional view showing the composition of the fluorescence pattern detection device of an embodiment of the invention, and this fluorescence pattern detection device equipped the end with the radiation window 2, and was provided with the diaphragm 3 in which the center section carried out the opening to the inside.

The ultraviolet ray lamp 4 which emits light in 1st excitation light La of the 1st fitness excited wavelengths L1 in the fluorescence pattern 11 of the detecting objects 10, such as mail arranged between said radiation window 2 and the diaphragm 3.

The light-emitting member 5 which is arranged at the wall surface by the side of the ultraviolet ray lamp 4 of said diaphragm 3, and emits light in the 2nd excitation light Lb of the 2nd fitness excited wavelengths L2 in the fluorescence pattern 11 with 1st excitation light La from this ultraviolet ray lamp 4.

It is arranged in the side (right-hand side) rather than the portion in which said diaphragm 3 carried out the opening inside said case 1, Each excitation light La emitted through said radiation window 2 from said ultraviolet ray lamp 4 and the light-emitting member 5, The optical system unit which consists of the camera (CCD camera) 6 which is a photo detector which receives and detects the light from the fluorescence pattern 11 of said detecting object 10 excited by Lb through the opening part of said radiation window 2 and the center section of the diaphragm 3, The recognition part 7 which recognizes concretely the fluorescence pattern 11 of said detecting object 10 as text etc. based on the output signal of the camera 6 of this optical system unit.

The detecting object 10 shall move to an arrow X direction in drawing 1 (conveyance).

[0016]It faces detecting the fluorescence pattern 11 of the detecting object 10 which moves to an arrow X direction according to the fluorescence pattern detection device of composition of having mentioned above, First, while making 1st excitation light La that turned on said ultraviolet ray lamp 4 and had the 1st fitness excited wavelengths L1 emit light and ejecting this 1st excitation light La from said radiation window 2, Excite the light-emitting member 5 with said 1st excitation light La, the 2nd excitation light Lb of the 2nd fitness excited wavelengths L2 is made to emit light, and this 2nd excitation light Lb is also ejected from said radiation window 2.

[0017]Thereby, the fluorescence pattern 11 of the detecting object 10 is excited by the 1st [said] excitation light La and 2nd excitation light Lb, respectively, and the light corresponding to the fluorescence pattern 11 enters into the camera 6 through the opening part of said radiation window 2 and the center section of the diaphragm 3.

[0018]As a result, a bigger signal output and S/N ratio than a conventional example are obtained by the photoelectric conversion in the camera 6 which is a photo detector, and said fluorescence pattern 11 can be efficiently recognized as text etc. by the recognition part 7.

[0019]Next, with reference to drawing 3 and drawing 4, the outline of the mail processing unit provided with the fluorescence pattern detection device (it gives mark 26 below and shown) of composition of having mentioned above is explained.

[0020]The mail processing unit shown in drawing 3 has the main part 20 of the shape of a large-scale core box, and loads into a left part the postcard 15 grade which is mail in drawing 3 of the main part 20, It had the supply system 21 which it sends out one sheet at a time, and had the Type accumulation system 22 of the long picture which classifies the postcard 15 supplied to the center section of the main part 20 from the supply system 21, and the distribution system 23 of postcard 15 grade and the rework part 24 are formed in the field of the point of the carrying path formed through the Type accumulation system 22 bottom from the supply system 21.

[0021]Said supply system 21 possesses the reading part etc. which read the variety of information of the zip code containing said fluorescence pattern detection device 26 which detects the accumulation part 25 which accumulates postcard 15 grade, and the fluorescence pattern 11 which is given to the postcard 15 grade sent out from this accumulation part 25, and which were described, an address, etc.

[0022]The ink-jet printer 27 which prints the fluorescence pattern 11a with the 1st and 2nd fitness excited wavelengths L1 according to the reading result of a zip code, an address, etc., and L2 on said rework part 24 by the reading part mentioned above, The fluorescence pattern

detection device 26 for checking the fluorescence pattern 11a printed by this ink-jet printer 27 is formed.

[0023] Drawing 4 shows an example of the postcard 15 on which the fluorescence pattern 11a was printed by the ink-jet printer 27.

[0024] According to the mail processing unit provided with the fluorescence pattern detection device 26 of composition of having mentioned above, the two fitness excited wavelengths L1 adopted in recent years and the fluorescence pattern 11 of the mail 15 with L2 can be detected efficiently, and can be recognized. According to the mail processing unit provided with the fluorescence pattern detection device 26 of composition of having mentioned above, it becomes possible to process efficiently the mail to which the fluorescence pattern 11a for discernment was newly given with this mail processing unit itself.

[0025]

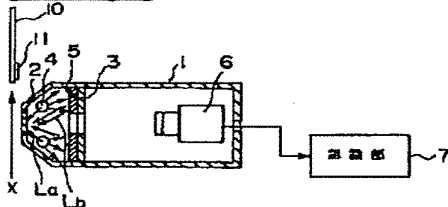
[Effect of the Invention] According to this invention, the fluorescence pattern detection device which can perform detection and recognition of a detecting object of a fluorescence pattern efficiently with the simple composition of using two or more excitation light can be provided.

[0026] It is possible according to this invention, to detect efficiently the two fitness excited wavelengths L1 and the fluorescence pattern of mail with L2, and to recognize them, for example, it is being adopted in recent years, The mail processing unit which can process efficiently the mail to which the fluorescence pattern for discernment was newly given with the mail processing unit itself can be provided.

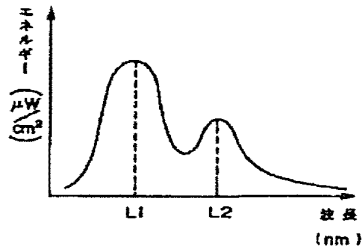
[Translation done.]

DRAWINGS

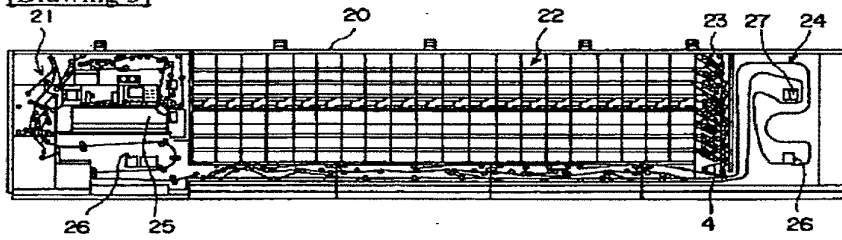
[Drawing 1]



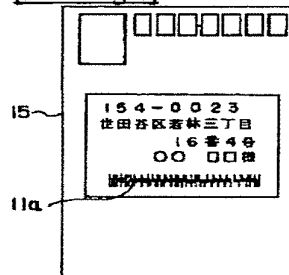
[Drawing 2]



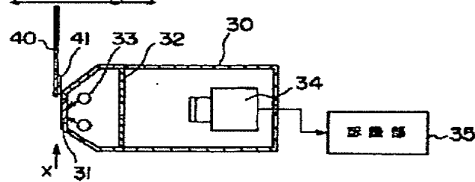
[Drawing 3]



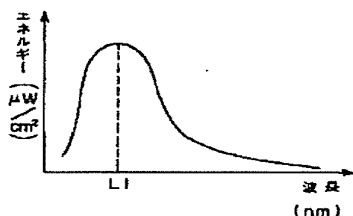
[Drawing 4]



[Drawing 5]



[Drawing 6]



[Translation done.]

[Claim 1] A fluorescence pattern detection device which detects a fluorescence pattern with two or more excited wavelengths given to a detecting object, comprising:

An excitation device which emits light in excitation light of two or more wavelength corresponding to a fluorescence pattern of said detecting object.

A recognition means to recognize a fluorescence pattern of said detecting object based on a detecting signal of an optical system unit which consists of a euphotic means to detect light from a fluorescence pattern of said detecting object excited by excitation light of two or more wavelength from this excitation device, and said optical system unit.

[Claim 2] The 1st given to a detecting object, a fluorescence pattern detection device which detects a fluorescence pattern with the 2nd fitness excited wavelengths characterized by comprising the following.

The 1st excitation part that emits light in excitation light of the 1st fitness excited wavelengths of a fluorescence pattern of said detecting object.

An excitation device which consists of the 2nd excitation part that emits light in excitation light of said 2nd fitness excited wavelengths by excitation light from this 1st excitation part.

An optical system unit which consists of a euphotic means to detect light from a fluorescence pattern of said detecting object excited by excitation light of the 1st [from this excitation device], and 2nd fitness excited wavelengths.

A recognition means to recognize a fluorescence pattern of said detecting object based on a detecting signal of said optical system unit.

[Claim 3] The 1st given to a detecting object, a fluorescence pattern detection device which detects a fluorescence pattern with the 2nd fitness excited wavelengths characterized by comprising the following.

An ultraviolet ray lamp which emits light in excitation light of the 1st fitness excited wavelengths of a fluorescence pattern of said detecting object.

An excitation device which consists of a light-emitting member which emits light in excitation light of said 2nd fitness excited wavelengths by excitation light from this ultraviolet ray lamp.

An optical system unit which consists of a photo detector which detects light from a fluorescence pattern of said detecting object excited by excitation light of the 1st [from this excitation device], and 2nd fitness excited wavelengths.

A recognition means to recognize a fluorescence pattern of said detecting object based on a detecting signal of said optical system unit.

[Claim 4]The 1st given to a detecting object, a fluorescence pattern detection device which detects a fluorescence pattern with the 2nd fitness excited wavelengths characterized by comprising the following.

A case which equipped an end with a radiation window and was provided with a diaphragm in which a center section carried out the opening to an inside.

An ultraviolet ray lamp which emits light in excitation light of the 1st fitness excited wavelengths of a fluorescence pattern of said detecting object arranged between said radiation window and a diaphragm.

A light-emitting member which is arranged at a wall surface by the side of an ultraviolet ray lamp of said diaphragm, and emits light in excitation light of said 2nd fitness excited wavelengths by excitation light from this ultraviolet ray lamp.

It is arranged in the side rather than a portion in which said diaphragm carried out the opening inside said case, A recognition means to recognize a fluorescence pattern of said detecting object based on an output signal of a photo detector which detects light from a fluorescence pattern of said detecting object excited by each excitation light emitted through said radiation window, and this photo detector from said ultraviolet ray lamp and a light-emitting member.

[Claim 5]A mail processing unit which processes mail to which a fluorescence pattern with two or more excited wavelengths was given, comprising:

An excitation device which emits light in excitation light of two or more wavelength corresponding to a fluorescence pattern of mail.

A recognition means to recognize a fluorescence pattern of said mail based on a detecting signal of an optical system unit which consists of a euphotic means to detect light from a fluorescence pattern of said mail excited by excitation light of two or more wavelength from this excitation device, and said optical system unit.

[Claim 6]A mail processing unit which processes mail to which a fluorescence pattern with two or more excited wavelengths was given, comprising:

An excitation device which emits light in excitation light of two or more wavelength corresponding to a fluorescence pattern of mail.

A recognition means to recognize a fluorescence pattern of said mail based on a detecting signal of an optical system unit which consists of a euphotic means to detect light from a fluorescence pattern of said mail excited by excitation light of two or more wavelength from this excitation device, and said optical system unit.

[Translation done.]