(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 170 431 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
09.01.2002 Bulletin 2002/02

(51) Int Cl.[7]: **E04B 2/72**

(21) Application number: **01250248.0**

(22) Date of filing: **02.07.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **04.07.2000 JP 2000202643**
04.07.2000 JP 2000202644
04.07.2000 JP 2000202645
04.07.2000 JP 2000202646

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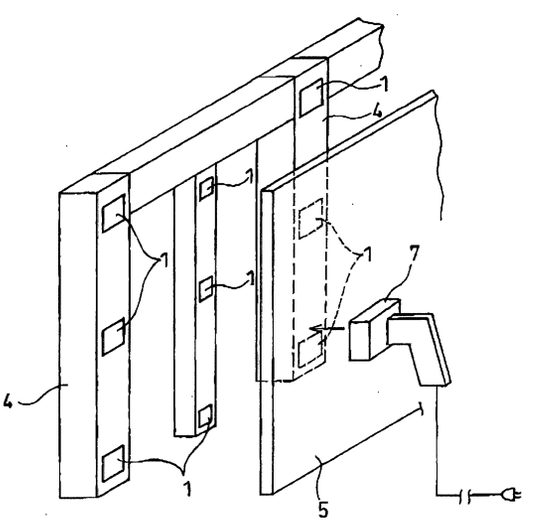
(54) Bonding member and gypsum board mounting method using the same

(57) A bonding member 1 comprising a metallic plate 2 formed as a small piece onto which a hot melt adhesive layer 3 is formed at least one side of said metallic plate 2, and a gypsum board mounting method for mounting a gypsum board 5 using the bonding member 1, comprising: fixing said bonding member 5 temporarily; pushing said gypsum board 5; heating the metallic plate 2 with electromagnetic induction to melt said hot melt adhesive layer 3; and thereby allowing the gypsum board 5 to be bonded easily without noise. The bonded gypsum board 5 can be recycled because it can be peeled off easily with melting the adhesive layer 3 without damage of the board.

FIG.3



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Description

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] The present invention relates to a bonding member for bonding, for example, gypsum board or panel to a pillar or the like, as well as a gypsum board mounting method for mounting a gypsum board with use of the bonding member.

DESCRIPTION OF THE PRIOR ART

[0002] Heretofore, nails, wood screws, staples, and adhesives have been used for bonding gypsum board, panel, and the like to pillars and the like.

[0003] Recently there has been a demand for recycling gypsum boards at the time of reforming or after dismantlement and a demand for suppressing noise during the execution of work.

[0004] If a gypsum board is fixed to a pillar using nails, staples, or wood screws as in the prior art, there occurs a striking noise or a noise from a motor-operated driver or the like. As further problems, the gypsum board may be broken when stripped from the pillar and it may become impossible to recycle the gypsum board, or the gypsum board may be damaged into a more bulky mass, requiring much time and labor for classifying work and a higher cost for discarding the board.

[0005] In the case where a gypsum board is mounted using staples or nails, it is necessary to pull out the staples or nails for removing the gypsum board, but at this time the gypsum board is damaged to a degree of scarcely having any original form. This is also the case with stripping a gypsum board from an adhesive used for bonding the gypsum board.

[0006] Where a gypsum board is fixed with screws, if the screws are removed one by one, the gypsum board will not be damaged. However, since a gypsum board is usually fixed using 40 or more screws, 40 or more tapped holes will be left after removal of the screws; besides, the gypsum collapses in the holes, so it is difficult to use those holes for re-clamping the gypsum board, and thus such a gypsum board is not suitable for recycling. Moreover, since 40 or more screws are used, much time is required for removing the screws one by one. Actually, therefore, the gypsum board is destroyed for removal.

SUMMARY OF THE INVENTION

[0007] It is an object of the present invention to provide a bonding member and a gypsum board mounting method using the bonding member, not generating noise in a gypsum board mounting work, capable of preventing destruction of gypsum boards in renovating the interior finish or in building dismantlement, thereby making it possible to recycle the gypsum boards, and capable of minimizing labor and cost also in a gypsum board discarding work.

[0008] A first aspect of the present invention is characterized in a bonding member comprising a metallic plate formed as a small piece onto which a hot melt adhesive layer is formed at least one side of said metallic plate.

[0009] A second aspect of the present invention is characterized in a gypsum board mounting method for mounting the gypsum board to a portion where said gypsum board is to be mounted using a bonding member comprising a metallic plate formed as a small piece onto which a hot melt adhesive layer is formed at least one side of said metallic plate, characterized in that said method comprising: fixing said bonding member temporarily to said portion; pushing said gypsum board onto said bonding member; heating said metallic plate of the bonding member with electromagnetic induction from above said gypsum board to melt said hot melt adhesive layer; and thereby allowing the gypsum board to be bonded to said portion.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Hereinafter embodiments of members and gypsum board mounting methods according to the present invention will be explained in detail with reference to attached drawings, in that:

Fig. 1 is a perspective view showing the configuration of a bonding member according to a first embodiment of the present invention;
Fig. 2 is a plan view of the bonding member on which a double side coated adhesive tape provided;
Fig. 3 is an explanatory diagram explaining how to mount a gypsum board using the bonding member;
Fig. 4 is a block diagram showing the configuration of an electromagnetic induction system;
Fig. 5 is an explanatory diagram for illustrating an inconvenience involved in using a belt-like metallic plate;
Fig. 6 is an explanatory diagram illustrating a gypsum board mounting method according to a second embodiment of the present invention;
Fig. 7 is an explanatory diagram illustrating a connected bonding member constituted by plural bonding members arranged on a double-side coated adhesive tape;
Fig. 8 is an explanatory diagram illustrating a bonding member in the second embodiment;
Fig. 9 is an explanatory diagram illustrating a bonding member according to a third embodiment of the present invention;
Fig. 10 is an explanatory diagram illustrating a temporarily fixed state of a bonding member with a pin;
Fig. 11 is a sectional plan view illustrating a gypsum board mounting structure;

Fig. 12 is a front view of the gypsum board mounting structure shown in Fig. 11;
Fig. 13 is a perspective view illustrating a mounted state of a gypsum board to a stud;
Fig. 14 is a sectional view illustrating the configuration of a bonding member;
Fig. 15 is a perspective view of the configuration of a bonding member shown in Fig. 14;
Fig. 16 is a block diagram illustrating the configuration of an electromagnetic induction system; and
Fig. 17 is an explanatory diagram illustrating in what state a hot melt is melted by the electromagnetic induction system.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[First Embodiment]

[0011] A bonding member 1 shown in Fig. 1 is made up of a metallic plate 2 and hot melt adhesive layers 3 formed on both sides of the metallic plate 2.

[0012] The metallic plate 2 is formed of, for example, aluminum or iron and may be in a square or rectangular shape (length and width: 1-10 cm) or may be in any other shape, including a circular shape. The thickness of the metallic plate 2 is set at a value suitable for induction heating, such as 0.1-2 mm.

[0013] The hot melt adhesive layers 3 are each formed by heat-melting a solid thermoplastic resin adhesive at a high temperature and applied with painting the thus melted adhesive to the metallic plate 2. The hot melt adhesive is a contact bonding adhesive and is constituted, for example, by any or a mixture of polyvinyl acetate, ethylene/vinyl acetate copolymer, polyimide, phenoxy resin, ethyl cellulose, polyisobutylene, petroleum resin, polyester, terpene resin, asphalt, rosin, and derivatives thereof.

[0014] As shown in Fig. 2, a double-side coated adhesive tape 6 may be used to affix beforehand to the surface of a hot melt adhesive layer 3 and a releasing paper may be used to affix onto the double-side coated adhesive tape 6.

[0015] The following description is now provided about a gypsum board mounting method using the bonding member 1.

[0016] First, as shown in Fig. 3, a plurality of bonding members 1 are temporarily fixed to pillars 4, 4 beforehand with double side coated adhesive tapes 6. For this temporary fixing, the double side coated adhesive tapes 6 are affixed beforehand to either the pillars 4, 4 or the bonding members 1.

[0017] Next, a gypsum board 5 is put on the temporarily fixed bonding members 1 so as to cover the bonding members, then is established its positional relation with respect to the pillars 4, 4 and is held in that positional relation.

[0018] Then, a high frequency is generated from above the gypsum board 5 by means of an electromagnetic induction system 7 and applied to heat the metallic plate 2 of each bonding member 1 by induction heating. As a result, the hot melt adhesive layers 3 begin to melt. After melting of the hot melt adhesive layers 3, the gypsum board 5 is pushed toward the pillars 4, 4, with the result that the gypsum board 5 is bonded to the pillars 4, 4.

[0019] Heating of the metallic plate 2 is done efficiently because the metallic plate is a small piece and the hot melt adhesive layers 3 are formed on both sides thereof and they function as heat insulating layers. As a result, heating of the hot melt adhesive layers 3 is done efficiently. Moreover, if the area of the metallic plate 2 is preset to an appropriate value, it becomes possible to install the gypsum board 5 with a certain holding force. Further, since small metallic plates 2 are arranged at predetermined intervals, the weight per unit area applied to the hot melt adhesive layers 3 can be taken large when pushing the gypsum board 5 for bonding. Consequently, the gypsum board 5 can be bonded to the pillars 4, 4 surely.

[0020] When the gypsum board 5 is applied to the temporarily fixed metallic plates 2, it becomes impossible to detect the positions of the metallic plates 2 where they are, however, it can be detected easily by using such a detecting means as a metal detector. For the metal detection there may be utilized a characteristic of the electromagnetic induction system 7 which is used for heating the hot melt adhesive layers 3. That is to say, when the electromagnetic induction system 7 is placed in a position facing to a metallic plate 2, an electric current will flow through the metallic plate 2 due to electromagnetic induction effect, with consequent a high frequency current flowing in the coil of the electromagnetic induction system 7 increases. By detecting this increase it is possible to detect the position of the metallic plate 2.

[0021] As shown in Fig. 4, the electromagnetic induction system 7 comprises a high-frequency coil 21, a high-frequency current generating circuit 22 for generating a high-frequency current through the high-frequency coil 21, a detecting coil 23 for detecting the high-frequency current flowing through the high-frequency coil 21, a voltage output circuit 24 which outputs a voltage corresponding to the electric current detected by the detecting coil 23, a controller 25 for controlling the high-frequency current generating circuit 22, and a display 26.

[0022] The controller 25 compares an output voltage Vt provided from the voltage output circuit 24 with a predetermined reference voltage V0 and, when the output voltage Vt is not lower than the reference voltage V0, the controller judges that a metallic plate 2 is present at the position, causing the display 26 to make an indication that the metallic plate 2 is present. The controller 25 is constituted by a CPU for example. Instead of the display 26 there may be used a lamp or a buzzer, causing the lamp to go on or the buzzer to generate a detection sound such as an alarm sound.

[0023] If the electromagnetic induction system 7 is moved along the pillars 4, 4 and is stopped for a predetermined time at a position at which the display 26 has indicated an increase of the high-frequency current, it is possible to heat the metallic plate 2 surely.

[0024] The electromagnetic induction system 7 causes a high-frequency current for beating a metallic plate 2 to flow through the high-frequency coil 21 also during detection of a metallic plate 2, but a modification may be made such that during the detection a weak high-frequency current is only allowed to flow to detect the metallic plate 2 and a high-frequency current for heating is allowed to flow after detection of the metallic plate. Although the electromagnetic induction system 7 uses the detecting coil 23 and the voltage output circuit 24, there may be used a metal detector instead.

[0025] In the case where the metallic plate of each bonding member 1 is a band-like long metallic plate 8, as shown in Fig. 5, the metallic plate 8 is shaded by the gypsum board 5 and therefore it is impossible to determine which portion of the metallic plate 8 is bonded. Consequently, there occurs a case when a portions A which has once been induction-heated and bonded, are melted again and peeled off by subjecting those portions to induction heating. But such an inconvenience does not occur in this embodiment because the metallic plate 2 is a small piece, allowing the whole surface of each bonding member 1 to be bonded to a pillar 4, 4 and the gypsum board 5 in induction heating, and further because the induction heating can be done for each bonding member 1. Consequently, it is possible to effect the bonding with high reliability, to attain a high heating efficiency, shorten the time required for the bonding work, to reduce the amount of the hot melt adhesive layers 3 used and hence to execute an interior finish work at low cost.

[0026] Although in the above embodiment the hot melt adhesive layers 3 are formed on both sides of the metallic plate 2, such hot melt adhesive layer may be formed on only one side of the metallic plate. In this case, if an ordinary type of an adhesive is applied to the other side of the metallic plate, it becomes unnecessary to temporarily fix the bonding member 1 with a double-side coated adhesive tape or the like.

[0027] For removing the gypsum board 5 from the pillars 4, 4, each metallic plate 2 is heated by the electromagnetic induction system 7 with the same manner as above described to melt the hot melt adhesive layers 3. Since the hot melt adhesive layers 3 are in a melted state during removal of the gypsum board 5, it is possible to peel off, or remove, the gypsum board easily from the pillars 4, 4 without damage.

[0028] As described above, the gypsum boards 5 can be peeled off in a simple manner moreover it is done without damage, the gypsum board 5 can be recycled.

[0029] Although in the above embodiment the gypsum board 5 is mounted with the bonding member 1, a wooden board for example can be mounted instead.

[Second Embodiment]

[0030] Fig. 6 illustrates a mounting method for the gypsum board 5 according to a second embodiment of the present invention. Onto each pillar 4 to which the gypsum board 5 is to be mounted there are affixed bonding members 10 at an interval with use of a continuously elongated double-side coated adhesive tape 11.

[0031] Each bonding member 10 shown in Fig. 7, comprises a metallic plate (not shown) and hot melt adhesive layers 3 formed on both sides of the metallic plate, like the bonding member 1 shown in Fig. 1, The double-side coated adhesive tape 11 which has adhesiveness, is affixed onto the hot melt adhesive layer 3 on one side and the bonding members 10 are arranged to locate at approximately equal intervals on the double-side coated adhesive tape 11.

[0032] A connected bonding member 12 which is constituted by affixing a large number of bonding members 10 to the double-side coated adhesive tape 11, when the connected bonding member 12 is not in use, a releasing paper, for example, which is made of silicon coated paper, is affixed to the adhesive portion of the double-side coated adhesive tape 11.

[0033] By peeling off the releasing paper from the connected bonding member 12 and affixing the bonding members 10 to each of pillars 4, a temporary fixing of the bonding members 10 is completed in a simple manner without generation of noise. After completion of the temporary fixing, the gypsum board 5 is pushed against the pillars 4 by hand while taking care so as not to cause a positional discrepancy of the gypsum board. Since the adhesive of the double-side coated adhesive tape 11 is exposed between adjacent and connected bonding members 10, the surface paper of the gypsum board 5 is bonded to the tape at those portions,

[0034] In this state, when a high frequency is generated with induction from above the gypsum board 5 by means of the electromagnetic induction system 7, the metallic plates of the bonding members 10 are induction-heated and the hot melt adhesive layers 3 as surface layers are melted. Then, by pushing the gypsum board 5, the gypsum board 5 is bonded to the pillars 4, 4 with adhesion. Since the double-side coated adhesive tape 11 is narrower than the portion of the hot melt adhesive layers 3 on each bonding member 10, there is no fear that the bonding force of the bonding member 10 may become insufficient.

[0035] Although the double-side coated adhesive tape 11 is used as a continuously elongated member in this embodiment, it may be substituted by a string or tape which has the adhesive force not throughout the whole surface thereof but it has the adhesive force on its only surface of abutting with the bonding members 10. These string or tape can be formed using paper or plastic film. In case of temporary fixing of the string or tape, the bonding member 10 located at the top position may be fastened with pin or a small double-side coated

adhesive tape and then the gypsum board 5 may be mounted while covering the connected bonding member 12 and the pin, even by these manner there will arise no problem.

[0036] Fig. 8 illustrates a bonding member 13 according to the second embodiment of the present invention. The bonding member 13 of this embodiment is provided with a pair of inserting projections 15, 15 formed at corners of a metallic plate 14 and the top of it have sharp tips. Hot melt adhesive layers 14A and 14B are formed on both surfaces, front and back, of the metallic plate 14.

[0037] For fixing the bonding member 13 temporarily, the inserting projections 16, 15 are inserted into the pillar 4 shown in Fig. 5 by hand or with a hammer. Instead of the inserting projections 15, 15, there may be formed a chevron shaped projection 15' near a central part of the metallic plate 14 as shown in Fig. 8.

[0038] Also in this second embodiment, by heating the metallic plate 10 with the electromagnetic induction system 7 to melt the hot melt adhesive layers 3, it is possible to peel off the gypsum board 5 easily from the pillars 4, 4 without damage of the board, the same effects as in the first embodiment can be obtained.

[Third Embodiment]

[0039] Fig. 9 illustrates a bonding member 16 according to a third embodiment of the present invention. The bonding member 16, which is formed by bending a metallic plate in roughly U shape, comprises a flat plate portion 18 and a pair of holding plate portions 17, 17 formed on both sides of the flat plate portion 18, The distal end sides of the holding plates 17, 17 are bent slightly inwards so as to become narrower. The flat plate portion 18 is formed flat and hot melt adhesive layers (not shown) are formed on both surfaces, front and back of the flat plate portion 18.

[0040] For mounting the gypsum board 5 to a pillar 4 with use of this bonding member 16, the distal end sides of the holding plate portions 17, 17 are slightly expanded and the pillar 4 is inserted between the holding plate portions 17, 17. In this case, the pillar 4 is inserted until the whole of the hot melt adhesive layer (not shown) formed on the back of the flat plate portion 18 comes into contact with the surface of the pillar 4. Once the pillar 4 is inserted between the holding plate portions 17, 17, the holding plate portions are held on the pillar by virtue of an elastic force thereof, whereby the bonding member 16 is temporarily fixed to the pillar 4.

[0041] Next, the gypsum board 5 (see Fig. 3) is pushed against the flat plate portion 18 of the bonding member 16 and in this state the gypsum board is heated from above by means of the electromagnetic induction system 7 (see Fig. 3), allowing the bonding member 16 to be bonded to the pillar 4 and also to the gypsum board 5. A small, rectangular, double-side coated adhesive tape may be used to affix to flat plate portion 18 on the side which comes into contact with the gypsum board 5, thereby allowing the flat plate portion to lightly hold the gypsum board before the electromagnetic induction heating.

[0042] Fig. 10 illustrates another method for temporarily fixing the bonding member at the time of mounting the gypsum board 5 to the pillar 4. According to this temporarily fixing method, a pin (inserting member) 19 is driven into the pillar 4 through the bonding member 1 as shown in Fig. 1 to fix the bonding member to the pillar temporarily. As examples of other inserting members employable than the pin 19, there are mentioned nail, wooden screw, and staple. After the bonding member 1 has been temporarily fixed to the pillar 4, the gypsum board 5 is pushed against the surface of the bonding member 1 and is induction-heated from above by means of the electromagnetic induction system 7.

[0043] In the case where the pillar 4 is a steel frame such as H shaped steel though it is not shown in the drawings, if the metallic plate of the bonding member 1 is magnetized to allow the bonding member to be adhered to the steel frame magnetically, it becomes easier to effect the temporary fixing of the bonding member 1. After the bonding member 1 has been fixed temporarily, the gypsum board 5 is pushed against the bonding member 1 and is subjected to electromagnetic induction heating from above, as noted above.

[0044] Also in this third embodiment, by heating the flat plate portion 18 as a metallic plate with use of the electromagnetic induction system 7 to melt the hot melt adhesive layers 3, the gypsum board 5 can be peeled off easily from the pillars 4, 4 without damage thereto and it is possible to obtain the same effects as in the first embodiment.

[0045] Besides, as described above, since the bonding members 1, 13, and 16 are small pieces, they can be removed easy, and even when they are to be discarded, the discarding work can be done at low cost in a simple manner.

[Fourth Embodiment]

[0046] Next, a building dismantlement method will be described below with reference to drawings.

[0047] In Figs. 11 and 12, the numeral 101 denotes a building, which is provided with a pillar 102 and walls 103. Between the pillar (support pillar) 102 and a pillar (not shown) are disposed wooden or steel frame studs (support posts) 104 and 105. A gypsum board 106 is attached to the support pillar 102 and the stud 104. Further, the gypsum board 106 and a gypsum board 107 are attached to the stud 105, as shown in Fig. 13.

[0048] In spaces 108 and 109 formed between opposed sides of the gypsum boards 106, 107 and the pillar 102 and studs 104, 105 are disposed a plurality of bonding members 112 aa small pieces at predetermined intervals. As shown in Figs. 14 and 15, the bonding members 112 respectively comprise a metallic plate 110 made of iron or aluminum for example and hot melt ad-

hesive layers 111 formed on both sides of the metallic plate 110. The metallic plate 110 is about 0.1 to 2 mm thick and about 1 to 10 cm in length and width.

[0049] In mounting the gypsum boards 106 and 107, the position of each metallic plate 110 can be detected easily by using a detecting means such as a metal detector. Alternatively, a characteristic of an electromagnetic induction system 120 (see Fig. 16) used for heating the hot melt adhesive layers 111 may be utilized for metal detection. In this case, a metallic plate 110 is detected by the electromagnetic induction system (electromagnetic induction heating means) 120, then the thus-detected metallic plate 110 is heated with an electromagnetic induction system 120 to melt the hot melt adhesive layers 111, and the gypsum boards 106 and 107 are pushed and bonded to the pillar 102 and studs 104, 105.

[0050] The electromagnetic induction system 120 is of completely the same configuration as that of the electromagnetic induction system 7 shown in Fig. 4 and therefore an explanation thereof will here be omitted.

[0051] The following description is now provided about how to remove the gypsum boards 106 and 107 for dismantlement of the building 101.

[0052] First, a high-frequency current is allowed to flow through the high-frequency coil 21 in the electromagnetic induction system 120. Then, the electromagnetic induction system 120 is moved along the pillar 102 and studs 104, 105, as shown in Fig. 17. When the electromagnetic induction system 120 arrives at a position opposing to a metallic plate 110, an electric current is flowed in the metallic plate 110 with electromagnetic induction, with consequent increase of the high-frequency current flowing through the high-frequency coil 21 in the electromagnetic induction system 120. Further, the electric current detected by the detecting coil 23 increases and the output voltage Vt provided from the voltage output circuit 24 takes a value of not lower than the reference voltage V0. In this state the controller 25 judges that a metallic plate 110 is present, and causes the display 26 to provide an indication that the metallic plate 110 is present.

[0053] Once the presence of the metallic plate 110 is indicated on the display 26, the movement of the electromagnetic induction system 120 is stopped at that position by the user and is operated to heat the metallic plate 110 for a predetermined time (several seconds), causing the hot melt adhesive layers 111 to melt. Thereafter, the electromagnetic induction system 120 is again moved along the pillar 102 and studs 104, 105 while searching for the position of another metallic plate 110 in the same manner as above, followed by heating the metallic plate 110 and melting the hot melt adhesive layers 111.

[0054] Since the metallic plate 110 is a small piece and the hot melt adhesive layers 111 applied to both sides of the metallic plate function as a heat insulating material, the metallic plate 110 is heated efficiently. Consequently, heating of the hot melt adhesive layers 111 is done efficiently. Besides, since the heat of the metallic plate 110 is retained by the hot melt adhesive layers 111 and plural such metallic plates 110 are arranged at predetermined intervals, heat docs not escape to the other metallic portion than the heated portion in comparison with the case where a metallic plate is disposed throughout the whole of opposing surfaces of the gypsum boards 106, 107 and the studs 104, 105, thus making it possible to effect efficient heating.

[0055] For removal of the gypsum board 106, the gypsum board is peeled off from the heated portions in a successive manner. At this time, since the hot melt adhesive layers 111 on each metallic plate 110 are in a melted state, the removal of the gypsum board 106 can be done easily without being damaged.

[0056] In the same manner as above, also with respect to the gypsum board 107, all of the metallic plates 110 are heated and the gypsum board 107 is peeled off.

[0057] As described above, the gypsum boards 106 and 107 can be peeled off in a simple manner moreover it is done without damage, the gypsum board 106 and 107 can be recycled.

[0058] Although in the above embodiments the hot melt adhesive layers 111 are applied to both sides of each metallic plate 110, only one of either side of the metallic plate may be coated with such adhesive layer. In this case, an ordinary type of an adhesive may be applied to the other side.

[0059] Further, although also during detection of a metallic plate 110 the electromagnetic induction system 120 causes a high-frequency current to flow in the high-frequency coil 21 for heating the metallic plate, there may be adopted a modification such that during the detection a weak high-frequency current is allowed to flow to detect a metallic plate 110 and a high-frequency current for heating is allowed to flow upon detection of the metallic plate.

Claims

1. A bonding member comprising a metallic plate formed as a small piece onto which a hot melt adhesive layer is formed at least one side of said metallic plate.

2. A bonding member according to claim 1, **characterized in that** said bonding member is disposed between a gypsum board and a pillar, and said metallic plate is heated with electromagnetic induction from the surface side of said gypsum board to melt said hot melt adhesive layer, whereby the metallic plate is bonded to at least said gypsum board or said pillar.

3. A bonding member according to claim 1, **characterized in that** said metallic plate is provided with an inserting projection for fixing the bonding mem-

ber temporarily to a portion to which the gypsum board is to be mounted.

4. A bonding member according to claim 3, **characterized in that** said metallic plate is provided with a pair of holding plate portions for allowing the bonding member to be held by and temporarily fixed to said pillar.

5. A bonding member according to claim 1, **characterized in that** said metallic plate is magnetized.

6. A gypsum board mounting method for mounting the gypsum board to a portion where said gypsum board is to be mounted using a bonding member comprising a metallic plate formed as a small piece onto which a hot melt adhesive layer is formed at least one side of said metallic plate, **characterized in that** said method comprising: fixing said bonding member temporarily to said portion; pushing said gypsum board onto said bonding member; beating said metallic plate of the bonding member with electromagnetic induction from above said gypsum board to melt said hot melt adhesive layer; and thereby allowing the gypsum board to be bonded to said portion.

7. A gypsum board mounting method according to claim 6, **characterized in that** said temporary fixing is performed while at least a top bonding member out of plural bonding members interconnected with an elongated member is fastened to said portion to which the gypsum board is to be mounted.

8. A gypsum board mounting method according to claim 6, **characterized in that** said temporary fixing is performed with driving an inserting member into said portion to which the gypsum board is to be mounted, so as to pierce through the bonding member.

9. A gypsum board mounting method according to claim 6, **characterized in that** said temporary fixing is performed with adhesively bonding together said bonding member and said portion to which the gypsum board is to be mounted, while interposing a double-side coated adhesive tape between said bonding member and said portion, said double-side coated adhesive tape being smaller than said hot melt adhesive layer.

10. A gypsum board mounting method according to claim 6, **characterized in that** said method further comprising: detecting said metallic plate by a metal detecting means from above said gypsum board; and then heating the metallic plate with electromagnetic induction at the position where the metallic plate is detected by said metal detecting means.

11. A gypsum board mounting method according to claim 10, **characterized in that** said metal detecting means utilizes an electromagnetic induction heater for heating said metallic plate.

12. A building dismantlement method for dismantling a building to which gypsum boards have been mounted by a method using a bonding member comprising a metallic plate formed as a small piece onto which a hot melt adhesive layer is formed at least one side of said metallic plate, **characterized in that** said mounting method comprising:

fixing said bonding member temporarily to said portion; pushing said gypsum board onto said bonding member;
heating said metallic plate of the bonding member with electromagnetic induction from above said gypsum board to melt said hot melt adhesive layer; and
thereby allowing the gypsum board to be bonded to said portion,

wherein said dismantlement method comprising:

heating said metallic plate by an electromagnetic induction heating means;
melting said hot melt adhesive layer; and
removing said gypsum board from its mounted portion.

13. A building dismantlement method according to claim 12, **characterized in that** said method further comprising: detecting said metallic plate by a metal detecting means from above said gypsum board; and heating the metallic plate by said electromagnetic induction heating means at the position where the metallic plate is detected by said metal detecting means.

14. A building dismantlement method according to claim 13, **characterized in that** said metallic plate is detected by said electromagnetic induction heating means.

FIG.1

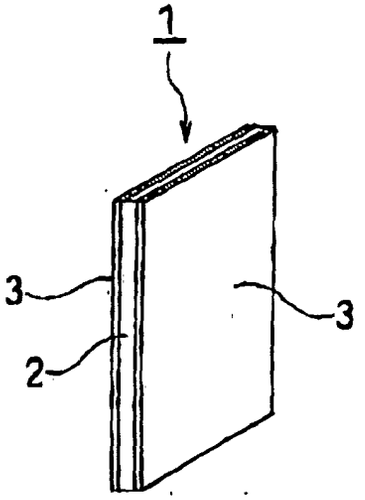

FIG.2

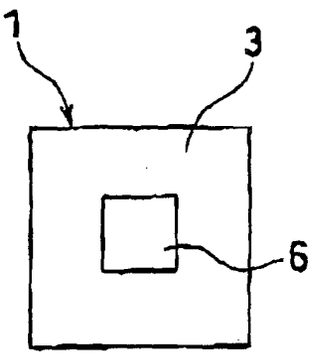

FIG.3

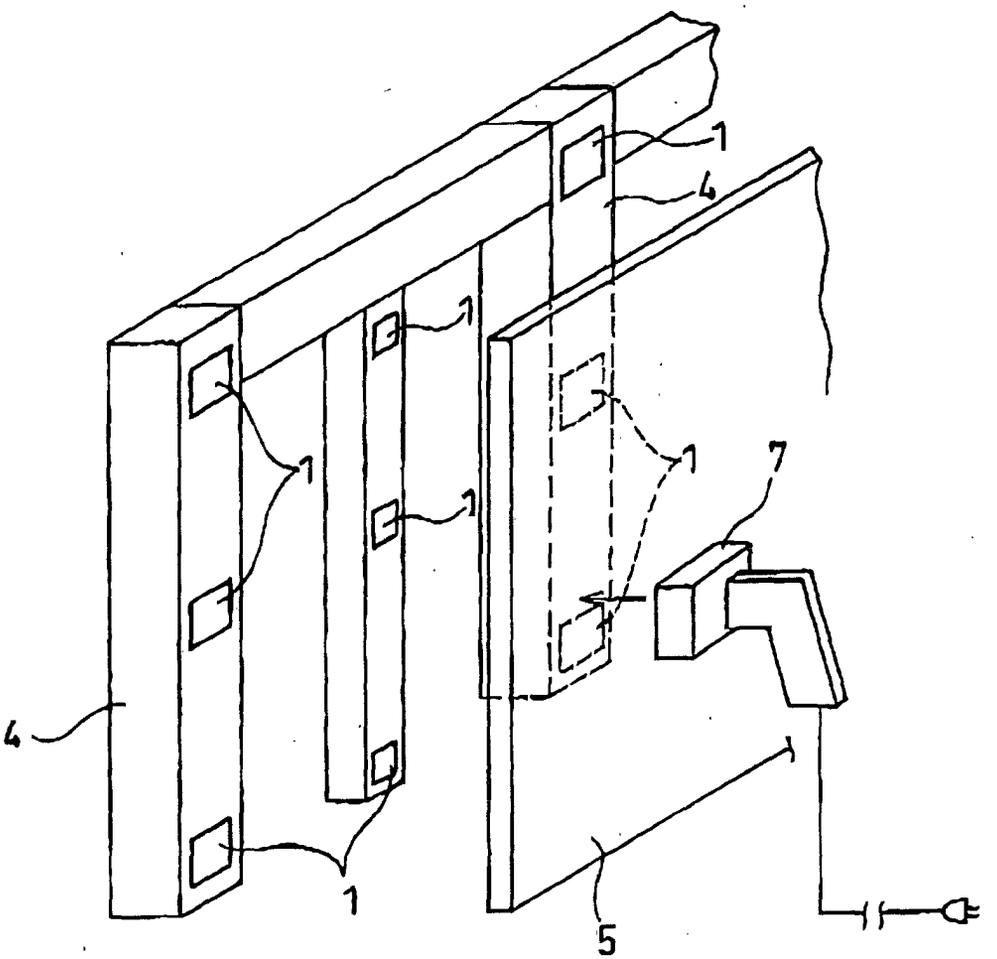

FIG.4

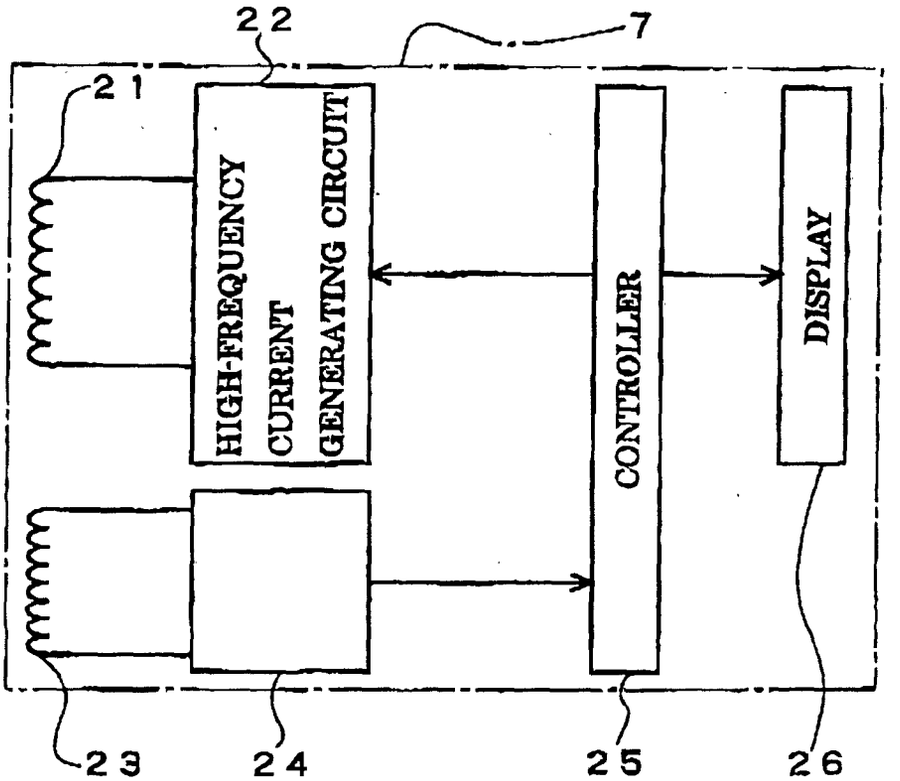
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FIG.5

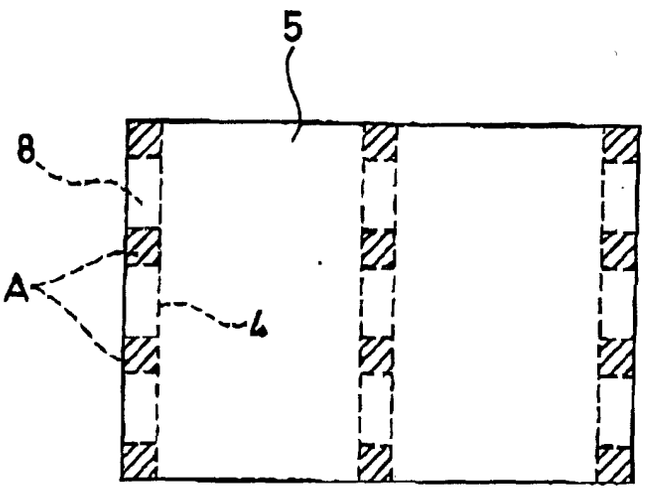

FIG.6

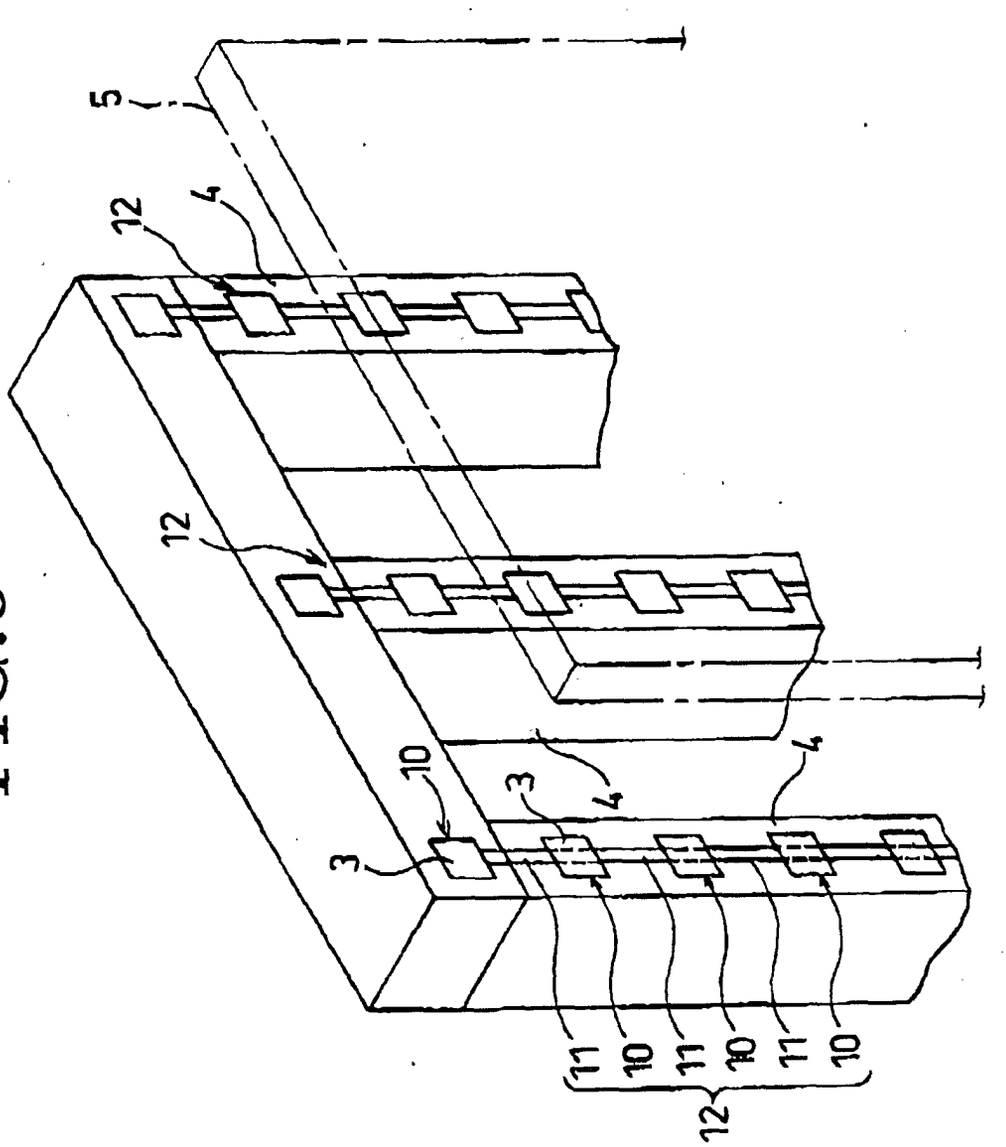

FIG.7

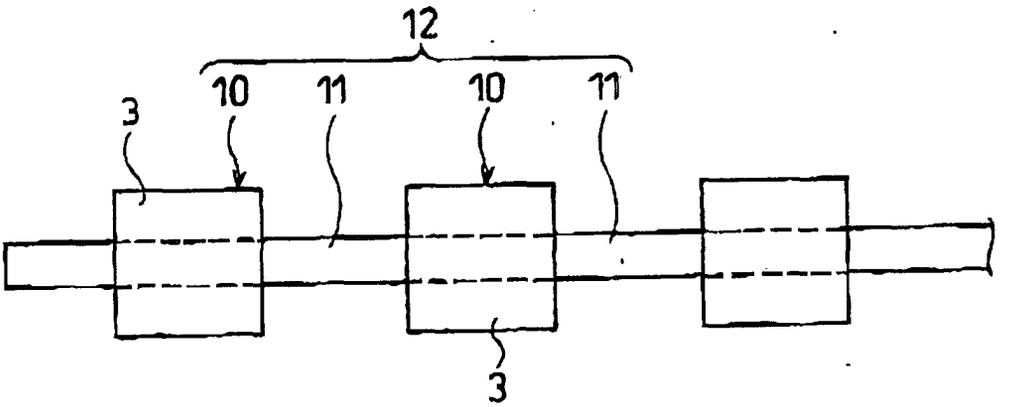

FIG.8

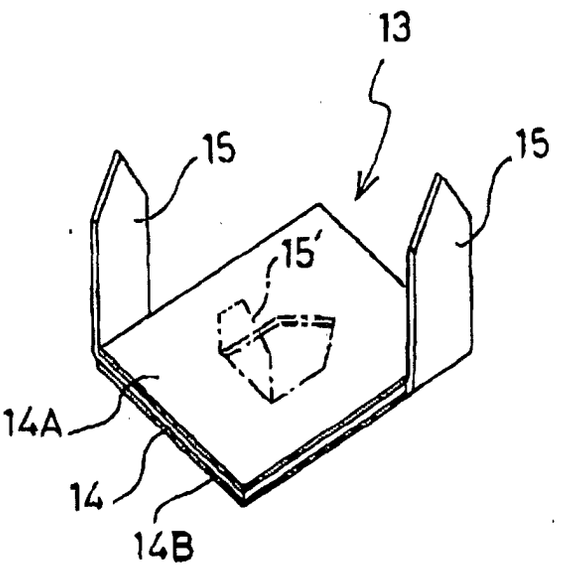

FIG.9

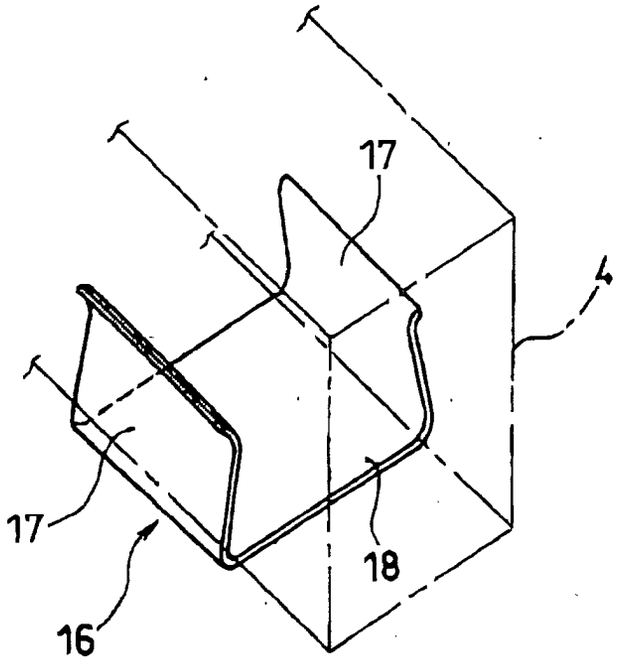

FIG.10

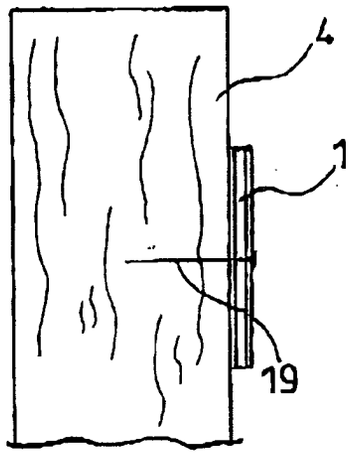

FIG.11

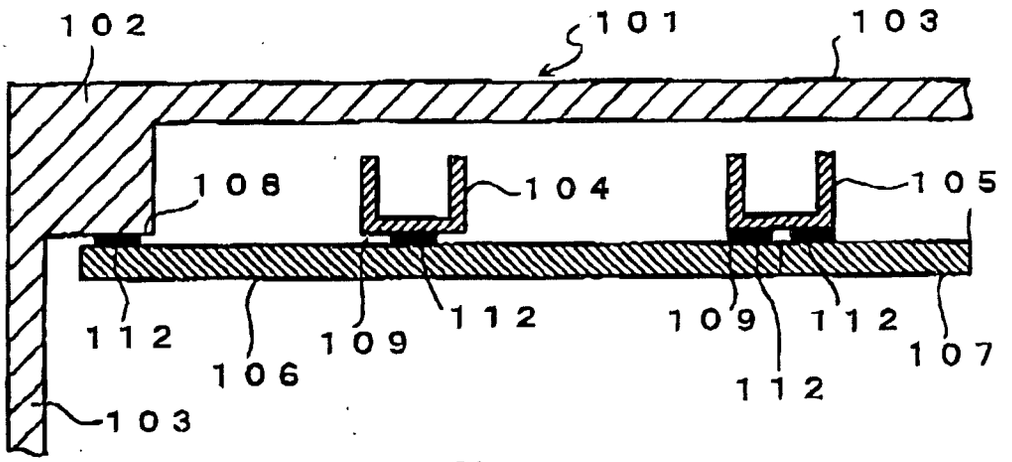
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FIG.12

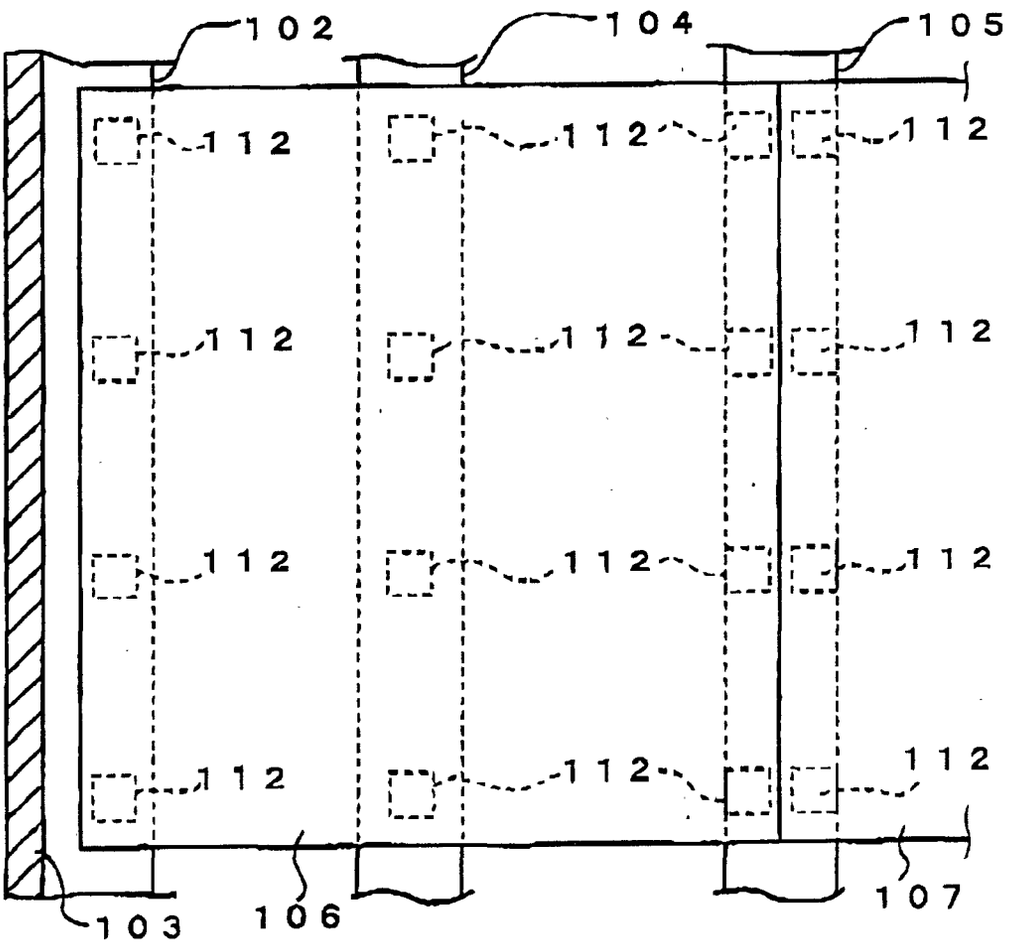
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FIG.13

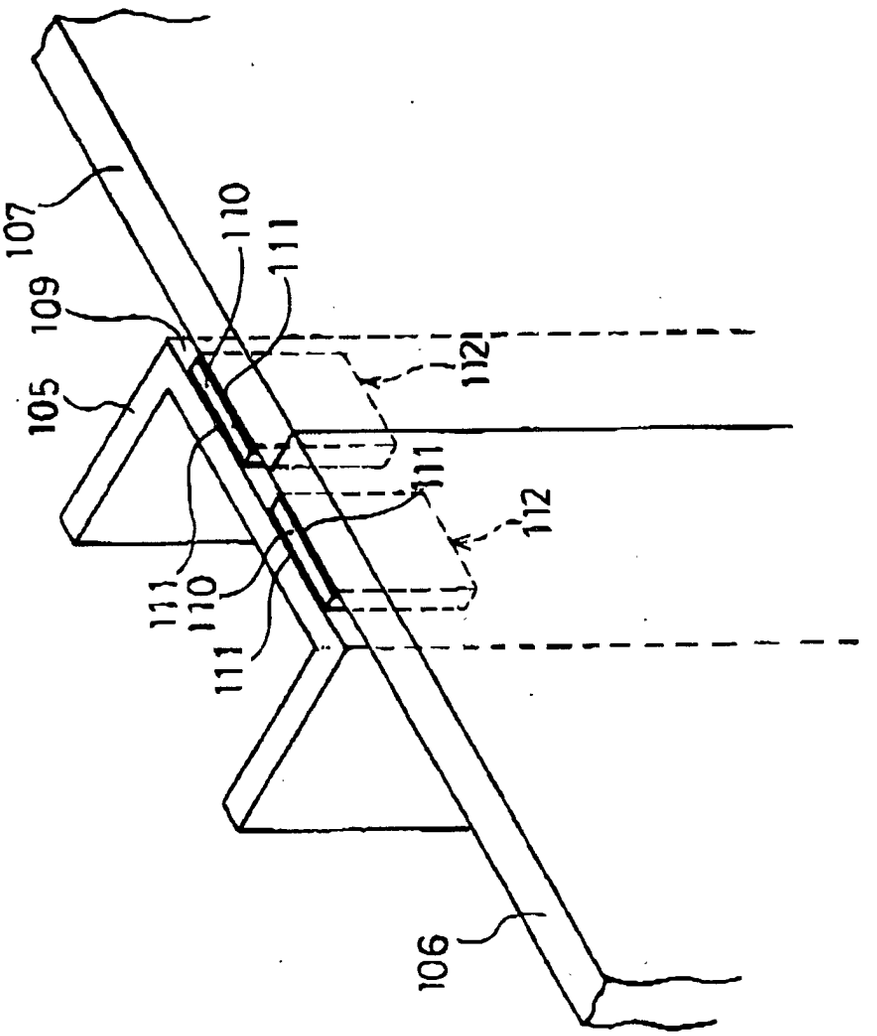

FIG.14

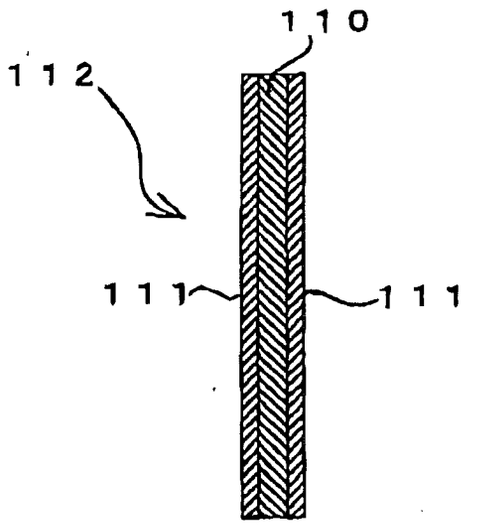

FIG.15

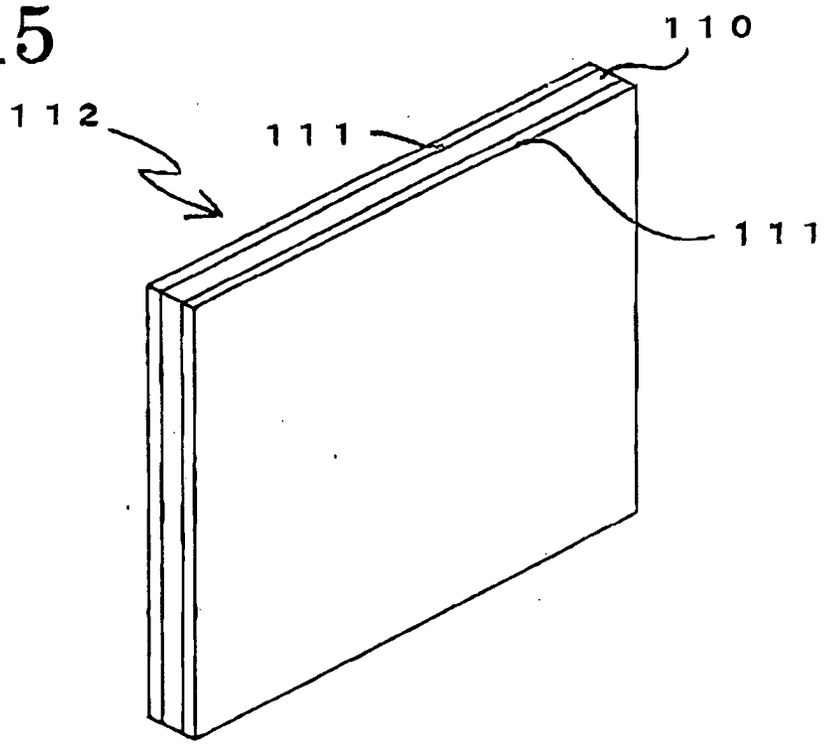

FIG.16

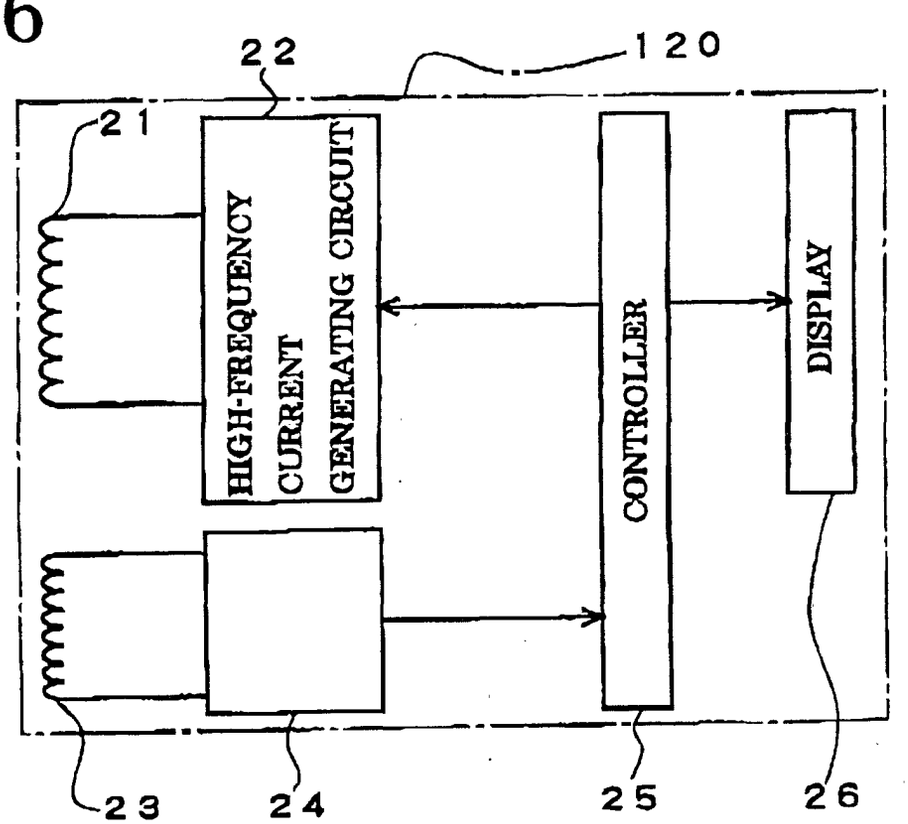
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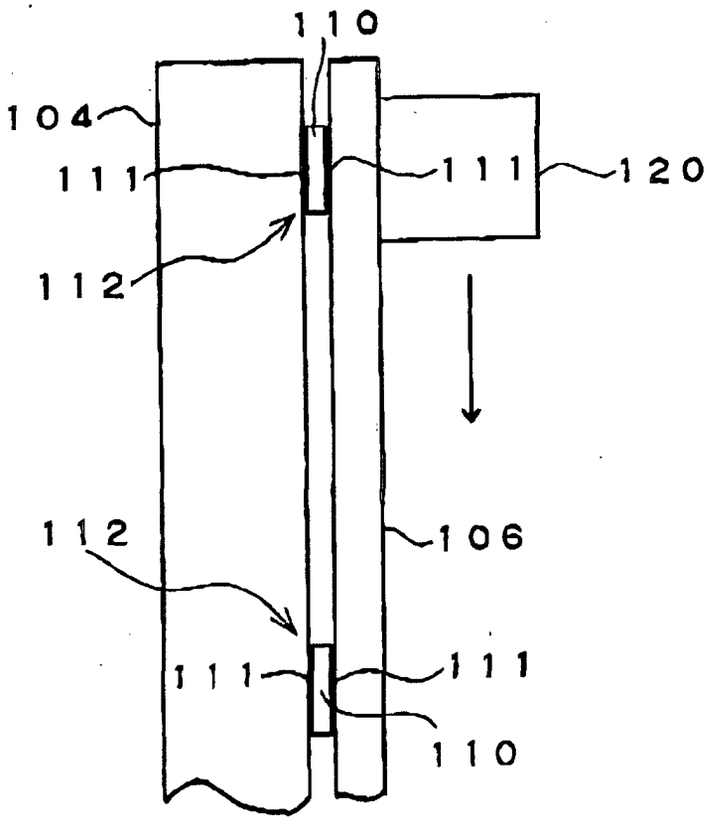
FIG.17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European Patent Office

EUROPEAN SEARCH REPORT

Application Number
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A	WO 97 14855 A (PEHRSON CLAES GOERAN) 24 April 1997 (1997-04-24) * the whole document *	6	
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E04B
F16B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	28 September 2001	Vrugt, S

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