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(54) **A stamp producing device**

Vorrichtung zur Herstellung von Stempeln

Appareil de production de cachets

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Description

[0001] The present invention relates to a production method and to a device for producing, using the production method, a stamp capable of consecutive stamp printing.

[0002] One example of a stamp capable of consecutive stamp printing includes a porous resin plate having open cells. A thin-film layer for blocking transmission of ink is formed at certain areas on a surface of the resin plate. Areas of the surface not formed with the thin-film layer protrude above the thin film layer and correspond to the print portion of the stamp. Because the open cells exposed at the print portion are in connection with the interior portion of the resin plate, ink impregnating the resin plate can be transmitted to the print portion.

[0003] Japanese Laid-Open Patent Publication No. HEI-6-24114 describes a method for forming the print portion of the stamp into a protruding shape corresponding to characters, figures, and like to be printed. First, a photosensitive resin matrix is produced with the characters and figures shaped in an indented form. The matrix is then preheated and brought into contact with the surface of the porous resin plate. The porous resin plate melts and solidifies as a result to form a thin film layer for preventing transmission of ink. Areas of the surface of the resin plate form the print portion, which allows transmission of ink.

[0004] EP-A-644 059 discloses a seal manufacturing apparatus wherein physical stimuli such as ultraviolet rays or laser beams act on areas of a surface of a resin block. The physical properties of these areas are changed and the exposed or non-exposed areas of the resin block can then be removed by the action of a predetermined fluid leaving either the exposed or the non-exposed areas standing proud. The resin block can then be used as a seal.

[0005] In the production method described in Hei-6-24114, there is a need to form the photosensitive resin matrix with an indented shape corresponding to the characters and figures to be printed. In order to properly melt the porous resin plate, the matrix must be heated to a specific temperature. As a result, the production method is extremely complicated and troublesome. It has therefore been difficult to easily prepare a stamp having a print surface with original content.

[0006] It is an objective of the present invention to provide a stamp producing device capable of preparing stamps using a simple porous resin plate.

[0007] According to the present invention there is provided a stamp producing device for use with a plate-shaped and porous stamp member with at least one surface having open cells, the device comprising:

- a movable member for supporting the stamp member in a predetermined posture with respect to the heating unit;
- a heating unit using a laser light beam melt the sur-

face of the stamp member;

a drive unit for generating relative movement between the heating unit and the movable member;

a controller for driving the drive unit to generate relative movement between the heating unit and the movable member and for selectively driving the heating unit according to a print pattern to melt the surface of the stamp member in order to form a thin-film layer for blocking transmission of ink according to the print pattern.

[0008] Accordingly, the controller selectively drives the heating unit according to the print pattern and drives the drive unit to generate relative movement following the surface of the plate-shaped stamp member in order to melt and solidify a flat portion corresponding to the print pattern, thereby forming the thin film layer for preventing transmission of ink and also forming the print portion for allowing transmission of ink at flat portions not corresponding to the print pattern. Therefore, a plate-shaped stamp can be produced.

[0009] Therefore, the thin film layer for preventing transmission of ink formed by melting and solidifying the flat portions of the stamp member is formed by being irradiated with laser light. Print portions are formed by the areas not irradiated by the laser light.

[0010] When scanning width of the heating unit is set to longer than the width of the plate-shaped stamp member, then the thin film layer for preventing transmission of ink can be formed across the entire surface of the plate-shaped stamp member.

[0011] When a compression member is provided for compressing the plate-shaped stamp member while it is being irradiated by the laser beam, then open cells can be reliably closed at melted portions to form the thin film layer for preventing transmission of ink.

[0012] The above and other objects, features and advantages of the invention will become more apparent from reading the following description of the preferred embodiment taken in connection with the accompanying drawings in which:

Fig. 1 is a perspective view showing a porous resin plate used in a stamp unit according to the present invention;

Fig. 2 is a perspective view showing a print member formed using the porous resin plate shown in Fig. 1;

Fig. 3 is a perspective view showing a stamp member formed by forming a print surface on the surface of the print member shown in Fig. 2;

Fig. 4 is a side view in partial cross section showing the stamp unit of the present invention, in which the stamp member is used;

Fig. 5 is a perspective view showing the stamp unit shown in Fig. 4;

Fig. 6 is a perspective view partially in phantom showing a stamp producing unit according to the present invention;

Fig. 7 is a perspective view showing components of the stamp unit shown in Fig. 5 and of a movable member of the stamp producing unit shown in Fig. 6;

Fig. 8 is a plan view showing a laser beam scanner unit of the stamp producing unit shown in Fig. 6;

Fig. 9 is a cross-sectional view showing the laser beam scanner unit shown in Fig. 8; and

Fig. 10 is a block diagram schematically showing configuration of a control system of the stamp producing unit shown in Fig. 6.

[0013] A device for producing a stamp according to a preferred embodiment of the present invention will be described while referring to the accompanying drawings wherein like parts and components are designated by the same reference numerals to avoid duplicating description.

[0014] Fig. 1 is a perspective view showing a porous resin plate 20 used in the device according to the present embodiment. The porous resin plate 20 is a thin plate formed from a porous resin, such as polyurethane and polyethylene, and is filled with fine open cells. Because the porous resin plate 20 is filled with open cells, it is capable of transmitting ink from one surface to another. Fig. 2 is a perspective view showing a pre-stamp member 27 formed by pretreating the porous resin plate 20. The pre-stamp member 27 includes side surfaces 23 through which ink is not transmissible. The side surfaces 23 are formed by pressing a preheated mold against the side of the porous resin plate 20 to melt and solidify the open cells exposed thereon. The pre-stamp member 27 also includes a pre-stamp surface 22A forming an ink transmissible region from which a stamp surface 22 can be formed in a manner to be described later.

[0015] Fig. 3 is a perspective view showing a stamp member 28 formed by forming a stamp surface 22 on the pre-stamp member 27 shown in Fig. 2. The stamp surface 22 of the stamp member 28 includes an ink transmission portion 24 and an ink non-transmission portion 25 formed by processing the stamp surface 22A in a manner to be described later according to a predetermined print pattern.

[0016] Fig. 4 is a side view in partial cross section showing a stamp unit 35 in which the stamp member 28 is used. Fig. 5 is a perspective view showing the stamp unit 35. The stamp unit 35 has a case 31 formed from plastic or metal and a grip 34 provided to the upper surface of the case 31. A guide group 31 and an engagement portion 32 (to be described later) are provided to the side surface of the case 31. The stamp member 28 is housed in the case 31. The side surfaces 23 of the stamp member 28 and an inner wall 31a of the case 31 are attached together by an adhesive layer 30 so that the stamp member 28 is fixed to the case 31 with the stamp surface 22 exposed. An ink supporting layer 32 formed from a sponge and the like is placed inward from the stamp member 28 (that is, above the stamp member

28 as viewed in Fig. 4). Ink is continuously supplied from the ink support layer 32 to the stamp member 28. Further, a lattice-shaped support member 33 is provided to the upper portion of the ink support layer 32. The lattice-shaped support member 33 supports the stamp member 28 in a flush condition when a stamp is being printed.

[0017] Next, the stamp producing device according to the present embodiment will be described while referring to Fig. 6.

[0018] The stamp producing device 50 includes: a main frame 55; a keyboard 51 provided at a front surface of the main frame 55; a display portion 52; a stamp producing portion 110 provided at the rear portion of the main frame 55; and a control system 100 provided in the main frame 55.

[0019] The keyboard 51 is provided with a stamp production key 56 and a variety of function keys, such as character keys and symbol keys. The display portion 52 is a liquid crystal display capable of displaying frames, a plurality of lines of character trains, and the like corresponding to a pattern inputted via the keyboard 51 as the subject of printing.

[0020] An insertion port 54 for inserting the stamp unit 35 into the stamp producing device 50 is formed in the side surface of the frame 55, that is, at the left side in the frame 55 as viewed in Fig. 6. A pair of guide bars 65 are disposed extending in the widthwise direction of the stamp producing device 50. A movable member 60 for supporting the stamp unit 35 is supported on the guide bars 65 so as to be freely slidably movable from the insertion port 54 to the stamp producing portion 110 in the widthwise direction of the stamp producing device 50. One end of a wire 63 is fixed to a protruding portion 67 provided at the side surface of the movable portion 60. The wire 63 is wrapped around a pair of pulleys 62, only one of which is shown in Fig. 6. The pulleys 62 are attached directly to a transport motor 59 (not shown in Fig. 6). The movable member 60 is configured to be slidably movable along the pair of guide bars 65 in an auxiliary scanning direction according to rotation of the transport motor 59.

[0021] The pre-stamp member 27 is preattached to the stamp unit 35 and the stamp unit 35 is mounted in the stamp producing device 50. The stamp unit 35 is mounted with the pre-stamp member 27 facing upward, as shown in Fig. 6, onto the movable member 60 when the movable member 60 is positioned at the side of the insertion port 54.

[0022] Next, components relating to the movable member 60 and the stamp unit 35 will be explained based on Fig. 7. A transparent plate 66 is shown in the drawings above the pre-stamp member 27 of the stamp unit 35. Pawl portions 68 capable of resiliently deforming are provided at four positions on side surfaces of the transparent plate 66. The transparent plate 66 can be fixed pressed against the pre-stamp member 27 by engaging the pawl portions 68 into the upper surface of the case 31 while the transparent plate 66 is in confrontation with

the pre-stamp member 27. The ink non-transmission portion 25 of the pre-stamp member 27 can be more easily melted when irradiated by laser light while compressed by the transparent plate 66 than while not compressed by the transparent plate 66.

[0023] Guide grooves 41 are formed in the sides of the grip 34. An engagement portion 42 is formed in the stamp unit 35. A C-shaped insertion portion 60a is formed in the movable member 60. Inward facing guide rails 61 for engaging with guide grooves 41 are formed in confrontation with each other on inner surfaces 601, 602 of the insertion portion 60a. Two pairs of rollers, only one pair 162, 163 of which are shown in Fig. 7, are provided in the inner surfaces 601, 602 of the insertion portion 60a so as to protrude into the insertion portion 60a. When a print surface 22 is to be formed, the grip 34 of the stamp unit 35 is inserted into the insertion portion 60a as guided by the guide rails 61. The rollers are urged toward the grip 34 by a spring (not shown in the drawings). The roller 163 engages in the engagement portion 42 formed in the stamp unit 35.

[0024] In this way, the position of the movable member 60 of the stamp unit 35 in the vertical direction, that is, as indicated by an arrow Z in Fig. 7, is determined by inserting the stamp unit 35 into the movable member 60 while engaging the guide rails 61 into the guide grooves 41 of the grip 34 of the stamp unit 35 in which the transparent plate 66 is mounted as described above. The position of the stamp unit 35 in the front and rear directions, that is, as indicated by an arrow Y in Fig. 7, is determined by urging force of by the roller 162 against the grip 34. Further, the position of the stamp unit 35 in the auxiliary scanning direction, that is the leftward and rightward direction as indicated by an arrow X in Fig. 7, is determined by engagement of the roller 163 in the engagement portion 42 formed in the case 31.

[0025] Next, an explanation will be provided for the stamp producing portion 110 of the stamp producing device 50 of the present embodiment while referring Figs. 8 and 9.

[0026] The stamp producing portion 110 of the stamp producing device 50 of the present embodiment is formed from a laser light scanner device 120. The laser light scanner device 120 has a substantially rectangular shape in plan view. A box-shaped unit case 121 is formed from a floor wall 121a and a peripheral wall 121b provided in an upright posture at the periphery of the wall 121a. A scanner motor 123 is fixed to an indented portion at the front edge of the unit case 121. A hexagonal mirror 124 having a hexagonal shape in plan view is fixed rotatable within a horizontal plane on a drive shaft (not shown in the drawings) of the scanner motor 123.

[0027] An indentation is formed at the substantial center, that is, in the front and rear direction, of the side portion of the unit case 121. A laser light source 125 is provided in the peripheral wall 121b at the indentation. The laser light source 125 is aligned so that laser light

LB emitted therefrom falls incident on the hexagon mirror 124. A compressor lens 127, a cylinder lens 128, and an ultrasonic light modulator 129 are disposed between the laser light source 125 and the hexagon mirror 124, that is, along a radiation pathway of the laser light LB.

[0028] A first F- θ lens 130 and a second F- θ lens 131 extending in the leftward and rightward direction are disposed at the left side center of the unit case 121, that is, as viewed in Fig. 9, and to the rear of the hexagon mirror 124. The first F- θ lens 130 and the second F- θ lens 131 are disposed with a predetermined distance therebetween in the frontward and rearward direction. A reflection mirror 132 for reflecting laser light LB transmitted through the second F- θ lens 131 downward is disposed extending in the leftward and rightward direction directly to the rear of the second F- θ lens 131. The unit case 121 is covered by a plate-shaped cover member 121d.

[0029] It is desirable that the pre-stamp member 27 be formed from a material whose surface melts and solidifies at temperatures between 60°C and 250°C. A material that melts at less than 60°C might melt during storage. A material that melts at greater than 250°C would require too much energy and time to melt. Also, control would be difficult. Accordingly, it is desirable that the laser light source 125 be capable of supplying energy for heating the pre-stamp surface 22A of the pre-stamp member 27 to between 60°C and 270°C. Examples for the laser lights source 125 would be a carbon dioxide gas laser, a YAG laser, an argon laser, a helium/neon laser, a semiconductor laser.

[0030] Next, the control system including a control portion 80 for controlling drive of the stamp producing portion 110 and the display portion 52 will be explained while referring to Fig. 10. It should be noted that the control system 100 is similar to control systems used in general laser printers so will be described only briefly here.

[0031] The control portion 80 includes: a CPU 81; a ROM 82 storing a variety of control programs; a RAM 83 having a variety of data memory regions; a timing control circuit (TC) 84 for generating timing signals for performing reading and writing of inputted data into and out of buffers; a video interface (V I/F) 86; and a keyboard interface (K I/F) 87 for receiving signals from the keyboard 51. The video interface 86 has a scanner buffer and outputs print information converted into bit image data to a DC controller circuit 118 for controlling the serial print portion 110. A bus 88 interconnects the components of the control portion 80. A drive circuit 72 for driving an LCD 71 of the display portion 51 is connected to the CPU 81 by the bus 88.

[0032] A variety of components are connected to a DC controller circuit 118 for controlling the stamp producing portion 110, including: a drive circuit 114 for driving the transport motor 59 to move the movable member 60; a drive circuit 115 for driving the laser light source 125; a drive circuit 116 for driving the scanner motor 123 for rotating the hexagon mirror 124; and a drive circuit 117

for driving the ultrasonic light modulator 129 to modulate the laser light LB.

[0033] The ROM 82 stores a control program for controlling overall operation of the stamp producing device 50 and also stores a dictionary for performing kana to kanji conversion. The ROM 82 also stores, in correspondence with code data, dot pattern data for a plurality of characters to be printed. The ROM 82 also stores, in correspondence with code data, dot pattern data for displaying a plurality of characters to be printed.

[0034] The RAM 83 is provided with an input buffer for storing inputted data, a print data buffer for storing dot pattern data for printing, and a variety of counters and registers.

[0035] Next, operations performed by the stamp producing device 50 to form print portions in the pre-stamp member 27 will be explained. First, when desired characters, symbols, or figures are inputted using the keyboard 51 of the input portion 57, the dot pattern corresponding to the inputted data is displayed on the LCD 71 of the display portion 52. While viewing content of the display, a user edits the character trains and the like using the keyboard 51 and confirms that the character trains and the like are in the form he or she wishes it to be printed.

[0036] Next, the user inserts a stamp unit 35 mounted with a pre-stamp member 27, which is not yet formed with a stamp surface 22, into the insertion port 54 and mounts it to the movable member 60. When input is received from the stamp production key 56 of the keyboard 51, then stamp producing operations are started on the pre-stamp member 27. That is, the CPU 81 transmits a drive signal to the transport motor drive circuit 114 via the DC controller circuit 118 to drive the transport motor 59. The movable member 60 is transported to the stamp producing device 10 via the wire 63 and following the guide rails 61. At the same time that the movable member 60 is being transported in this way, the CPU 81 transmits a drive signal to the laser light source drive circuit 115 via the DC controller circuit 118, whereupon the laser light source 135 emits the laser light LB. The CPU 81 transmits a print dot pattern signal to the ultrasonic light modulator drive circuit 117, whereupon the ultrasonic light modulator 129 selectively modulates the laser light LB so that portions of laser light LB corresponding to the ink non-transmission portion 25, which does not form the printing portion of the stamp member 28, propagate toward the hexagonal mirror 124 and so that portions of the laser light LB corresponding to the ink transmission portion 24 propagate away from the hexagonal mirror 124. In this way, on and off condition of the laser light LB can be modulated. At the same time, the CPU 81 transmits a drive signal to the scanner drive motor signal 116 to drive the scanner motor 123 to rotate the hexagon mirror 124.

[0037] After passing through the compressor lens 127, the ultrasonic light modulator 129, and the cylinder lens 128, the laser light LB falls incident onto the hexa-

gon mirror 124. Because the hexagon mirror 124 is rotating at a fixed speed, the incident laser light LB is reflected from each mirror surface at a predetermined angle and scanned in a main scanning direction, which is perpendicular to the auxiliary scanning direction, across a scanning range α , shown in Fig. 8, extending from a scanning start phase (indicated by the laser light LBS) to a scanning end phase (indicated by the laser light LBE). After, passing through the first and second F- θ lenses 130, 131, the laser light LB is reflected downward by the reflection mirror 132. The reflected laser light LB passes through a rectangular slit 121c formed in the floor 121a of the unit case 121 so as to extend in the leftward and rightward direction. The laser light LB is transmitted through the transparent plate 66 pressing on the upper surface of the pre-stamp member 27 in the stamp unit 35 set on the movable member 60. The laser light LB irradiates the upper surface of the pre-stamp member 27, thereby melting and solidifying the pre-stamp surface 22A. By repeating this operation, a thin film layer for preventing transmission of ink is formed at the ink non-transmission portion 25.

[0038] It should be noted that the scan range α is formed longer than the length of the widthwise direction of the pre-stamp member 27. This is so that the thin film layer for preventing ink from passing through the ink non-transmission portion 25 can be formed by melting and solidifying the entire surface, including widthwise edges, of the pre-stamp member 27. A stamp unit 35 provided with a stamp member 28 is completed by the operations described in detail above.

[0039] By preparing the stamp member 28 using the stamp producing device 50 of the present embodiment, there is no need to prepare a matrix with characters or figures of the print surface formed from an indented photosensitive resin portion. There is also no need to heat the matrix to a specific temperature in order to melt the porous resin plate. Predetermined characters and image data can be edited while viewing the display so that a stamp having a print portion formed from desired characters and the like can be easily prepared.

[0040] While the invention has been described in detail with reference to specific embodiments thereof, it would be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the invention, the scope of which is defined by the attached claims.

[0041] For example, in the above-described embodiment, the ink transmission portion 24 forms the character portion and the ink non-transmission portion 25 forms the portion without characters. However, the opposite is possible. That is, portions without characters can be formed by the ink transmission portion 24 and portions with characters can be formed by the ink non-transmission portion 25. When pressing the stamp on a recording medium, in the former case the character image is formed with ink, but in the latter condition, the portions without characters are formed by ink so that the

character image is formed from a white area.

[0042] Further, by using the infrared laser light to melt with a high energy, indentations can be formed at regions other than for desired picture elements so that ink can be prevented from clinging to non-picture element portions when the ink seeps.

[0043] Also, although in the embodiment the grip 34 is mounted in the insertion portion 60a of the movable member 60, the case 31 could be mounted in the insertion portion instead. In this case, grooves would be formed in the case for engaging with the guide rails in the insertion portion.

Claims

1. A stamp producing device for use with a plate-shaped and porous stamp member (27) with at least one surface having open cells, the device comprising:

a movable member (60) for supporting the stamp member (27) in a predetermined posture with respect to the heating unit;

a heating unit (125) using a laser light beam (LB) to melt the surface of the stamp member; a drive unit for generating relative movement between the heating unit (125) and the movable member (60);

a controller for driving the drive unit to generate relative movement between the heating unit (125) and the movable member (60) and for selectively driving the heating unit (125) according to a print pattern to melt the surface of the stamp member (27) in order to form a thin-film layer for blocking transmission of ink according to the print pattern.

2. A stamp producing device as claimed in claim 1, wherein the heating unit (125) includes:

a laser light source for generating the laser beam (LB);

a modulator for switching on and off condition of the laser light; and

deflector for deflecting the laser light switched by the modulator in order to irradiate the surface of the stamp member (27).

3. A stamp producing device as claimed in claim 2, wherein the controller controls the laser light source to generate laser light, the modulator to switch, according to the print pattern, the on/off condition of the laser light generated by the laser light source, and the deflector to irradiate the surface of the stamp member (27) with the laser light switched by the modulator.

4. A stamp producing device as claimed in claim 2 or 3, wherein the stamp member (27) has a width and the deflector of the heating unit is set to deflect the laser light to an irradiation width at least longer than the width of the stamp member (27).

5. A stamp producing device as claimed in any preceding claim, wherein the controller controls the heating unit to melt the surface of the stamp member (27) so that the print pattern is formed at areas of the surface other than areas corresponding to the thin-film layer.

6. A stamp producing device as claimed in any one of claims 1 to 5, wherein a support unit (34) supports the stamp member (27).

7. A stamp producing device as claimed in claim 6, wherein the support unit (34) includes:

a case surrounding the stamp member (27) at an outer periphery of the stamp member (27) not including the surface of the stamp member (27); and

a grip attached to the case.

8. A stamp producing device as claimed in claim 6 or 7, wherein the drive unit includes a movable member (60) for supporting the support unit (34) in a predetermined posture with respect to the heating unit (125).

9. A stamp producing device as claimed in claim 8, wherein:

the movable member (60) is moved to generate relative movement between the heating unit (125) and the surface of the stamp member (27) in an auxiliary scanning direction; the movable member (60) is formed with an insertion portion into which the support unit (34) is inserted to fix position of the support unit (34) in the movable member (60); and the movable member (60) includes rollers (163) disposed in the insertion portion, the rollers (163) positioning the support unit (34) in the auxiliary scanning direction and in a horizontal direction perpendicular to the auxiliary scanning direction.

10. A stamp producing device as claimed in claim 8 or 9, wherein:

the support unit (34) is formed with grooves (41); and

the movable member (60) is formed with guide rails (61) for engaging with the grooves (41) of the support unit (34) and positioning the sup-

port unit (34) in a vertical direction perpendicular to the auxiliary scanning direction and the horizontal direction.

11. A stamp producing device as claimed in any preceding claim, further comprising a compressing member (66) in confrontation with the surface of the stamp member (27) and for compressing the plate-shaped stamp member (27) while the heating unit (125) emits laser light to irradiate the surface of the stamp member (27). 5
12. A stamp producing device as claimed in claim 11, wherein the compressing member (66) is transparent. 10
13. A stamp producing device as claimed in claim 11, wherein the compressing member (66) is a transparent plate shaped member. 15
14. A stamp producing device as claimed in any one of claims 11, 12 and 13 when appendant to any one of claims 6 to 10 wherein the compressing member (66) includes pawls (68) for engaging with the case of the support unit (34) so that the compressing member (66) presses against the surface of the stamp member (27). 20
15. A stamp producing device as claimed in any preceding claim in combination with a stamp member (27). 25

Patentansprüche

1. Stempelherstellungsvorrichtung zur Verwendung mit einem plattenförmigen und porösen Stempelbauteil (27) mit wenigstens einer Oberfläche, die offene Zellen hat, wobei die Vorrichtung folgendes aufweist: 30
 - ein bewegliches Bauteil (60) zum Tragen des Stempelbauteils (27) in einer vorbestimmten Haltung in Bezug auf die Heizeinheit;
 - eine Heizeinheit (125) unter Verwendung eines Laserlichtstrahls (LB), um die Oberfläche des Stempelbauteils aufzuschmelzen;
 - eine Antriebseinheit zur Erzeugung einer relativen Bewegung zwischen der Heizeinheit (125) und dem beweglichen Bauteil (60); 35
 - eine Steuerung zum Ansteuern der Antriebseinheit, um eine relative Bewegung zwischen der Heizeinheit (125) und dem beweglichen Bauteil (60) zu erzeugen, und zum wahlweisen Ansteuern der Heizeinheit (125) gemäß einem Druckmuster, um die Oberfläche des Stempelbauteils (27) aufzuschmelzen, um eine Dünnschicht zur Verhinderung der Übertragung 40

von Tinte gemäß dem Druckmuster zu erzeugen.

2. Stempelherstellungsvorrichtung gemäß Anspruch 1, wobei die Heizeinheit (125) folgendes enthält:
 - eine Laserlichtquelle zur Erzeugung des Laserlichtstrahls (LB) ;
 - einen Modulator zum Schalten des EIN- und AUS-Zustandes des Laserlichts; und
 - einen Deflektor zum Ablenken des Laserlichts, das durch den Modulator geschaltet wird, um die Oberfläche des Stempelbauteils (27) zu bestrahlen.
3. Stempelherstellungsvorrichtung gemäß Anspruch 2, wobei die Steuerung die Laserlichtquelle steuert, um Laserlicht zu erzeugen, den Modulator steuert, um ihn gemäß dem Druckmuster zu schalten, den EIN-/AUS-Zustand des Laserlichts, das durch die Laserlichtquelle erzeugt wird, und den Deflektor, um die Oberfläche des Stempelbauteils (27) mit dem Laserlicht zu bestrahlen, der durch den Modulator geschaltet wird.
4. Stempelherstellungsvorrichtung gemäß Anspruch 2 oder 3, wobei das Stempelbauteil (27) eine Breite hat, und der Deflektor der Heizeinheit so eingestellt ist, daß er das Laserlicht auf einer Bestrahlungsbreite ablenkt, die mindestens länger als die Breite des Stempelbauteils (27) ist.
5. Stempelherstellungsvorrichtung gemäß einem der vorhergehenden Ansprüche, wobei die Steuerung die Heizeinheit steuert, um die Oberfläche des Stempelbauteils (27) aufzuschmelzen, so daß das Druckmuster an Flächen der Oberfläche mit Ausnahme derjenigen Flächen, die der Dünnschicht entsprechen, ausgebildet wird. 35
6. Stempelherstellungsvorrichtung gemäß einem der Ansprüche 1 bis 5, wobei eine Trägereinheit (34) das Stempelbauteil (27) trägt.
7. Stempelherstellungsvorrichtung gemäß Anspruch 6, wobei die Trägereinheit (34) folgendes enthält:
 - ein Gehäuse, das das Stempelbauteil (27) an einem Außenumfang des Stempelbauteils (27) umgibt, ausschließlich der Oberfläche des Stempelbauteils (27); und
 - einen Griff, der an dem Gehäuse angebracht ist.
8. Stempelherstellungsvorrichtung gemäß Anspruch 6 oder 7, wobei die Antriebseinheit ein bewegliches Bauteil (60) enthält, um die Trägereinheit (34) in einer vorbestimmten Haltung in Bezug zu der Heiz- 45

einheit (125) zu tragen.

9. Stempelherstellungsvorrichtung gemäß Anspruch 8, wobei das bewegliche Bauteil (60) bewegt wird, um eine relative Bewegung zwischen der Heizeinheit (125) und der Oberfläche des Stempelbauteils (27) in einer Hilfsabtastrichtung zu erzeugen;
 - das bewegliche Bauteil (60) mit einem Einsatzabschnitt ausgebildet ist, in den die Trägereinheit (34) eingesetzt wird, um eine Position der Trägereinheit (34) in dem beweglichen Bauteil (60) zu fixieren; und
 - das bewegliche Bauteil (60) Walzen (163) enthält, die in dem Einsatzabschnitt angeordnet sind, wobei die Walzen (163) die Trägereinheit (34) in der Hilfsabtastrichtung und in einer horizontalen Richtung senkrecht zu der Hilfsabtastrichtung positionieren.
10. Stempelherstellungsvorrichtung gemäß Anspruch 8 oder 9, wobei:
 - die Trägereinheit (34) mit Nuten (41) ausgebildet ist; und
 - das bewegliche Bauteil (60) mit Führungsschienen (61) ausgebildet ist, um mit den Nuten (41) der Trägereinheit (34) in Eingriff zu gelangen, und die Trägereinheit (34) in einer vertikalen Richtung senkrecht zur Hilfsabtastrichtung und der horizontalen Richtung zu positionieren.
11. Stempelherstellungsvorrichtung gemäß einem der vorhergehenden Ansprüche, des weiteren aufweisend ein Kompressionsbauteil (66) in Gegenüberstellung mit der Oberfläche des Stempelbauteils (27) und zum Zusammendrücken des plattenförmigen Stempelbauteils (27), während die Heizeinheit (125) Laserlicht abgibt, um die Oberfläche des Stempelbauteils (27) zu bestrahlen.
12. Stempelherstellungsvorrichtung gemäß Anspruch 11, wobei das Kompressionsbauteil (66) transparent ist.
13. Stempelherstellungsvorrichtung gemäß Anspruch 11, wobei das Kompressionsbauteil (66) ein transparentes, plattenförmiges Bauteil ist.
14. Stempelherstellungsvorrichtung gemäß einem der Ansprüche 11, 12 und 13, wenn sie zu irgendeinem der Ansprüche 6 bis 10 gehören, wobei das Kompressionsbauteil (66) Klauen (68) enthält, um mit dem Gehäuse der Trägereinheit (34) in Eingriff zu stehen, so daß das Kompressionsbauteil (66) gegen die Oberfläche des Stempelbauteils (27) drückt.

15. Stempelherstellungsvorrichtung gemäß einem der vorhergehenden Ansprüche in Kombination mit einem Stempelbauteil (27).

Revendications

1. Dispositif de fabrication de tampon destiné à être utilisé avec un élément de tampon poreux et de forme en plaque (27) avec au moins une surface présentant des cellules ouvertes, le dispositif comprenant :
 - un élément mobile (60) destiné à supporter l'élément de tampon (27) selon une posture prédéterminée eu égard à l'unité de chauffage ;
 - une unité de chauffage (125) utilisant un faisceau de lumière laser (LB) pour faire fondre la surface de l'élément de tampon ;
 - une unité d'entraînement destinée à générer un déplacement relatif entre l'unité de chauffage (125) et l'élément mobile (60) ;
 - un contrôleur destiné à attaquer l'unité d'entraînement pour générer un déplacement relatif entre l'unité de chauffage (125) et l'élément mobile (60) et à attaquer sélectivement l'unité de chauffage (125) en fonction d'une configuration d'impression pour faire fondre la surface d'un élément de tampon (27) de façon à former une couche à film mince pour bloquer la transmission de l'encre selon la configuration d'impression.
2. Dispositif de fabrication de tampon selon la revendication 1, dans lequel l'unité de chauffage (125) inclut :
 - une source de lumière laser destinée à générer le faisceau laser (LB) ;
 - un modulateur destiné à commuter la condition activée et désactivée de la lumière laser ; et
 - un déflecteur destiné à dévier la lumière laser commutée par le modulateur de façon à irradier la surface de l'élément de tampon (27).
3. Dispositif de fabrication de tampon selon la revendication 2, dans lequel le contrôleur commande la source de lumière laser pour générer la lumière laser, le modulateur pour commuter, en fonction de la configuration d'impression, la condition activée/désactivée de la lumière laser générée par la source de lumière laser et le déflecteur pour irradier la surface de l'élément de tampon (27) avec la lumière laser commutée par le modulateur.
4. Dispositif de fabrication de tampon selon la revendication 2 ou 3, dans lequel l'élément de tampon (27) présente une largeur et le déflecteur de l'unité

de chauffage est fixé pour dévier la lumière laser sur une largeur d'irradiation au moins plus longue que la largeur de l'élément de tampon (27).

5. Dispositif de fabrication de tampon selon l'une quelconque des revendications précédentes, dans lequel le contrôleur commande l'unité de chauffage pour faire fondre la surface de l'élément de tampon (27) de telle sorte que la configuration d'impression est formée dans les zones de la surface autres que les zones correspondant à la couche à film mince. 5
6. Dispositif de fabrication de tampon selon l'une quelconque des revendications 1 à 5, dans lequel une unité de support (34) supporte l'élément de tampon (27). 10
7. Dispositif de fabrication de tampon selon la revendication 6, dans lequel l'unité de support (34) inclut : 15
 - un boîtier entourant l'élément de tampon (27) à une périphérie extérieure de l'élément de tampon (27) n'incluant pas la surface de l'élément de tampon (27) ; et
 - une poignée fixée au boîtier. 20
8. Dispositif de fabrication de tampon selon la revendication 6 ou 7, dans lequel l'unité d'entraînement inclut un élément mobile (60) destiné à supporter l'unité de support (34) selon une posture prédéterminée eu égard à l'unité de chauffage (125). 25
9. Dispositif de fabrication de tampon selon la revendication 8, dans lequel : 30
 - l'élément mobile (60) est déplacé pour générer un déplacement relatif entre l'unité de chauffage (125) et la surface de l'élément de tampon (27) selon une direction de balayage secondaire ; 35
 - l'élément mobile (60) est formé avec une partie d'insertion dans laquelle l'unité de support (34) est insérée pour fixer la position de l'unité de support (34) dans l'élément mobile (60) ; et
 - l'élément mobile (60) inclut des rouleaux (163) disposés dans la partie d'insertion, les rouleaux (163) positionnant l'unité de support (34) selon la direction de balayage secondaire et selon une direction horizontale perpendiculaire à la direction de balayage secondaire. 40
10. Dispositif de fabrication de tampon selon la revendication 8 ou 9, dans lequel : 45
 - l'unité de support (34) est formée de rainures (41) ; et
 - l'élément mobile (60) est formé de rails de guidage (61) destinés à engager les rainures (41) 50

de l'unité de support (34) et à positionner l'unité de support (34) selon une direction verticale perpendiculaire à la direction de balayage secondaire et à la direction horizontale.

11. Dispositif de fabrication de tampon- selon l'une quelconque des revendications précédentes, comprenant, en outre, un élément de compression (66) en confrontation avec la surface de l'élément de tampon (27) et destiné à comprimer l'élément de tampon en forme de plaque (27) tandis que l'unité de chauffage (125) émet une lumière laser pour irradier la surface de l'élément de tampon (27). 5
12. Dispositif de fabrication de tampon selon la revendication 11, dans lequel l'élément de compression (66) est transparent. 10
13. Dispositif de fabrication de tampon selon la revendication 11, dans lequel l'élément de compression (66) est un élément transparent en forme de plaque. 15
14. Dispositif de fabrication de tampon selon l'une quelconque des revendications 11, 12 et 13 lorsqu'elle est dépendante de l'une quelconque des revendications 6 à 10, dans lequel l'élément de compression (66) inclut des cliquets (68) destinés à engager le boîtier de l'unité de support (34) de telle sorte que l'élément de compression (66) s'appuie contre la surface de l'élément de tampon (27). 20
15. Dispositif de fabrication de tampon selon l'une quelconque des revendications précédentes en association avec un élément de tampon (27). 25

FIG. 1

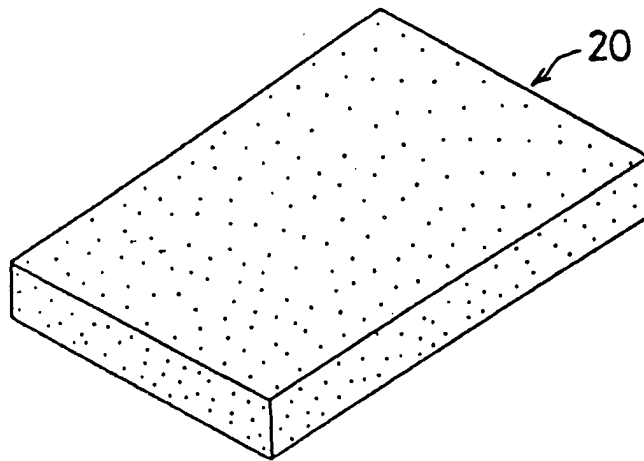


FIG. 2

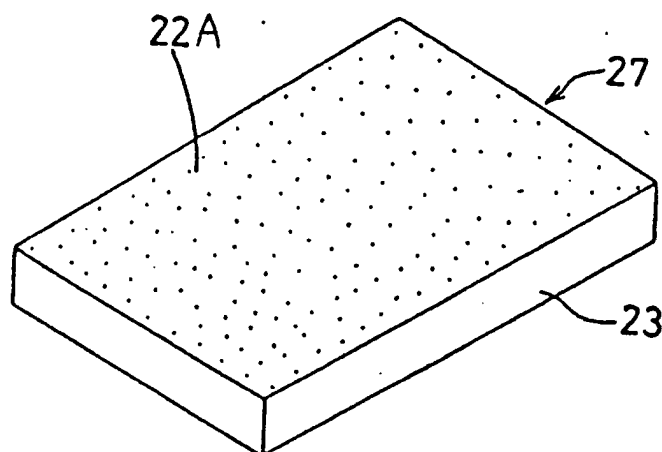


FIG. 3

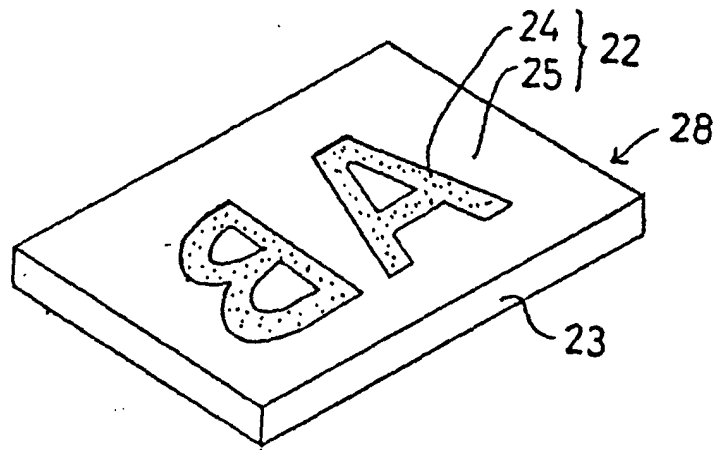


FIG. 4

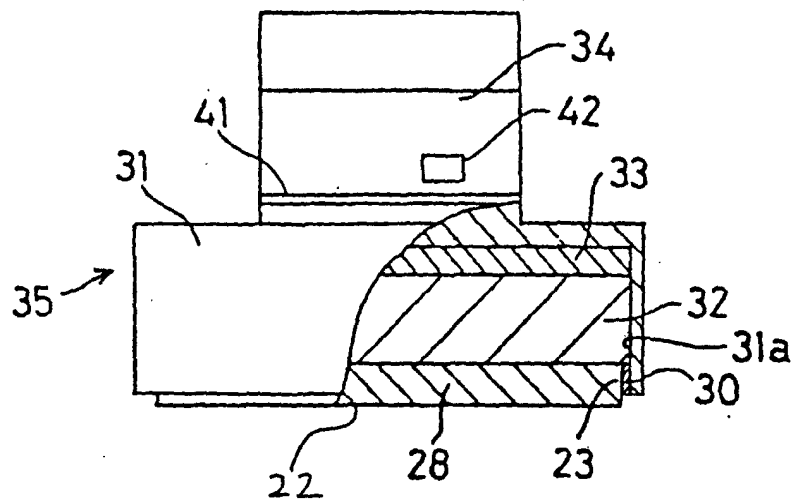
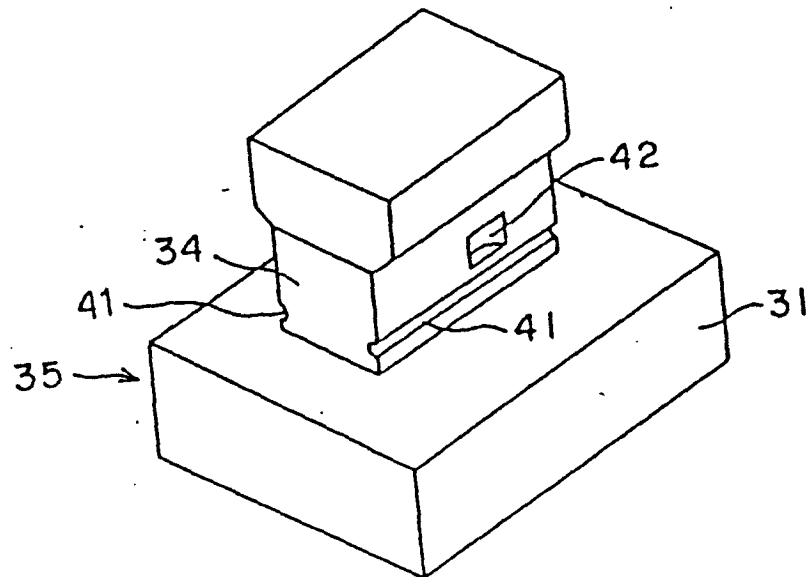
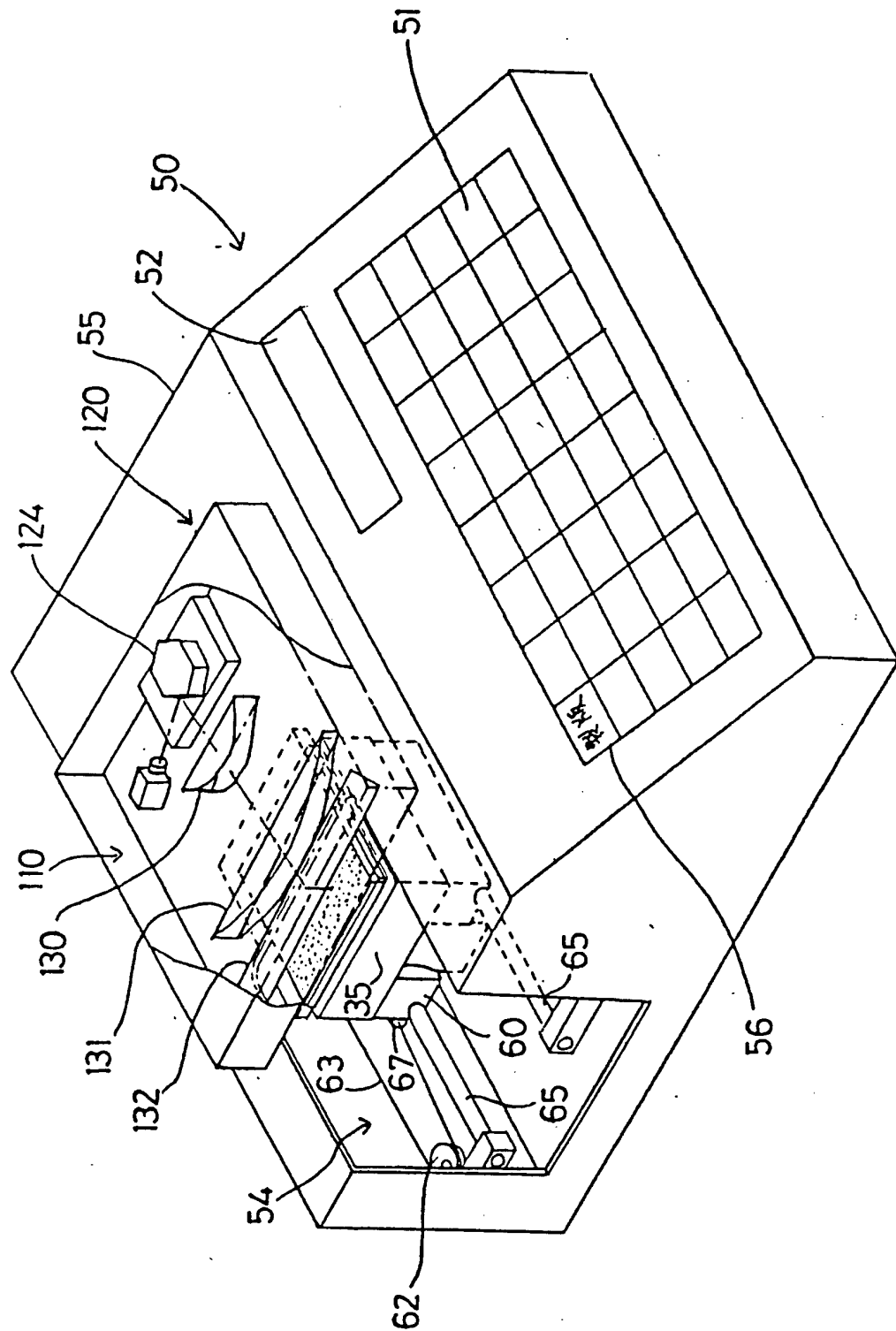


FIG. 5



F16.6



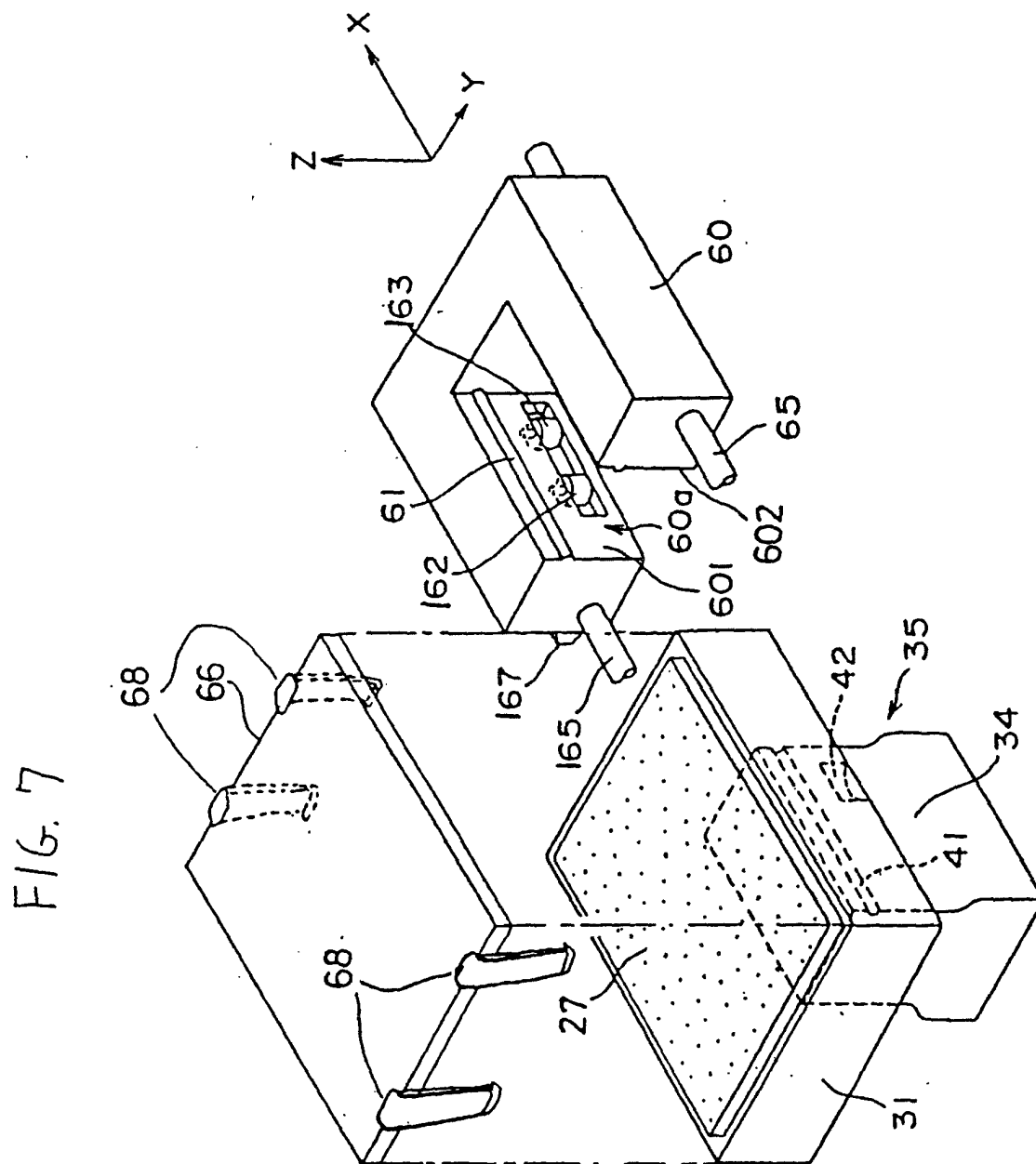


FIG. 8

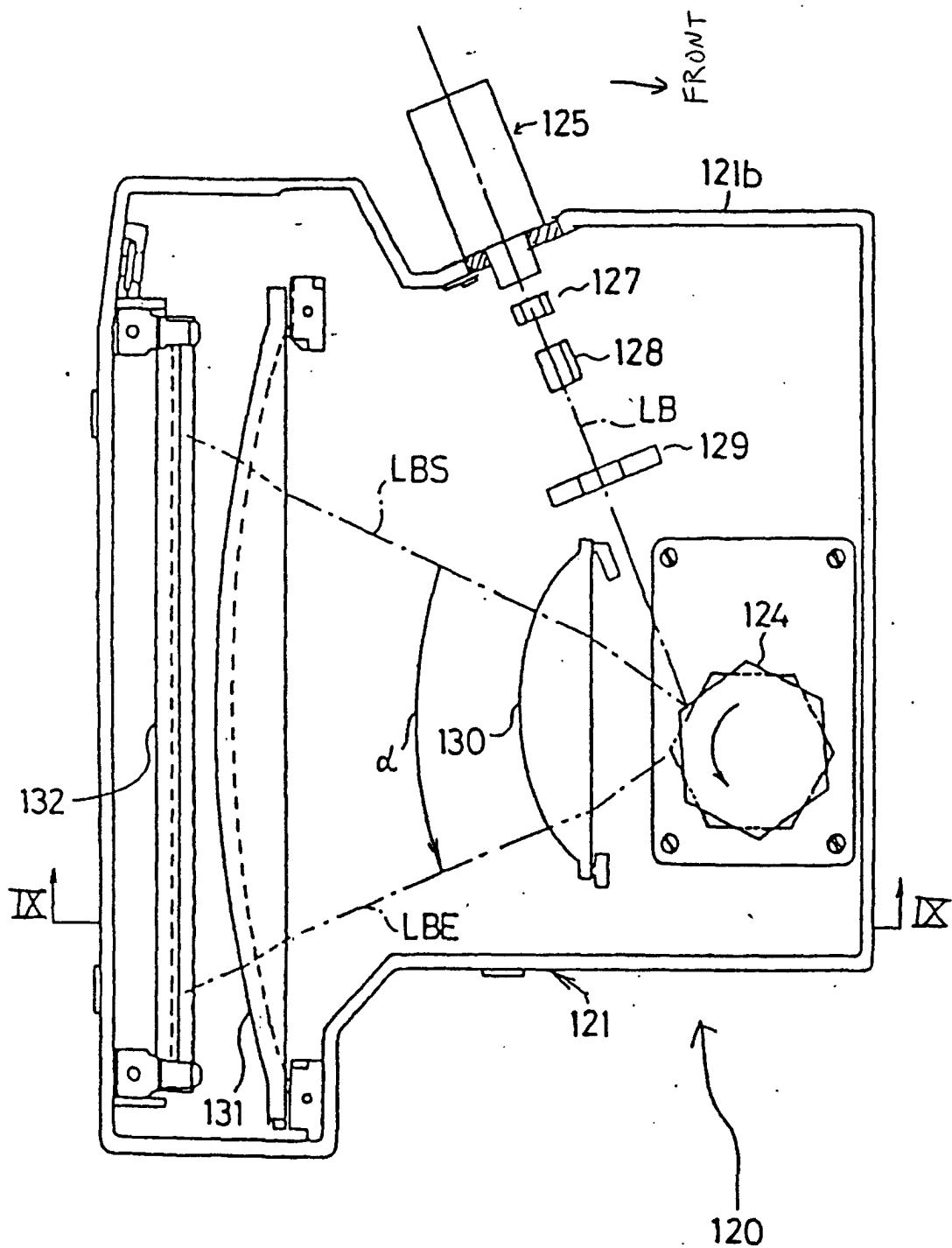


FIG. 9

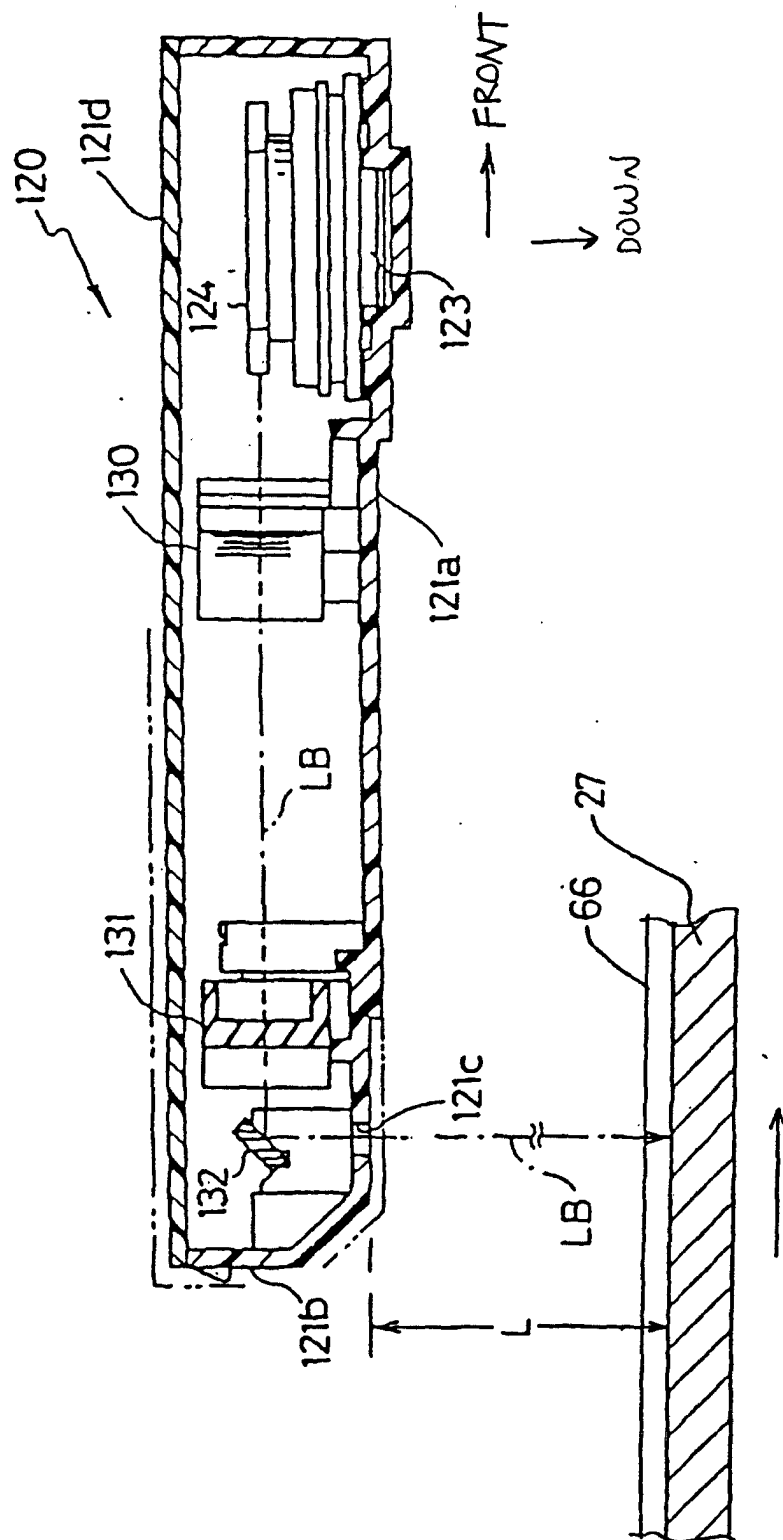


FIG. 10

