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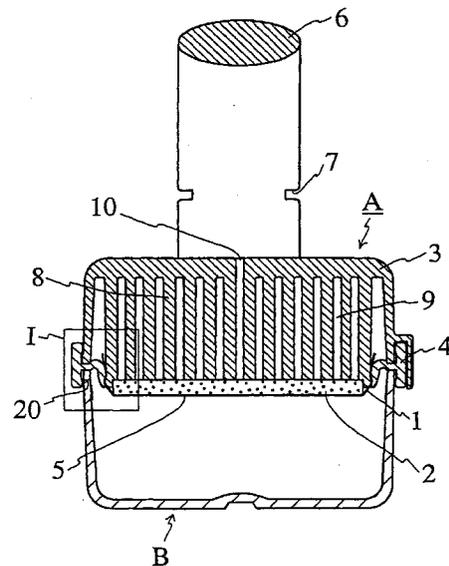
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(54) **STAMPING DEVICE**

(57) An ink escaping portion, which is a space for permitting ink temporarily to travel when stamped, is formed so as to be continuous with an ink absorbing body. Further, a printing surface sheet is nipped between an inward projecting portion of a holder and an outward projecting portion of a main body, a riding dimension being set therebetween. By sliding the holder while pressing the printing surface sheet against the main body, the printing surface sheet is stretched outward and fixed so as to form a printing surface. As a result, stable ink discharge unlikely to be affected by a magnitude of pressing force is obtained and ink leakage is suppressed. Further, a flat printing surface in which occurrence of wrinkles is minimized can be obtained. As a result, it is possible to obtain a stamping device capable of forming a desired print in which ink color shading or print missing is minimized.

FIG. 1



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## Description

### TECHNICAL FIELD

This invention relates to a stamping device wherein a printing sheet in which an ink passage hole of letters, patterns or the like is to be formed is mounted on a surface of an ink absorbing body disposed in a main body and the printing surface sheet after the ink passage hole is made by boring is pressed against a printing object so that the ink absorbing body is crushed so as to discharge ink from the ink passage holes thereby printing the letter, pattern or the like.

### BACKGROUND OF THE INVENTION

Such a conventional stamping device in which an ink absorbing body made of continuous porous substance such as polyurethane or a bundle of natural or synthetic fibers such as acrylic fibers, polyester fibers, wood pulp or the like is disposed has such an advantage that its printing surface does not have to be placed onto a seal-ink or a stamping ink pad each time of the stamping. However, to discharge ink contained in the ink absorbing body through ink passage holes of the printing surface, it is necessary to force ink discharged from the ink absorbing body by pressing or the like. However, it is somewhat difficult to apply an appropriate force thereto upon this pressing operation. As a result, there are produced such disadvantages that excessive ink is discharged by over pressing so that a printed letter is blurred or that excessive ink is not dried for a long time, contaminating clothes or hands, or that if the pressing force is insufficient, an unclear letter is produced.

There sometimes occurs a case in which ink released from the ink absorbing body by the pressing operation leaks from other portions than the ink passage holes, for example, fine gaps of joints of members. Then, according to some structure, an accommodating portion for the ink absorbing body in the main body of the stamping device, and a portion which directly contacts ink such as the printing surface are separated independently and formed in liquid tight, so that even if a change in internal pressure or shock is applied, no ink comes out. However, this type induces trouble of assembly caused by bonding or welding together the members and elements in liquid tight condition or increase of production cost caused by increased number of parts. Further, although the stamp of this type is capable of blocking ink leakage, there is a fear that ink may be spouted by a change in internal pressure of the ink absorbing body of the main body due to consumption of ink for printing or change in temperature or insufficient discharge of ink may occur. If an air vent which is directly opened is formed in the accommodating portion for the ink absorbing body, although it is capable of corresponding to a change in internal pressure of the

portion accommodating the ink absorbing body, there is a possibility that ink may leak from the directly formed air vent. Therefore, in this case, prevention of ink leakage and preventing improper discharge of ink due to change in internal pressure of the ink accommodating portion cannot coexist.

As a case for forming the printing surface with a printing surface sheet, there is well known a printing surface sheet in which a porous supporter such as unwoven clothes, old Japanese paper or the like and thermoplastic film such as polyethylene or the like are bonded to each other. By irradiating heat on this thermoplastic film in the shape of a desired letter, pattern or the like so as to melt partially the thermoplastic film, thereby boring it so that ink passage hole is made. Japanese Utility Model Registration No.3,026,902 has disclosed an idea that when the printing surface sheet is mounted on the main body, the printing surface sheet is nipped by concave/convex engaging portions formed between the main body and printing surface sheet holder. However, although in this stamping device described above, it is estimated that the printing surface sheet is mounted securely because the printing surface sheet is nipped by the concave/convex engaging portions of the main body and printing surface sheet holder, the printing surface sheet is only designed to be mounted on the main body, but the printing surface sheet mounting condition is not considered. That is, because the printing surface sheet provides a printing surface which is bored in the shape of letter or pattern by thermal or optical energy, this printing surface is demanded to be a flat surface without unevenness. In a conventional stamping device in which the printing sheet is only pressed against the main body by a holder member, a nipping force between the main body and printing surface sheet holder is applied, so that sometimes wrinkles occur at the nipping portion of the printing surface sheet. If a letter or pattern is formed on the printing surface with such wrinkles on the printing surface sheet, a favorable boring cannot be made and further there is such a problem that ink color shading due to the wrinkles, missing due to no transfer of ink or the like occurs in a print obtained after stamping operation.

### DISCLOSURE OF THE INVENTION

An object of the present invention is to provide a new stamping device capable of suppressing excessive discharge or insufficient discharge of ink with a simple structure, ensuring a stable printing quality, and suppressing a leakage of ink through gap between members.

Another object of the present invention is to provide a new stamping device wherein a wrinkle unlikely occurs on a printing surface sheet when the printing surface sheet is mounted on a main body by a simple structure so as to form a printing surface and a print of a desired letter or pattern can be obtained easily.

To achieve the above object, according to a first aspect of the present invention, there is provided a stamping device wherein a space acting as an ink escaping zone is formed around a surface opposite to an ink discharging surface for a printing surface sheet of an ink absorbing body disposed within a main body. An amount of ink corresponding to a reduced volume of the ink absorbing body whose volume is reduced by pressing operation is discharged from the ink absorbing body. However, if all the discharged ink is passed through the ink passage holes, depending on a magnitude of the pressing force, excessive ink may be spouted. Therefore, a space is formed in the back of the printing surface of the ink absorbing body, so that a part of the ink discharged from the ink absorbing body travels into this space which is the ink escaping portion. In this manner, of the ink corresponding to the reduced volume of the ink absorbing body, ink existing near the printing surface of the ink absorbing body is used for printing but other almost all ink temporarily travels into the ink escaping portion. Generally, the ink passage holes in the printing surface are fine holes so that a large amount of ink cannot pass through all at once. However, in the ink escaping portion, a relatively wide space is open directly to the ink absorbing body, and therefore an large amount of ink can travel all at once. Therefore, even if printing operation is carried out with a large pressing force (excessive pressing force), an excessive discharge of ink through the ink passage holes is suppressed and further ink leakage is also suppressed.

According to a second aspect of the present invention, there is provided a stamping device wherein the printing surface sheet is nipped on the main body by a printing surface sheet holder which slides while pressing the printing surface sheet against the outside wall of the main body. By sliding the printing surface sheet holder for holding the printing surface sheet to the main body, while pressed against the printing surface sheet, the printing surface sheet is stretched outward by a press contacting force of the printing surface sheet and frictional resistance between the printing surface sheet holder and printing surface sheet, and simultaneously pressed against the ink absorbing body, so that a flat printing surface is formed.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a longitudinal sectional view showing an example of a stamping device according to the present invention;

FIG. 2 is an enlarged sectional view of a printing surface sheet;

FIG. 3 is an enlarged sectional view of portion I of FIG. 1;

FIG. 4 is a bottom view for explaining members and elements shown in FIG. 1;

FIG. 5 is a diagram showing another example corresponding to FIG. 2;

FIG. 6 is a diagram showing a further example corresponding to FIG. 2;

FIG. 7 is a diagram showing a still another example corresponding to FIG. 2;

FIG. 8 is a diagram showing a further example corresponding to FIG. 2;

FIG. 9 is a diagram showing a further example corresponding to FIG. 2;

FIG. 10 is a sectional view of a stamping device according to another embodiment of the invention;

FIG. 11 is an explanatory perspective view of a pressing plate shown in FIG. 10;

FIG. 12 is a perspective view showing a modification of the pressing plate;

FIG. 13 is a perspective view showing another modification of the pressing plate;

FIG. 14 is a perspective view showing a further modification of the pressing plate;

FIG. 15 is a sectional view of a stamping device according to a further embodiment of the invention;

FIG. 16 is a perspective view of an ink absorbing body shown in FIG. 12;

FIG. 17 is a perspective view showing a modification of the ink absorbing body; and

FIG. 18 is a perspective view showing a further modification of the ink absorbing body.

#### BEST MODE FOR CARRYING OUT THE INVENTION

FIG. 1 is a sectional view showing an example of a stamping device according to the present invention.

Basically, this stamping device comprises a stamping device main body A having a stamping device surface and a cap body B for preventing the stamping device surface from coming into contact with an unnecessary object when not in use and further preventing ink on the stamping device surface from being dry. The stamping device main body A comprises a printing sheet 1 having a plurality of fine ink passage holes (not shown) designed in the shape of letters or pattern by a heat sensitive mimeograph, an ink absorbing body 2 made of elastic member having multiple communicating holes such as urethane, a box body 3 in which the ink absorbing body 2 is disposed, and a holder 4 for fixing the printing sheet 1. The printing sheet 1 is fixed to the box body 3 by the holder 4 in such a manner that a tension is applied thereto, so that the ink absorbing body 2 is nipped between the printing sheet 1 and the box body 3. Then, the printing surface 5 is located so as to project from the box body 3 by the same amount as the projection of the ink absorbing body 2. Upon operating the stamping device, when the printing surface 5 is pressed against a printing object, stamping is possible for only a length of the projection portion of the ink absorbing body 2. Further, the box body 3 has a handle 6 which is gripped when operating the stamping device and a concave portion 7 formed in the handle 6 serves as a guide for an apparatus (not shown) for boring the printing sur-

face 5.

Here, as ink contained in the ink absorbing body 2, conventional known stamping device ink can be used. However, this example uses ink essentially consisting of phenol resin, polyethylene glycol and phthalocyanine base fat dye, having a viscosity of 18,000 cps (at 25° C). Particularly, considering discharging characteristic of ink from the ink passage holes of the printing sheet 1, an ink having a viscosity of 10,000-38,000 cps (at 25° C) when measured by means of Tokyo Keiki's ELD type viscosimeter (3° x R9.7 cone rotor, rotation speed 0.5 rpm) (however, if the viscosity exceeds 35,000 cps, measured by Tokyo Keiki's ELD type viscosimeter (ST rotor, rotation speed 2.5 rpm)) is preferred. A type dissolving material of the printing sheet or reacting therewith must be avoided. Further, it is also favorable to keep the permeability of ink itself relatively low to suppress ink leakage between the members and provide the ink with storage characteristic by adding various gelatinizing agents.

With reference to FIG. 2 showing the bottom of the box body 3, the box body 3 has a plurality of pressing plates 8 disposed in parallel with each appropriate gap so that they are integrated like comb teeth in the sectional view. Each gap between the pressing plates 8 is an ink escaping zone 9 which is a space for permitting ink to temporarily travel therein, and communicates with an air vent 10 formed on top of the box body 3. When the printing sheet 1 is pressed against the printing object (not shown), the ink absorbing body 2 is crushed by the pressing plates 8. Ink is released from the ink absorbing body 2 in the same volume as a reduced volume by the crushing. Ink existing in the vicinity of the printing sheet 1 is supplied to the printing object through the ink passage holes and other portion of the ink is moved to the ink escaping zone 9. If all ink released from the ink absorbing body 2 is discharged through the ink passage holes, a stamped portion blurs or drying delays so that the other articles may be contaminated. Therefore, this is a problem for formation of clear picture. Further, ordinarily the ink passage holes are fine holes and if excessive ink is about to come out from these fine holes all at once, this leads to leakage of ink from a clearance between the members. However, by permitting the excessive ink to move to the ink escape zone 9 temporarily, the amount of ink discharged from the ink passage holes of the printing surface 5 is controlled. If pressure to the ink absorbing body 2 is released and the shape of the ink absorbing body 2 is elastically restored to its original shape, the ink moved to the ink escape zone 9 is returned to the ink absorbing body 2 stored again.

The total area of portions, which is open to the ink absorbing body 2, of the ink escaping zones 9 is larger than the total area of the ink passage holes of the printing sheet 1, so that ink is easy to travel. If the total area of the portions open to the ink absorbing body 2, of the ink escaping zones 9 is 20-80% relative to the area of

the surface to be pressed of the ink absorbing body 2, it is acceptable. To enlarge the area of the portion released to the ink escaping zones 9, of the ink absorbing body 2 as much as possible and make the ink absorbing body 2 pressed as uniformly as possible, each of the pressing plates 8 must only be thinned so that the number thereof is increased. In this embodiment of the invention, the pressing plate 8 has a thickness of about 0.5 mm-6.0 mm and an interval between the pressing plates 8 is 0.5 mm-4.0 mm. Although the area for pressing the ink absorbing body 2 can be controlled depending on the thickness of the pressing plate 8, if the thickness is too large, resin flow when synthetic resin is injection molded is affected so that the surface of the molded product deflects thereby failing to form a uniform flat surface. This is also a cause for producing so-called surface sink. In a product in which the surface sink occurs, not only its appearance is deteriorated but also there is a fear that error may be caused in dimension of each component, thereby leading to leakage of contained ink. Further, pressing of the ink absorbing body becomes unequal so that ink discharge may be badly affected.

FIG. 3 shows a partially enlarged sectional view of the printing sheet 1 which is a component for forming the printing surface 5. The printing sheet 1 is bored in the shape of letter or pattern by thermal or optical energy so as to form the printing surface 5. The printing sheet 1 of this example comprises thermoplastic film layer 11 made of polyethylene terephthalate and porous supporter layer 12 made of vinylon fiber, both the components being bonded to each other by adhesive layer 13. The porous supporter mentioned here includes natural fibers such as Manila hemp, paper mulberry, *Edgeworthia papyrifera*, synthetic fiber such as Tetron, vinylon, polyester, polypropylene, acrylic, sheet-like fiber bundle made mainly of semi-synthetic fiber such as rayon. Considering a passage of ink, the diameter of the fiber is preferred to be 15  $\mu\text{m}$ -60  $\mu\text{m}$  and an interval between the fibers is preferred to be 30  $\mu\text{m}$ -200  $\mu\text{m}$ . Particularly if the sheet-like fiber bundle is unwoven fabric, the grammage is preferred to be 3g/m<sup>2</sup>-20g/m<sup>2</sup>. The thermoplastic film includes mono substance or mixture of such thermoplastic synthetic resins as polyvinylidene chloride, polyvinyl chloride, polyethylene terephthalate, polypropylene, polystyrene, polyethylene, ethylene - vinyl acetate and the like. The adhesive agent for bonding the thermoplastic film layer 11 and porous supporter layer 12 includes solutions of vinyl acetate synthetic resin, vinylidene chloride base synthetic resin, and vinyl chloride synthetic. In the printing sheet 1, the surface of the porous supporter layer 12 is in contact with the ink absorbing body 2.

Because a member which forms the printing surface 5 is a thin sheet, the printing surface 5 must be as flat as possible. If an unevenness is caused on the printing surface 5 due to wrinkles or the like, the unnecessary wrinkles are printed together with a stamping

device mark, so that the stamping device mark becomes obscure. This flatness of the printing surface 5 is achieved by fixing the printing sheet 1 to the box body 3.

Fixing of the printing sheet 1 to the box body 3 will be described with reference to FIG. 4. The holder 4 for fixing the printing sheet 1 to the box body is made of high density polyethylene and has fixing pieces 14 which are formed in a bent shape so as to apply an elastic force. The printing sheet 1 is nipped and fixed between the fixing piece 14 and outside wall 16 of an ink absorbing body mounting portion 15 of the ink absorbing body 2. On the elastically deformable fixing piece 14 of this holder 4 is formed an inward projecting portion 17 which is a peripheral portion having the smallest inside diameter. This inward projecting portion 17 rides over an outward peripheral projecting portion 18 formed on the outside wall 16 of the mounting portion 15 of the ink absorbing body 2 such that it engaged therewith. That is, the inside diameter of the inward projecting portion 17 is smaller than the outside diameter of the outward projecting portion 18 so that a riding length is contained in both the dimensions. When the printing sheet 1 is installed on the box body 3 by the holder 4, the holder 4 is mounted on the printing sheet 1 placed on the ink absorbing body 2 such that the porous supporter layer 12 is in contact with the ink absorbing body 2. Because the printing sheet 1 is extended so that it reaches outside of the outside wall 15 of the mounting portion 15 of the ink absorbing body, the inward projecting portion 17 of the holder 4 rides over the outward projecting portion 18 of the box body while the printing sheet 1 being nipped therebetween. Because as described above, the riding length is provided in the dimensions of the inward projecting portion 17 and outward projecting portion 18, the inward projecting portion 17 slides in such a manner that it is in a firm contact with the printing sheet. At this time, the printing sheet 1 is stretched outward by the pressure contact force of the inward projecting portion 17 and frictional resistance between the inward projecting portion 17 and printing sheet 1 so that the printing sheet 1 is pressed against the ink absorbing body 2, thereby forming the flat printing surface 5. A surface of the ink absorbing body 2, which is in contact with the printing sheet 1 is preferred to be flat. However, because some degree of unevenness is equalized by a tension caused when the printing sheet 1 is installed, a flat surface which is not wrinkled when stamped must only be provided as the printing surface 5 ensured after the printing sheet 1 is installed, and it may be entirely circular.

A portion of the holder 4 which is press-fitted to the printing sheet 1 when the printing sheet 1 is installed to the box body 3 is an inside contacting surface 19 including a vertex of the inward projecting portion 17 and this surface is a tapered surface so as to gradually increase the press contacting force. Because the portion pressing the printing sheet 1 is of a surface, a force applied to

the printing sheet 1 is dispersed so that favorably, unnecessary flaw or the like is difficult to form on the printing sheet 1 and the printing sheet 1 becomes hard to tear. Further, by gradually increasing the press contacting force, the fixing positions for the fixing piece 14 and printing sheet 1 are not determined at a position where a first pressing force is applied thereto, but the fixing positions are determined when after appropriate degree of sliding, the inward projecting portion 17 rides over the outward projecting portion 18 of the box body 3. As a result, the tension applied to the printing sheet 1 can be adjusted to an appropriate level so that the printing sheet 1 is not torn.

Further, the outward projecting portion 18 of the outside wall 16 on which the printing sheet 1 is pressed and its periphery are formed in a shape of roundness. Further as shown in FIG. 3 which indicates the main body 1 in which the ink absorbing body 2, holder 4 and printing sheet 1 are demounted, seen from the mounting portion 15 of the ink absorbing body 2, corners of the outside wall 16 of the ink absorbing body mounting portion 15 formed so as to surround the pressing plates 8 are formed in the shape of roundness. As a result, this prevents a phenomenon that when the printing sheet 1 contacts the corners, tension is concentrated on the corners thereby the printing sheet 1 being torn. Even if an angle is formed without forming a curved surface, it is favorable that the angle is as large as possible and a tension concentrated on that angle is as small as possible.

The holder 4 has an engaging/disengaging portion 20 relative to the cap body B, which is engaged with an engaging protrusion 21 of the cap body B. Here, the engaging/disengaging portion 20 determines a length of projection of the printing surface 5 from the box body 3 and restricts pressing amount. Namely, the pressing amount is restricted by a relation between the engaging/disengaging portion 20 and disposing position of the ink absorbing body 2 or thickness of the ink absorbing body 2, so that the ink discharge amount can be adjusted.

FIG. 5 and following figures of the drawing show other embodiments. FIGs. 5-9 are drawings corresponding to FIG. 2 of the above described embodiment.

In an example shown in FIG. 5, the pressing plates 8 are integrally connected with an inside wall of the box body at the side thereof and the ink escaping zones 9 communicate with each other at a position corresponding to the center of the ink absorbing body 2. That is, if the ink escaping zones 9 formed between the pressing plates 8 are formed in the vicinity of the box body inside wall, substantially the box body 3 and pressing plates 8 are formed independently. In viewpoint of injection molding of synthetic resin, forming thin plates like the pressing plate 8 independently is disadvantageous from the standpoint of the structure. Therefore, by joining the pressing plates 8 with the box body inside wall, fall-down of the pressing plates 8 upon molding is pre-

vented. As for the ink escaping zone 9, because generally, not so many ink passage holes are formed on the edge of the printing surface 5, it is advantageous that an area as large as possible is open at a portion corresponding to the center area of the printing surface 5.

FIG. 6 shows one of the other examples. The pressing plates 8 are further divided so as to increase the connection portions of each ink escaping zones 9, thereby facilitating flow of the ink. Reference numeral 22 denotes a reinforcement rib for preventing fall-down of the pressing plate upon molding.

FIG. 7 shows another example. The pressing plate 8 is not a flat plate but a curved plate. As a result, the strength of the pressing plate 8 when stamped can be increased.

FIG. 8 shows a further example. The mounting portion 15 of the ink absorbing body 2, which is in contact with the ink absorbing body 2, is formed in grid shape. Each of the ink escaping zones 9 is formed on the ink absorbing body mounting portion 15 in the shape of a circular hole. Because the ink absorbing body mounting portion 15 is connected with each other, a strength against the pressing force can be obtained. Further, because no angle is formed in the ink escaping zone 9, such a phenomenon that ink is held by capillary force caused at the angle portion of the hole does not occur, so that the ink travels smoothly to the ink absorbing body 2. Thus, when ink continuously comes in and out, such as a case in which continuous stamping is carried out, it is desirable not to form any angle as described above. Although the same effect can be obtained by carrying out water repellent treatment for the wall surface of the ink escaping zone 9, this is not a permanent treatment.

FIG. 9 shows a further example. As a pressing body for directly pressing the ink absorbing body 2, a pillar-shaped bodies 23 are formed. The ink escaping zones 9 are space formed around the respective pillar-shaped bodies 23. In this example, because the pillar-shaped body 23 is formed in the cylindrical form, there is no angle formed in the ink escaping zone. Further, because the cylinder can be considered to be a shape having a relatively high strength, it is advantageous upon molding and further, it is favorable because this shape is capable of effectively pressing the ink absorbing body 2 while maintaining the area of the ink escaping zone 9 relatively wide. This pillar-shaped body 23 may be formed in tube-like shape.

FIG. 10 shows another example. This is a sectional view obtained by turning FIG. 1 at 90°. The box body 3 is not a member for directly pressing the ink absorbing body 2, but a pressing plate 24 made of hard synthetic resin is interposed between the ink absorbing body 2 and box body 3. In the pressing plate 24, as shown in FIG. 11 which is a perspective view thereof, holes through which ink passes are formed and the holes 25 serve as ink passage holes to the ink escaping zone 9 which is an internal space. The shape and location of

the hole 25 are appropriately determined. In addition, the curved hole 25 as shown in FIG. 12 and circular hole 25 as shown in FIG. 13 are permissible. Further, as shown in FIG. 14, wire net shaped sheet is also permissible.

FIGs. 15-17 show a further example. In FIG. 16 which is a perspective view of only the ink absorbing body 2, the ink absorbing body 2 has a top face in which a surface for receiving a pressing force is uneven and its concave portion acts as the ink escaping zone 9. An slit-like air hole 10 is formed in the box body 1 so that it communicates with an interior contained in the ink absorbing body 2. The reason why the air hole 10 is formed in the slit-shape is that by narrowing the hole, ink is difficult to pass thereby preventing ink leakage, and that by making the ink escaping zone 9 and air hole 10 communicate with each other, any changes in internal pressure which is an obstacle for outside ink travel and ink travel inside the ink absorbing body 2 are suppressed. If a pressing force is applied to this, the volume of the ink absorbing body 2 is decreased entirely by a pressed length, so that an amount of ink corresponding to a reduced volume is released from the ink absorbing body 2. Here, ink around the uneven surface, which is part of the released ink, is discharged to the ink escaping zone 9 thereby suppressing an excessive discharge thereof. Further, to form the ink escaping zone, the structure of the box body 3 does not have to be made complicated, so that it can be produced easily. To form the ink absorbing body 2 as shown in the Figure, it is permissible to form it with a desired shape mold or cut that shape from a molded cube.

The ink escaping zone 9 may have concave portions the sides of which are surrounded like a modification of the ink absorbing body 2 shown in FIG. 17, so that many holes of small capacity are formed so as to decrease an influence of transmission of the pressing force.

FIG. 18 shows other modification of the ink absorbing body 2. What is different from the above example is that as the ink escaping zone 9, the respective concave portions are connected with each other by continuous groove 26. As a result, ink discharged to the ink escaping zone 9 can travel freely in that space and deflection of ink within the ink absorbing body can be suppressed. Further, the unevenness forming the ink escaping zones 9 is formed by curved surface, so that the shape restoration force of the ink absorbing body 2 against repeated application of the pressing force is increased. Further, since there is no sharp angled portion, the uneven portions are difficult to damage.

## Claims

1. A stamping device wherein a printing sheet in which an ink passage hole of letter, pattern or the like is to be formed is mounted on a surface of an ink absorbing body disposed in a main body and said

printing surface sheet after said ink passage hole is made by boring is pressed against a printing object so that said ink absorbing body is crushed so as to discharge ink from said ink passage holes thereby printing the letter, pattern or the like,

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wherein said stamping device comprises a space acting as an ink escaping zone, said ink escaping zone being formed in the back of a printing surface of said ink absorbing body in said main body.

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2. A stamping device according to claim 1 wherein a pressing member for pressing said ink absorbing body comprises a plurality of pressing bodies and space between the respective pressing bodies acts as ink escaping zones communicating with each other. 15
3. A stamping device according to claim 1 wherein said ink escaping zone is so constructed that a surface for receiving a pressing force, of the ink absorbing body is formed in the uneven shape and a space is formed between an inside wall of the main body and said ink absorbing body. 20
4. A stamping device according to claim 1-3 wherein a pressing plate having a plurality of ink passage holes is interposed between said pressing member for pressing said ink absorbing body and ink absorbing body so that a part of ink in the ink absorbing body is passed through the holes of the pressing plate by pressing operation to said ink escaping zone. 25
5. A stamping device wherein a printing sheet in which an ink passage hole of letter, pattern or the like is to be formed is mounted on a surface of an ink absorbing body disposed in a main body and said printing surface sheet after said ink passage hole is made by boring is pressed against a printing object so that said ink absorbing body is crushed so as to discharge ink from said ink passage holes thereby printing the letter, pattern or the like, said stamping device further having a printing surface sheet holder having a protrusion, which slides while pressing said printing surface sheet against the main body. 35
6. A stamping device according to claim 5 wherein said printing surface sheet holder is made of synthetic resin and said protrusion is formed in the form of a fixing piece elastically deformable. 40
7. A stamping device according to claim 6 wherein said protrusion of said printing surface sheet holder has a tapered surface which is in a facial contact with said printing surface sheet. 45
8. A stamping device according to claim 5-7 wherein an engaging portion which is capable of freely engaging with or disengaging from a cap body is formed on said printing surface sheet holder. 50

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FIG. 1

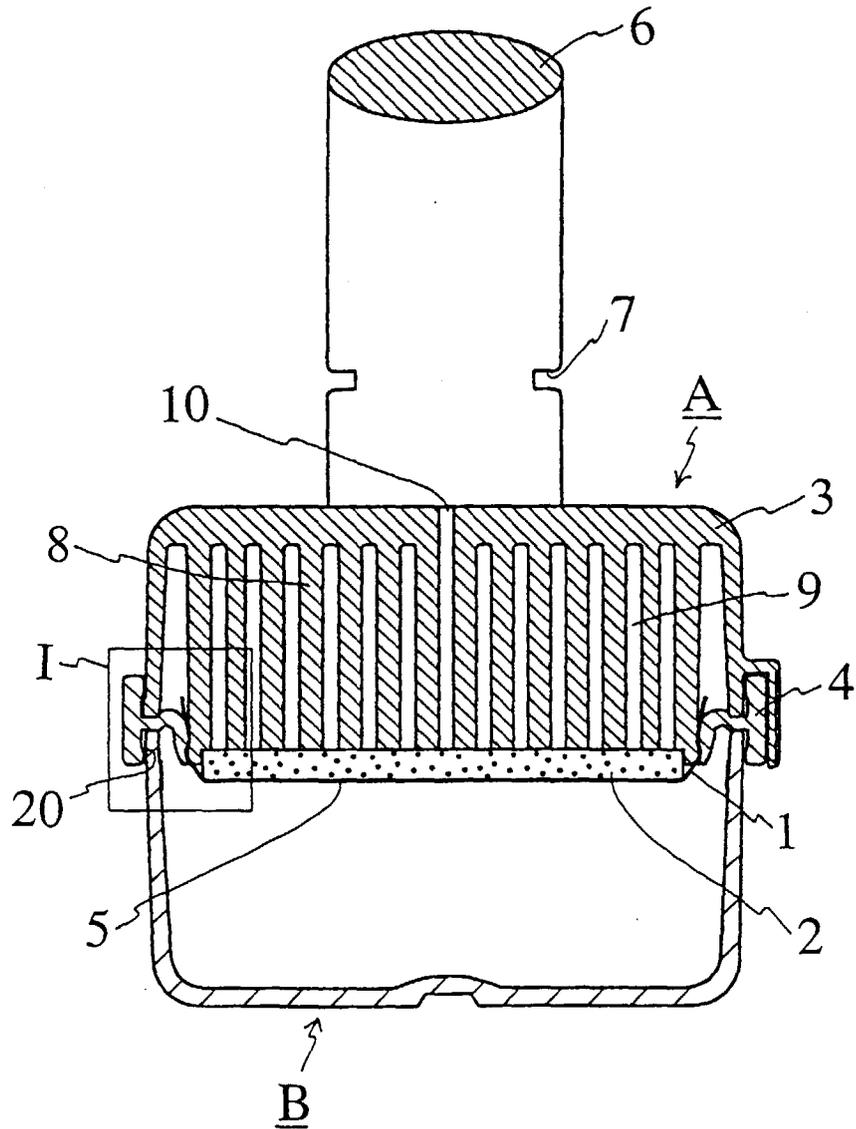


FIG. 2

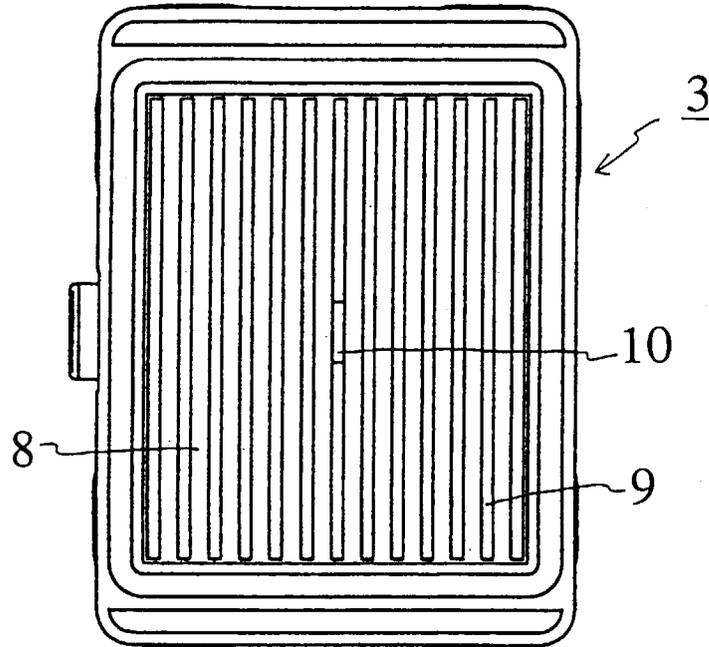


FIG. 5

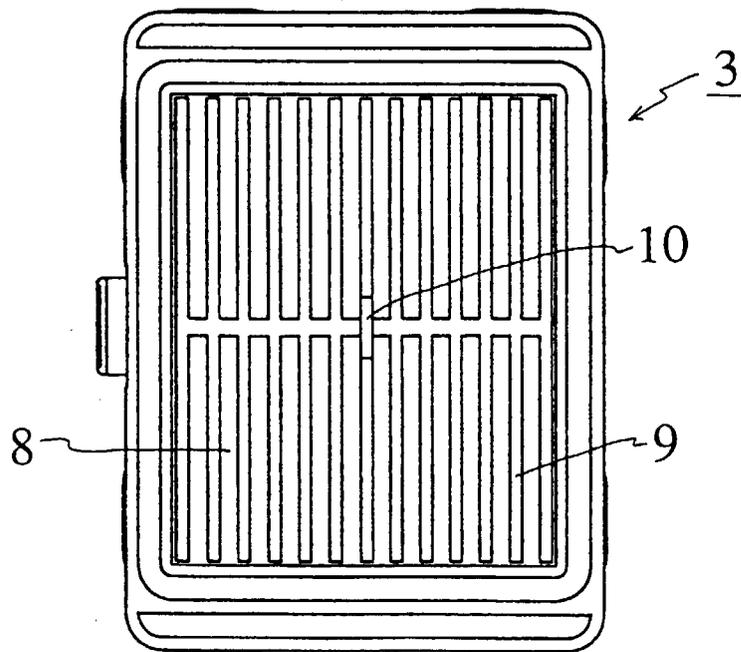


FIG. 3

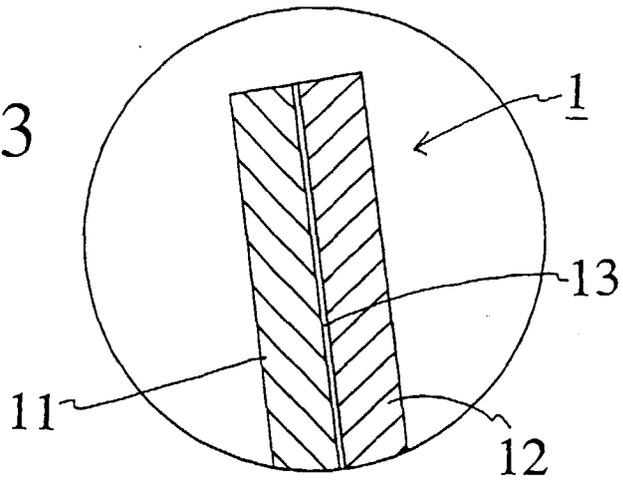


FIG. 4

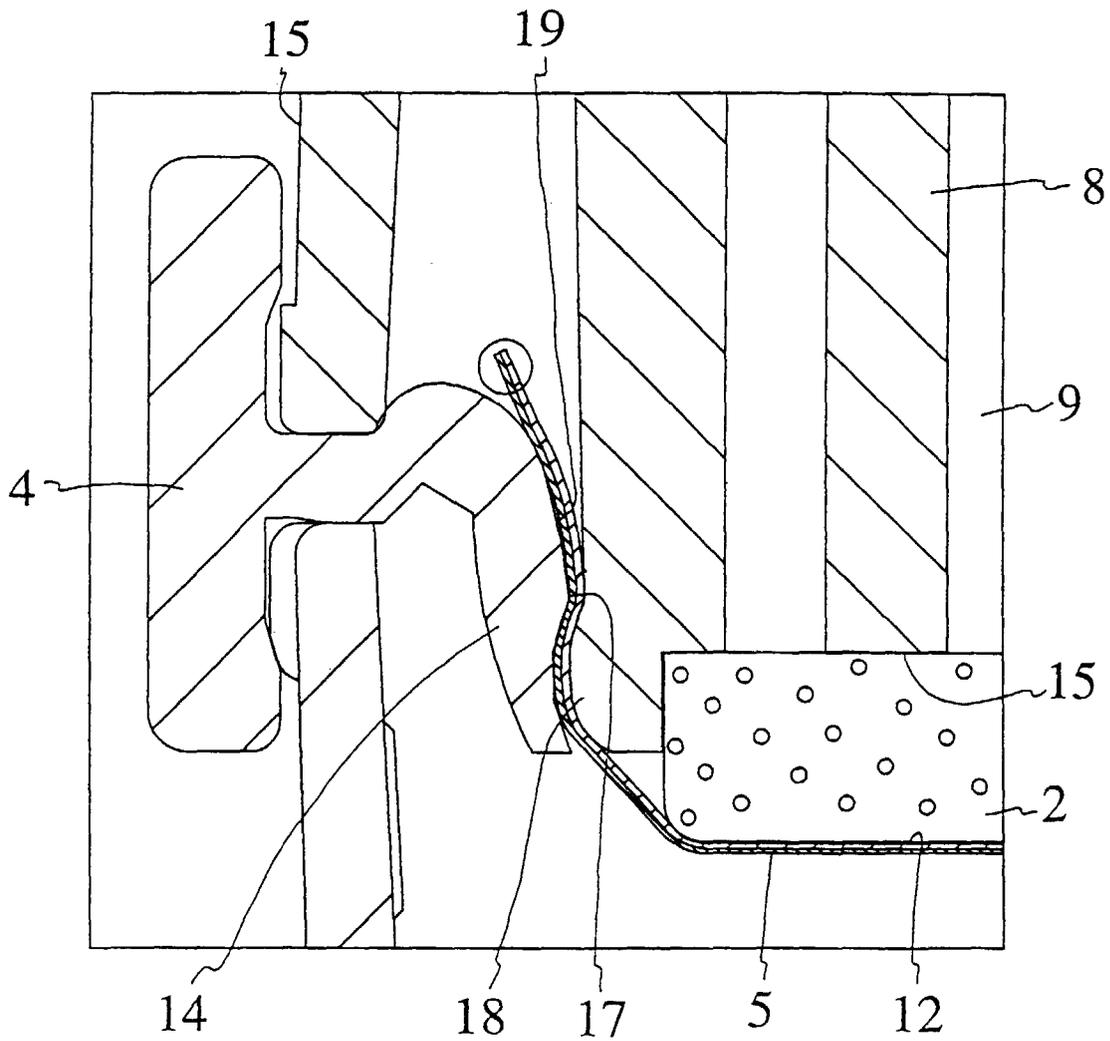


FIG. 6

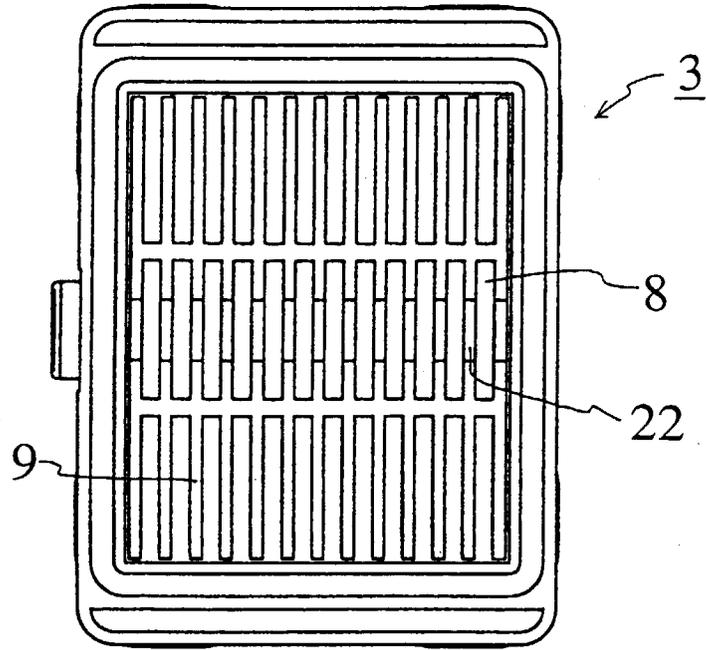


FIG. 7

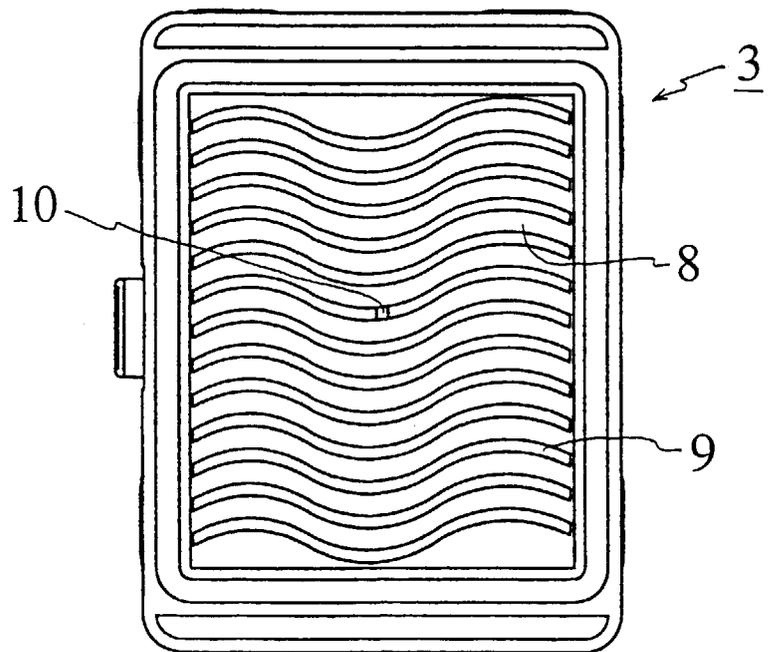


FIG. 8

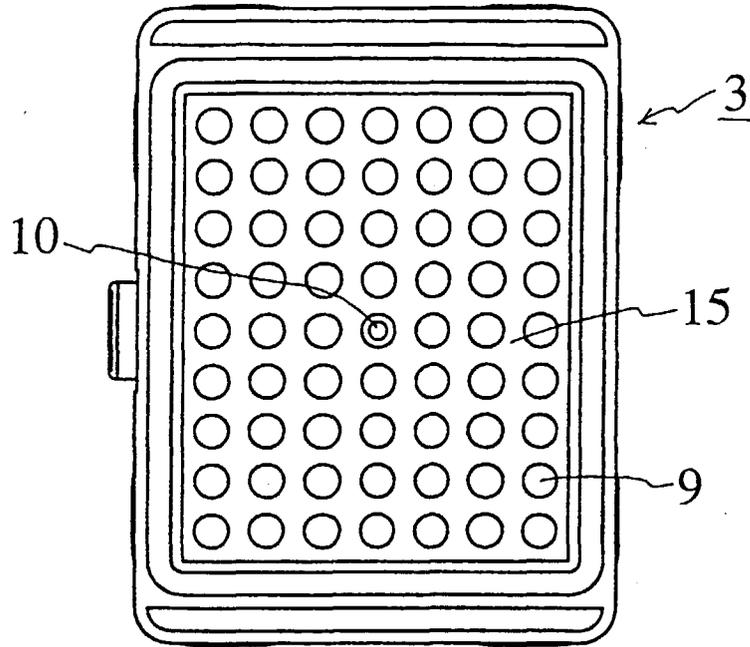


FIG. 9

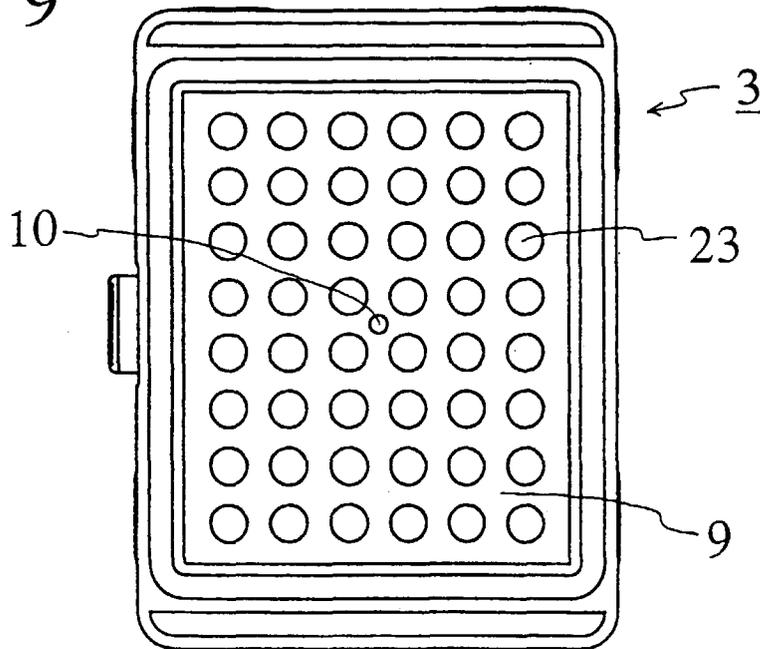


FIG. 10

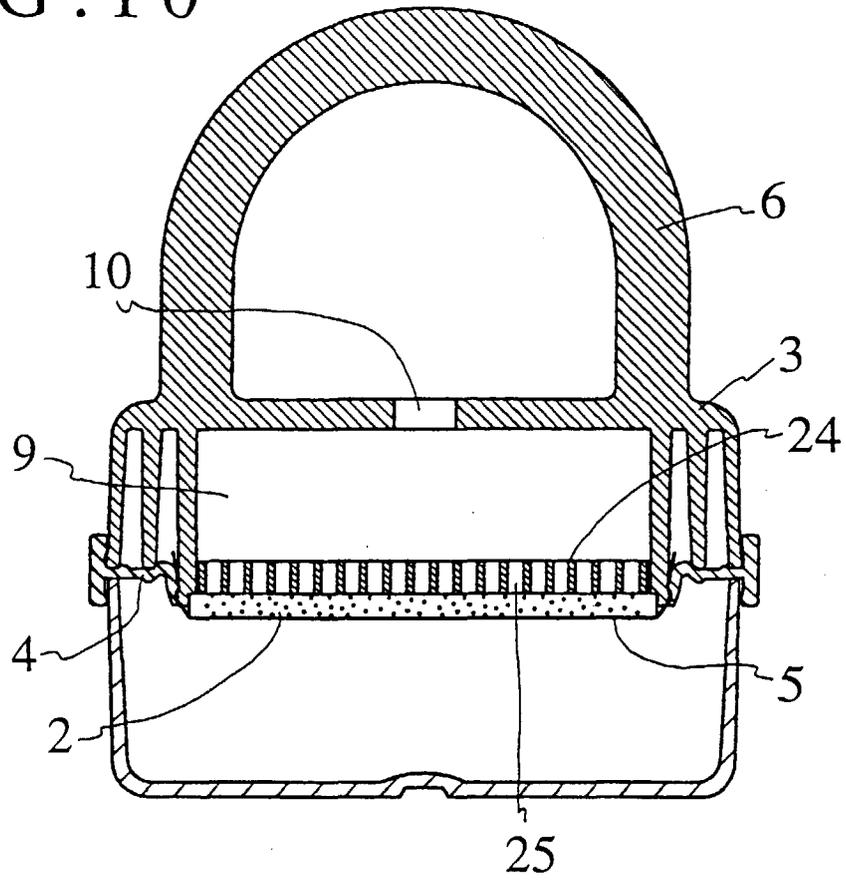


FIG. 11

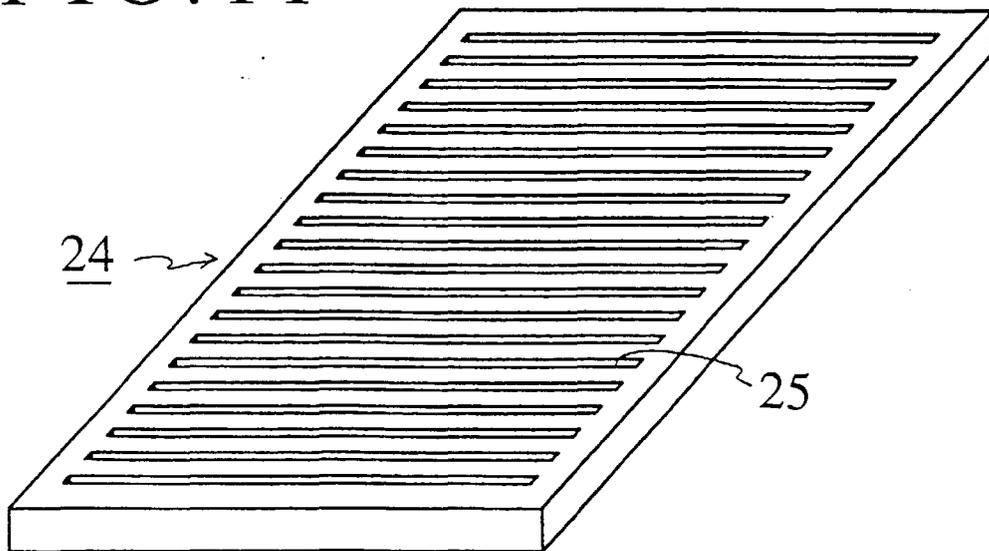


FIG. 12

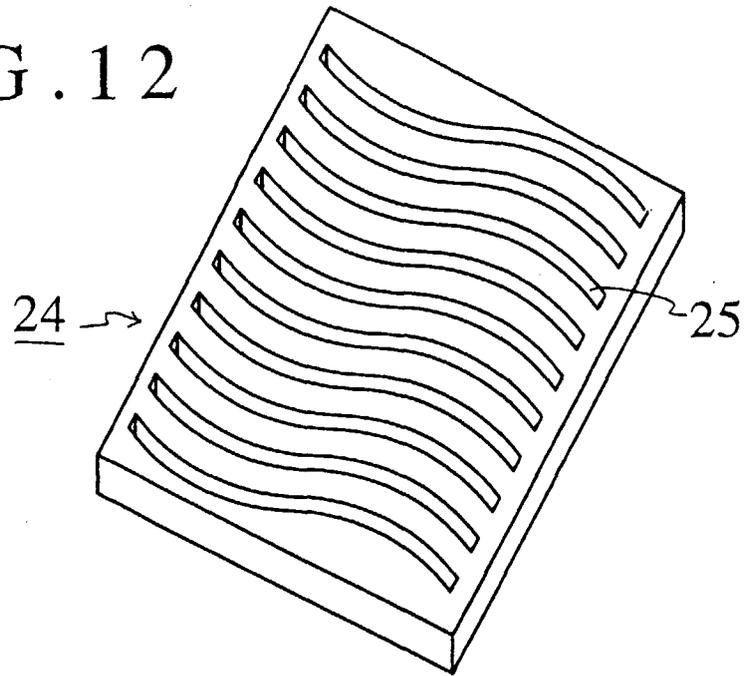


FIG. 13

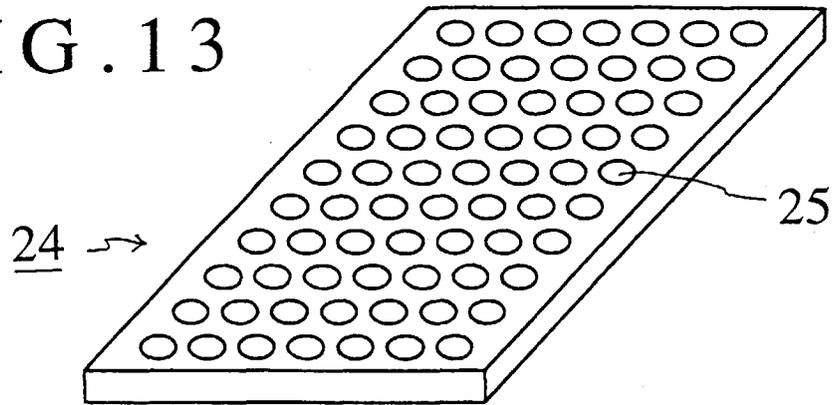


FIG. 14

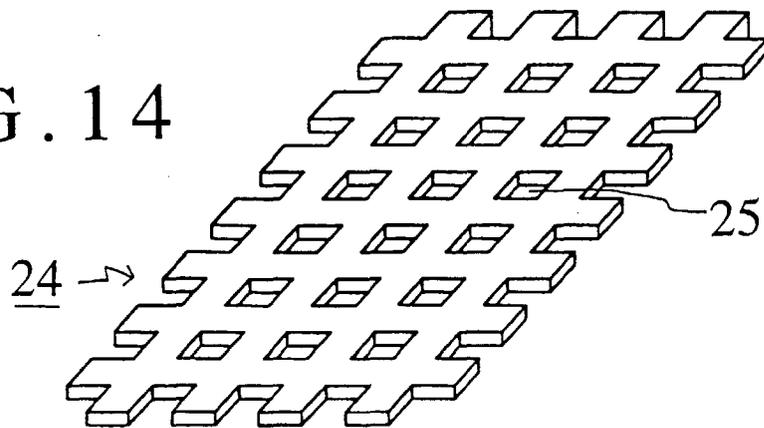


FIG. 15

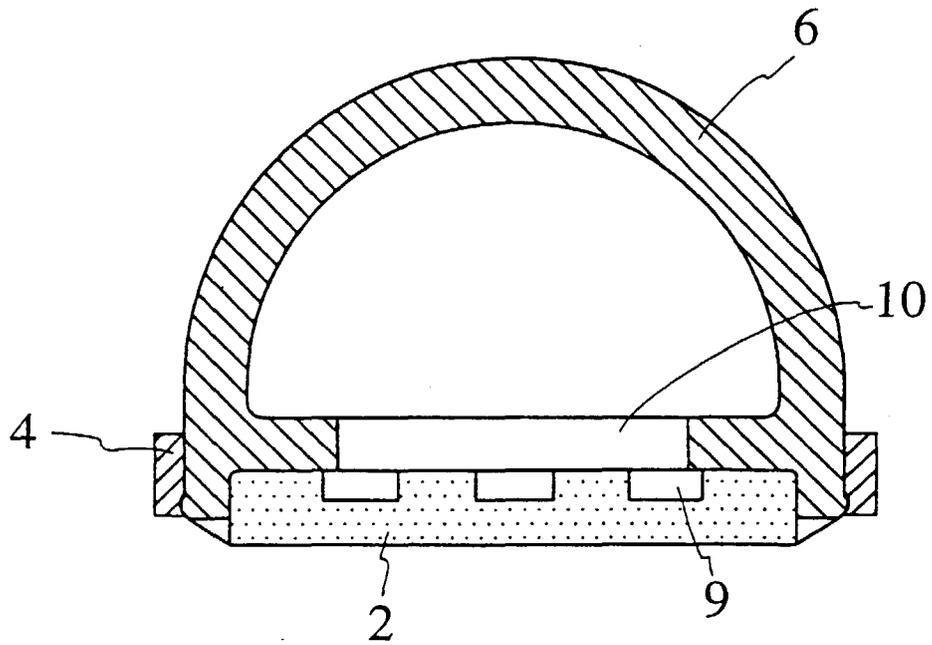


FIG. 16

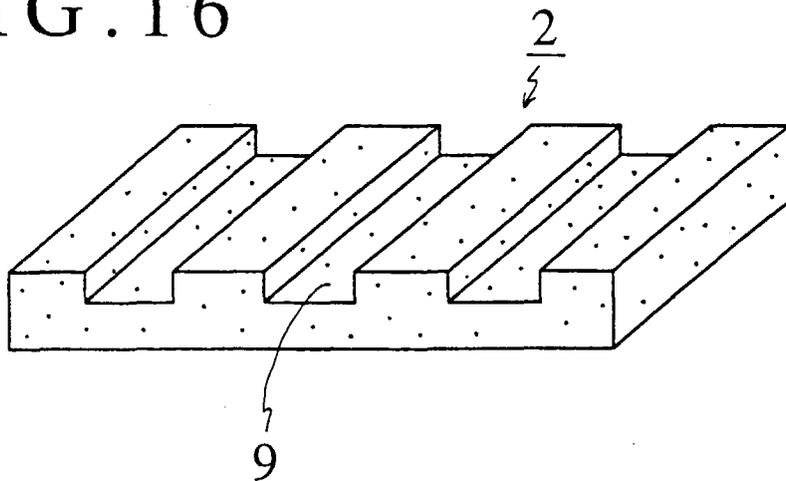


FIG. 17

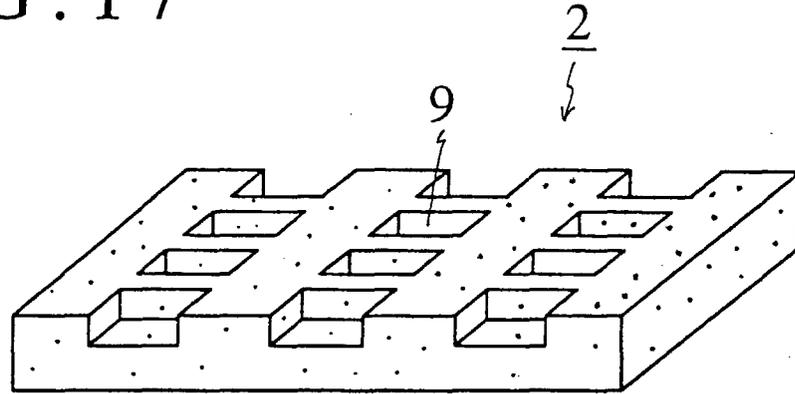
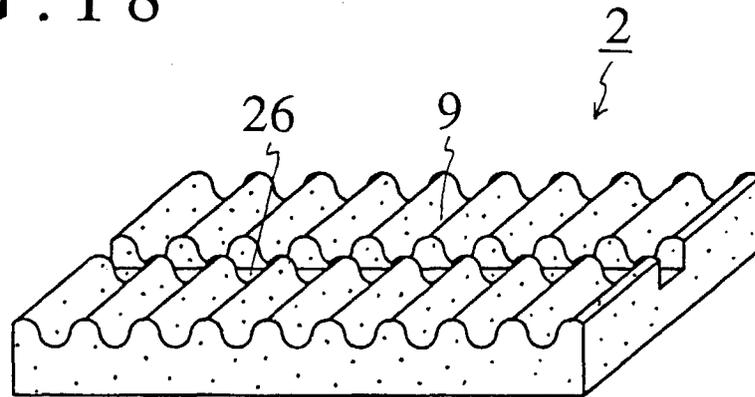


FIG. 18



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP97/03187

A. CLASSIFICATION OF SUBJECT MATTER Int. Cl <sup>6</sup> B41K1/32, B41K1/44 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) Int. Cl <sup>6</sup> B41K1/32, B41K1/44 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1922 - 1997 Jitsuyo Shinan Toroku Kokai Jitsuyo Shinan Koho 1971 - 1997 Koho 1996 - 1997 Toroku Jitsuyo Shinan Koho 1994 - 1997 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP, 63-191050, U (Nobushige Okamoto), December 8, 1988 (08. 12. 88), Figs. 3, 4 (Family: none)	1 - 4
X	JP, 7-329405, A (Brother Industries, Ltd.), December 19, 1995 (19. 12. 95), Column 16, lines 27 to 36; Fig. 27; column 17, lines 9 to 15; Fig. 29 (Family: none)	1, 3
X Y	JP, 53-88208, U (Keiji Ueno), July 20, 1978 (20. 07. 78), Fig. 2 (Family: none)	5 - 7 8
Y	JP, 3026902, U (Taiyo Seiki K.K.), May 8, 1996 (08. 05. 96), Fig. 4 (Family: none)	8
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
Date of the actual completion of the international search December 3, 1997 (03. 12. 97)		Date of mailing of the international search report December 16, 1997 (16. 12. 97)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.		Authorized officer Telephone No.

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