



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 321 259 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
25.06.2003 Bulletin 2003/26

(51) Int Cl.7: **B28B 11/04**, B28B 11/00

(21) Application number: **02028500.3**

(22) Date of filing: **19.12.2002**

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

(72) Inventors:
• **Elmetti, Valdo Vittorio**
42014 Castellarano, Reggio Emilia (IT)
• **Fiandri, Giancarlo**
41030 Prignano sulla Secchia, Modena (IT)

(30) Priority: **21.12.2001 IT MO20010259**

(74) Representative: **Luppi, Luigi**
Luppi & Crugnola S.r.l.
Viale Corassori, 54
41100 Modena (IT)

(71) Applicant: **TECNO - EUROPA S.R.L.**
41043 Formigine (MO) (IT)

(54) Means for decorating objects

(57) Means for decorating objects (2) comprises decorating surface means (3) provided with openings (7) through which a flowable decorative product can pass, said openings (7) being arranged in such a way as to form a decoration on an object (2) placed underneath said decorating surface means (3), said decorating surface means (3) being made of substantially ho-

mogenous yielding material.

Means for decorating objects (2), comprises decorating surface means (3) provided with openings (7) through which a flowable decorative product can pass, support means (4) suitable for supporting said decorating surface means (3), said decorating surface means (3) being operationally associable in a removable manner with said support means (4).

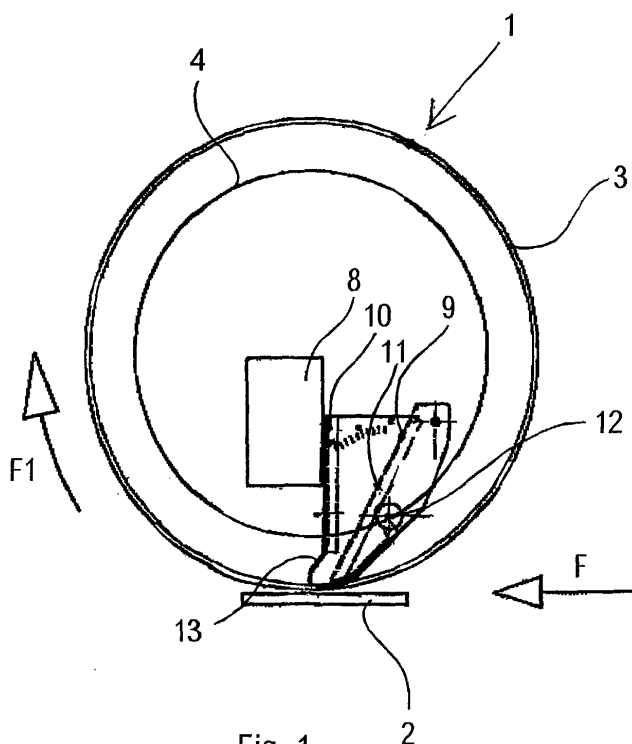


Fig. 1

EP 1 321 259 A2

Description

[0001] The invention concerns means for decorating objects, for example ceramic tiles, glass plates but also objects with a surface that does not have a flat shape, such as structured surfaces, edges of steps, and sanitaryware.

[0002] In the ceramics industry decorating machines are known that are provided with at least one decorating cylinder comprising two end flanges, to which a tubular jacket in a stiff material, for example polymethylmethacrylate, is fixed on which through apertures are made. A certain quantity of decorating glaze is taken to the internal surface of the tubular jacket, to a position located immediately upstream of a distributing blade supported internally on said jacket, in such a way that the distributing blade can press the glaze through the openings of the jacket and carry out the desired decoration of the tile placed underneath said jacket.

[0003] A drawback of the known decorating machines is that they bring a high risk of breakage of the ceramic tiles to be decorated, particularly when the latter are in an unfired state, i.e. when they have not yet been consolidated through firing.

[0004] In fact, owing to processing defects of the mechanical members that constitute the known machines, the decorating cylinder is often assembled eccentrically with respect to the support members so that the geometrical axis of the decorating cylinder does not coincide with the axis around which it is rotated. Consequently, during rotation of the decorating cylinder, the external surface of the jacket is placed, depending on the angular position of the cylinder, nearer or further away from the surface of the tile to be decorated compared with the theoretically envisaged position. As the theoretical position of the decorating cylinder is usually the position in which the external surface of the jacket is at a tangent in relation to the tile, a cylinder that has eccentricity defects may pass, during rotation, from positions in which it is not in contact with the tile to positions in which it exercises excessive pressure on said tile. These last positions are particularly dangerous inasmuch as excessive pressure may easily cause the tile to break, especially if the latter is still in an unfired and therefore particularly fragile state.

[0005] Furthermore, even if the tile does not get broken through anomalous contact with the decorating cylinder, distribution of the glaze on the surface to be decorated will certainly be altered compared with theoretical distribution, thereby generating defects in the decoration because of which low-quality tiles are obtained or even tiles that have to be rejected because they fail to meet the minimum quality requirements.

[0006] Silk-screen decorating machine are furthermore known, which differ from the aforementioned machines only through the fact that the decorative roller is not provided with a tubular jacket in stiff material but by a silk screen that is provided with a plurality of openings

to enable the passage of the glaze. Said openings are initially closed by a layer of resin in a selective manner, so as to leave open only the openings that correspond to the design that has to be printed on the tile.

5 **[0007]** The silk screens have the drawback of wearing out rapidly through contact with the distributing blade arranged inside them. Furthermore, prolonged use may remove the resin from certain openings, which causes the glaze to be transferred to undesirable positions on the tile.

10 **[0008]** Other drawback of the known decorating machines are connected to the fact that in said machines the tubular jacket is fixed to the flanges through gluing.

15 **[0009]** This fixing system greatly complicates the recycling of the materials that form the decorating cylinder, when the latter has come to the end of its working life. In fact, when the cylinder can no longer be used in production because of breakages or great wear, the flanges, which are usually made of metal material, have to be separated from the tubular jacket, which is made of another material, so as to dispose of the two different materials separately, in accordance with the regulations in force.

20 **[0010]** This separation is normally a somewhat complicated operation, which keeps the operator entrusted with the task occupied for a relatively lengthy period, inasmuch as the glue used to fix the jacket to the flanges is a permanent adhesive that is provided with high adhesive power and is therefore not easily removable.

25 **[0011]** The unusable cylinder has furthermore to be replaced, on the decorating machine, with a new decorating cylinder that is ready for use, i.e. provided with flanges and a tubular jacket that has been previously sent to the tile manufacturers by the cylinder manufacturer. Before dispatch to the tile manufacturer the decorating cylinder must have been properly packaged so as to be protected against any blows; owing to the considerably dimensions of said cylinder, the packages are very bulky and involve high transport costs and not insignificant handling difficulties.

30 **[0012]** An object of the invention is to improve the known means for decorating objects.

35 **[0013]** A further object of the invention is to provide means for decorating objects that can limit the risk of breakage of said objects during decoration, at the same time ensuring high-quality aesthetic results.

40 **[0014]** A further object of the invention is to provide means for decorating objects that can be easily replaced and disposed of, when the productive life thereof comes to an end.

45 **[0015]** A still further object of the invention is to provide means for decorating objects that can be easily transported.

50 **[0016]** In a first aspect of the invention, means for decorating objects is provided, comprising decorating surface means provided with openings through which a flowable decorating product can pass, said openings being arranged in such a way as to form a decoration

on an object placed underneath said decorating surface means, characterised in that said decorating surface means is made of a substantially homogenous yielding material.

[0017] Owing to this aspect of the invention, the risk of breakage of the objects to be decorated can be significantly reduced, even when the latter comprise fragile materials, such as ceramic tiles in unfired state. In fact, if processing defects of the mechanical members are current, the decorating surface means, being made of yielding material, is easily deformed in such a way as to adapt to the surface of the object to be decorated without applying pressure to the object that would cause said object to break.

[0018] In a preferred embodiment, the decorating surface means comprises tubular jacket means.

[0019] If the tubular jacket means is pressed against the objects to be decorated with excessive pressure, said jacket means is deformed only in a radial sense, i. e. the jacket means flexes inwards so as to remove itself from the surface of the objects to be decorated, without however varying its position in the advancing direction of the objects or transversally to said direction. In this way the decorating product is applied to the surface of the objects in a position that substantially coincides with the theoretical position, which enables defects in the decoration to be avoided.

[0020] Furthermore, as the material of the decorating surface means is substantially homogenous, it is almost impossible to accidentally generate undesirable openings in said decorating surface means, unlike what occurs in silk-screens, in which the resin that closes the openings can be easily removed.

[0021] As the decorating surface means is made of a yielding material, also objects with a complex geometry that do not have flat surfaces such as the edges of steps, sanitaryware and curved border tiles can be decorated.

[0022] In a preferred embodiment, said substantially homogenous yielding material comprises a sheet material made of plastic material.

[0023] The sheet materials made of plastic material guarantee good resistance to wear, both in contact with the objects to be decorated and in contact with any distributing means of the decorating product.

[0024] Advantageously, said sheet material comprises a bioriented material.

[0025] As the bioriented sheet materials have substantially uniform properties in the two main directions of the sheet, means for decorating objects can be obtained which have the same constant properties whatever the winding direction of the sheet material to form the tubular jacket means.

[0026] Also advantageously, said substantially homogenous yielding material belongs to the polyester family, and is preferably polyethylene terephthalate.

[0027] Experimental tests have shown that this material can easily be perforated with laser devices to obtain openings through which the decorating product can

pass, and at the same time it possesses good flexibility so as to adapt to the surface of the objects to be decorated, however complicated they are.

[0028] In a second aspect of the invention, means for decorating objects is provided, comprising decorating surface means provided with openings through which a flowable decorative product can pass, support means suitable for supporting said decorating surface means, characterised in that said decorating surface means is operationally associatable in a removable manner with said support means.

[0029] Owing to this aspect of the invention, the decorating surface means can be fixed to and be removed from the support means easily and for a virtually unlimited number of times, without excessive loss of time or complications for the operator in charge.

[0030] Furthermore, when the decorating surface means is worn, it can be removed from the support means and only the decorating surface means need be replaced, which ensures financial savings due to reuse of the support means.

[0031] Finally, when the means for decorating objects has to be disposed of, it is possible to easily separate the decorating surface means from the support means, if the decorating surface means and the support means are made of a different material, so that they can be sent to different disposal sites.

[0032] In a preferred embodiment, the means for decorating objects furthermore comprises connecting means suitable for connecting the decorating surface means with the support means.

[0033] Advantageously, the connecting means is suitable for being shapingly coupled with the decorating surface means and with the support means.

[0034] In a preferred embodiment, the connecting means comprises protruding element means and seat means suitable for receiving the protruding element means.

[0035] Owing to the connecting means, it is possible to achieve precise coupling between the decorating surface means and the support means, and to maintain said coupling even when the decorating surface means and/or the support means are moved with respect to said objects.

[0036] In an advantageous embodiment, the protruding element means comprises male parts of press studs.

[0037] Owing to their ready availability on the market the male parts of the press studs enable connecting means to be obtained that is easy to manufacture and is low-cost.

[0038] In a further preferred embodiment, the protruding element means comprises tooth means of toothed-belt means that is suitable for interacting with the seat means.

[0039] The toothed-belt means advantageously enables an anchoring system to be obtained that can be easily created and at low cost inasmuch as it is possible to use the same toothed belts that are normally used as

drive members and are therefore certainly available in the production facility.

[0040] Furthermore, in certain cases, worn belts can be used that can no longer be safely used as drive members but which ensure excellent results as connecting means.

[0041] In a still further preferred embodiment the decorating surface means comprises tubular jacket means, preferably made from a yielding material, and the support means comprises flange means that is suitable for supporting said tubular jacket means.

[0042] The tubular jacket means can easily be separated from the flange means and, by exploiting their flexibility, can be folded and packaged in small containers, thereby being easy to be transported.

[0043] In a third aspect of the invention, there is provided the use of components of press studs to anchor treatment surface means, arranged for treating objects, especially ceramic tiles, on support means.

[0044] In a fourth aspect of the invention there is provided the use of toothed-belt means to anchor treatment surface means, arranged for treating objects, particularly ceramic tiles, on support means.

[0045] Owing to the third and fourth aspect of the invention, the treating means for treating objects, particularly ceramic tiles, can be simplified by using anchoring systems that are readily available and low-cost.

[0046] The invention may be better understood and carried out with reference to the enclosed drawings which show some exemplifying and non-limiting embodiments thereof, in which:

Figure 1 is a schematic side view of means for decorating objects according to a first aspect of the invention;

Figure 2 is a schematic front view, partially sectioned, of the means for decorating objects of Figure 1;

Figure 3 is a broken view from above of connecting means according to a second aspect of the invention;

Figure 4 is a broken section taken along the plane IV-IV of Figure 3;

Figure 5 is a schematic side view, partially sectioned, of connecting means according to the invention, in an initial assembly phase on means for decorating objects;

Figure 6 is a view like the one of Figure 5, at the end of the assembly phase;

Figure 7 is an enlarged and broken section of the connecting means of Figures 3 and 4, fitted on means for decorating objects;

Figure 8 is a schematic section, enlarged and broken, of an alternative embodiment of the connecting means of Figures 3 and 4;

Figure 9 an enlarged and broken section of a further alternative embodiment of connecting means according to the second aspect of the invention.

[0047] As Figure 1 shows, means 1 for decorating objects, particularly ceramic tiles 2 moving along a conveyor line, that is not shown, in a horizontal direction indicated by arrow F comprises a decorating surface, in the form of a cylindrical tubular jacket 3, with longitudinal ends occupied by flanges 4 that can be coupled with rotating means of a known decorating machine that is therefore not shown.

[0048] The jacket 3 may have a central operating section 5 that is less thick than the thickness of the remaining end zones, or be uniformly thick along all its axial development.

[0049] The central operating section 5 is occupied by a decorating zone 6 with a flat development that corresponds to the surface of the tiles 2 to be decorated, the decorating zone 6 having a plurality of through holes 7 distributed according to the decorating motif to be obtained on the surface of the tiles 2 to be decorated.

[0050] The decorating motif may have the most varied forms and extension, for example to define a figurative or abstract motif on the tiles 2, for example a veined motif that imitates the effect of natural stones.

[0051] The same jacket 3 may have a single decorating zone 6 or also several decorating zones 6, depending on the ratio between the diameter of the jacket and the extension of each tile 2 along direction F.

[0052] Within the jacket 3 a support bar is arranged 8 to which a container 9 is fixed that has the form of a hopper inside which glaze in powder form for decorating the tiles 2 is contained. In the container 9 there is a conduit - that is not shown - through which a quantity of ceramic glaze is poured that corresponds to the glaze distributed on the tiles 2.

[0053] The container 9 is delimited by side walls arranged roughly at the longitudinal ends of the jacket 3, by a fixed front wall 10 and by a rear wall 11 whose position can be angularly adjusted around an axis 12. The front wall 10 finishes at the bottom with a distributing blade 13 that defines, together with the bottom edge of the rear wall 11, a container outlet 9 through which the powder glaze is in contact with the jacket 3 and exits from the openings 7, if any, or is kept in the container 9 in the zones of the jacket 3 that are not provided with openings.

[0054] The jacket 3 is rotated around its own longitudinal axis in a direction F1 that corresponds to the advancing direction F of the tiles 2.

[0055] Therefore, a tile 2 that moves, along direction F, under the operating zone 5 of jacket 3 without touching the jacket is loaded with powder glaze only in the zones that form the decorating motif of said tile.

[0056] The jacket 3 is made of substantially homogeneous yielding material, in such a way that it can be easily deformed and can easily adapt to the surface to be decorated, even if, for example due to concentricity defects, it is pressed with a certain pressure against the surface of the tile 2 to be decorated. Preferably, the jacket 3 is made from polyester, particularly, polyethylene tereph-

thalate.

[0057] To anchor the jacket 3 to the flanges 4, connecting means is used comprising a strip 14, in which a plurality of seats is made, which for example take the form of circular holes 15. Inside each circular hole 15, a protruding element is housed comprising a male part 16 of a press stud, which can be inserted into the strip 14 using a device of the type commonly used in tailoring to insert the press studs into the fabrics. The strip 14 is furthermore provided, near the ends, with a first through fixing hole 17 and a second through fixing hole 17'.

[0058] To assembly the means for decorating objects according to the invention, the tubular jacket 3 has first to be positioned on the flanges 4, as shown in Figure 5. The flanges 4 are peripherally provided with at least one threaded hole 21, and a plurality of recesses 19, arranged radially, at which a plurality of passing holes 20 have to be arranged with which the tubular jacket 3 is provided, near its own lateral edges.

[0059] Subsequently, the strip 14 is positioned above the jacket 3 and is temporarily fixed to the assembly comprising the flanges 4 and the jacket 3 by means of a positioning tool 22, that may, for example, be a normal screwdriver or any type of pin of a suitable diameter. The tool 22 is caused to pass through the first fixing hole 17 of the strip 14, and is then housed inside the threaded hole 21 made in the flange 4.

[0060] The strip 14 is now wrapped around the lateral edge of the tubular jacket 3, in such a way that each male part 16 of the press studs passes through the corresponding through hole 20 of the tubular jacket 3 and engages inside the respective radial recess 19 made in the flange 4, as shown in Figures 6 and 7.

[0061] The strip 14 has a size such that, once wound onto the tubular jacket 3, the second fixing hole 17' is located above the first fixing hole 17. At this point the tools 22 can therefore be removed and the cylindrical jacket 3 can be firmly tightened against the flanges 4 by means of screw 23 that is received by the threaded hole 21.

[0062] The screw 23, together with the male parts 16 of the press studs, enables the tubular jacket 3 to be fixed securely and firmly to each flange 4, thereby preventing any relative shifts; on the other hand, the screw 23 and the male parts 16 can easily be removed so as to enable easy dismounting of the tubular jacket 3 from the flanges 4 that support it.

[0063] In an alternative embodiment, shown in Figure 8, the strip 14 can be provided, in addition to the male parts 16 of press studs, with fixing elements 24, suitable for being shapingly coupled with said male parts 16, on the opposite side of the strip 14 with respect to the side from which the male parts 16 are inserted so as to ensure even more solid positioning of the male parts 16 on the strip 14.

[0064] In a preferred embodiment that is not shown, the male parts 16 of the press studs can be fixed directly to the flanges 4, or to the tubular jacket 3, for example

through welding or gluing, and engage in corresponding seats made respectively in the tubular jacket 3 or the flanges 4, with or without use of the strip 14. The seats in which the male parts 16 are received may comprise female parts of the press studs.

[0065] In an alternative embodiment, schematically shown in Figure 9, the connecting means comprises a toothed belt 25, for example of the type that is usually used as a drive member. The toothed belt 25 is arranged inside the tubular jacket 3, in such a way that the teeth 27 with which the belt 25 is provided are housed inside a plurality of passing holes 20' provided near the side edges of the jacket 3. The passing holes 20' have a profile that reproduces the plan profile of the teeth 27 and are located at a reciprocal distance that is the equivalent of the space between said teeth 27.

[0066] Subsequently, the assembly comprising the tubular jacket 3 and the belt 25, with the teeth 27 housed in the passing holes 20', is fitted on the flanges 4 in such a way that the flat back 26 of the belt 25 rests on the peripheral surface of the flanges 4, and the teeth 27 of the belt 25 point outwards.

[0067] Inserting the belt 25 and the jacket 3 onto the flanges 4 is made possible by the elasticity of the belt 25, which can be deformed to adapt to the shape and dimensions of the flanges 4, unlike what occurs with the jacket 3, which is preferably made from non-extendible material so as not to be subjected to stretching during operation that could impair its regularity and the quality of the pattern impressed on the tiles 2.

[0068] The teeth 27 are inserted inside the passing holes 20' to prevent shifts between the tubular jacket 3 and the flanges 4, during rotation of the means 1 for decorating objects.

[0069] Furthermore, the belt 25 and the jacket 3 can be fixed onto the flanges 4 by one or more threaded elements that are not shown, that constitute a further safeguard against any slipping of the jacket 3 onto the flanges 4.

[0070] It should finally be noted that the connecting means described can be used not only to connect the tubular jacket 3 of a decorating roller to the flange 4, but also to connect a flat decorating screen to a support frame, for example a silk screen or a decorating element in which openings are made to let a flowable product pass through.

[0071] Furthermore, said connecting means can be used to connect surfaces for the treatment of ceramic tiles, such as for example, the tubular jackets of presser rollers or distributor rollers to the respective support means.

Claims

1. Means for decorating objects (2), comprising decorating surface means (3) provided with openings (7) through which a flowable decorative product can

- pass, said openings (7) being arranged in such a way as to form a decoration on an object (2) placed underneath said decorating surface means (3), **characterised in that** said decorating surface means (3) is made of a substantially homogenous yielding material. 5
2. Means for decorating objects (2) according to claim 1, wherein said substantially homogenous yielding material comprises a sheet material made of plastic material. 10
 3. Means for decorating objects (2) according to claim 2, wherein said sheet material comprises bioriented material. 15
 4. Means for decorating objects (2) according to any one of the preceding claims, wherein said substantially homogenous yielding material belongs to the polyesters family. 20
 5. Means for decorating objects (2) according to any one of the preceding claims, wherein said substantially homogenous yielding material is polyethylene terephthalate. 25
 6. Means for decorating objects (2) according to any one of the preceding claims, wherein said decorating surface means (3) comprises at least one central operating zone (5) in which at least one decorating zone (6) is obtained suitable for decorating said objects (2). 30
 7. Means for decorating objects (2) according to any one of the preceding claims, wherein said decorating surface means comprises tubular jacket means (3). 35
 8. Means for decorating objects (2) according to any one of the preceding claims, and further comprising support means (4) suitable for supporting said decorating surface means (3). 40
 9. Means for decorating objects (2) according to claim 8, wherein said support means comprises end flange means (4). 45
 10. Means for decorating objects (2) according to claim 8, or 9, and further comprising connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') suitable for removably connecting said decorating surface means (3) to said support means (4). 50
 11. Means for decorating objects (2) according to claim 10, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') is suitable for being shapingly coupled with said decorating surface means (3). 55
 12. Means for decorating objects (2) according to claim 10, or 11, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') is suitable for being shapingly coupled with said support means (4).
 13. Means for decorating objects (2) according to any one of claims 10 to 12, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') comprises protruding element means (16; 27).
 14. Means for decorating objects (2) according to claim 13, wherein said protruding element means (16; 27) comprises male parts (16) of press studs.
 15. Means for decorating objects (2) according to claim 14, and further comprising locking means (24) suitable for keeping said male parts (16) in position.
 16. Means for decorating objects (2) according to any one of claims 13 to 15, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') comprises strip means (14) to which said protruding element means (16; 27) is associated.
 17. Means for decorating objects (2) according to any one of claims 13 to 16, wherein said protruding element means (16; 27) comprises tooth means (27) associated with a toothed belt means (25).
 18. Means for decorating objects (2) according to claim 17, wherein said toothed-belt means (25) is wrapped around said support means (4).
 19. Means for decorating objects (2) according to any one of claims 13 to 18, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') comprises seat means (15, 17, 17', 19, 20, 21; 20') suitable for receiving said protruding element means (16; 27).
 20. Means for decorating objects (2) according to claim 19, wherein said seat means (15, 17, 17', 19, 20, 21; 20') comprises passing hole means (20; 20') obtained in said decorating surface means (3).
 21. Means for decorating objects (2) according to claim 19, or 20, wherein said seat means (15, 17, 17', 19, 20, 21; 20') comprises recess means (19) obtained in said support means (4).
 22. Means for decorating objects (2) according to any one of claims 19 to 21, wherein said seat means (15, 17, 17', 19, 20, 21, 23; 20') comprises threaded-hole means (21), suitable for receiving screw means (23) of said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20').

23. Means for decorating objects (2) according to any one of claims 19 to 22, wherein said seat means (15, 17, 17', 19, 20, 21, 23; 20') comprises female parts of press studs.
24. Means for decorating objects (2), comprising decorating surface means (3) provided with openings (7) through which a flowable decorative product can pass, support means (4) suitable for supporting said decorating surface means (3), **characterised in that** said decorating surface means (3) can be operationally associated in a removable manner with said support means (4).
25. Means for decorating objects (2) according to claim 24, and further comprising connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') suitable for connecting said decorating surface means (3) with said support means (4).
26. Means for decorating objects (2) according to claim 25, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') is suitable for being shapingly coupled with said support means (4).
27. Means for decorating objects (2) according to claim 25, or 26, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') is suitable for being shapingly coupled with said decorating surface means (3).
28. Means for decorating objects (2) according to any one of claims 25 to 27, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') comprises protruding element means (16; 27).
29. Means for decorating objects (2) according to claim 28, wherein said protruding element means (16; 27) comprises male parts (16) of press stud.
30. Means for decorating objects (2) according to claim 29, and further comprising locking means (24) suitable for keeping said male parts in position (16).
31. Means for decorating objects (2) according to any one of claims 28 to 30, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') comprises strip means (14) with which said protruding element means (16; 27) is associated.
32. Means for decorating objects (2) according to any one of claims 28 to 31, wherein said protruding element means (16; 27) comprises tooth means (27) associated with a toothed belt (25).
33. Means for decorating objects (2) according to claim 32, wherein said toothed-belt means (25) is wrapped around said support means (4).
34. Means for decorating objects (2) according to any one of claims 28 to 33, wherein said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20') comprises seat means (15, 17, 17', 19, 20, 21; 20') suitable for receiving said protruding element means (16; 27).
35. Means for decorating objects (2) according to claim 34, wherein said seat means (15, 17, 17', 19, 20, 21; 20') comprises passing hole means (20; 20') obtained in said decorating surface means (3).
36. Means for decorating objects (2) according to claim 34, or 35, wherein said seat means (15, 17, 17', 19, 20, 21; 20') comprises recess means (19) obtained in said support means (4).
37. Means for decorating objects (2) according to any one of claims 34 to 36, wherein said seat means (15, 17, 17', 19, 20, 21, 23; 20') comprises threaded-hole means (21), suitable for receiving screw means (23) of said connecting means (14, 15, 16, 17, 17', 19, 20, 21, 23; 25, 27, 20').
38. Means for decorating objects (2) according to any one of claims 34 to 37, wherein said seat means (15, 17, 17', 19, 20, 21, 23; 20') comprises female parts of press studs.
39. Means for decorating objects (2) according to any one of claims 24 to 38, wherein said decorating surface means comprises tubular jacket means (3).
40. Means for decorating objects (2) according to any one of claims 24 to 39, wherein said support means comprises flange means (4).
41. Use of components of press studs (16) to anchor treatment surface means (3), arranged for treating objects (2), particularly ceramic tiles, on support means (4).
42. Use of toothed-belt means (25) to anchor treatment surface means (3), arranged for treating objects (2), particularly ceramic tiles, on support means (4).

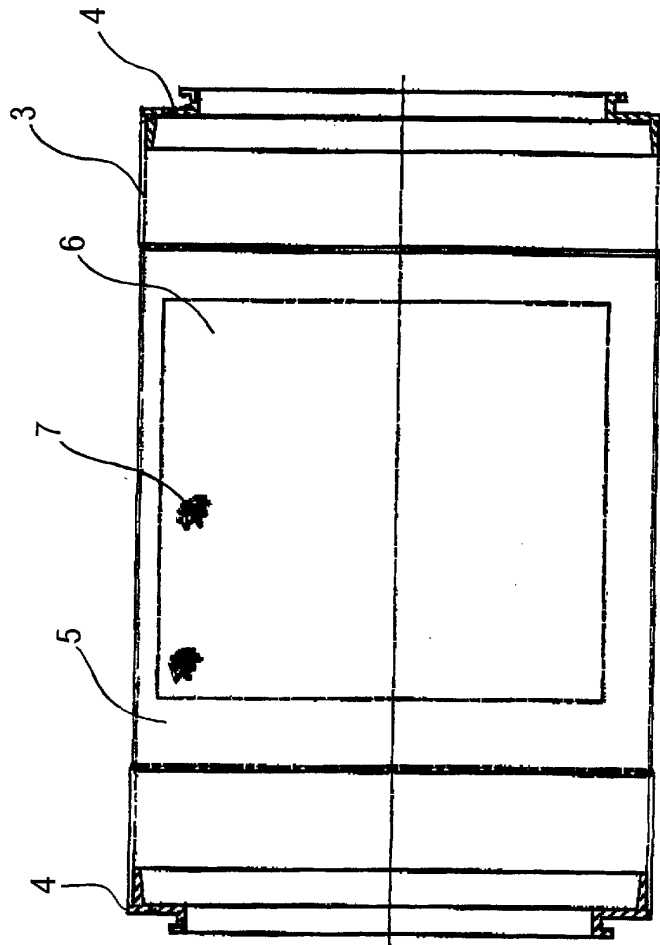
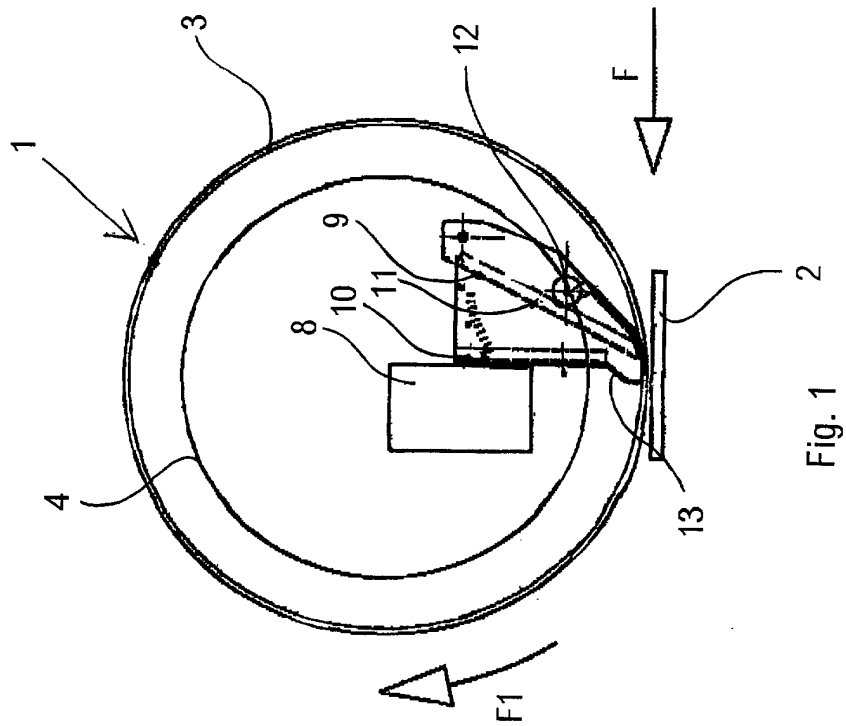


Fig. 2

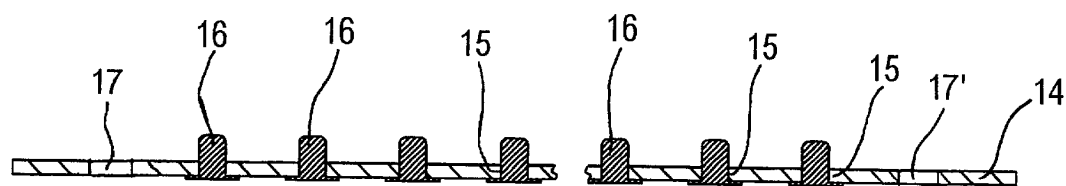


Fig. 4

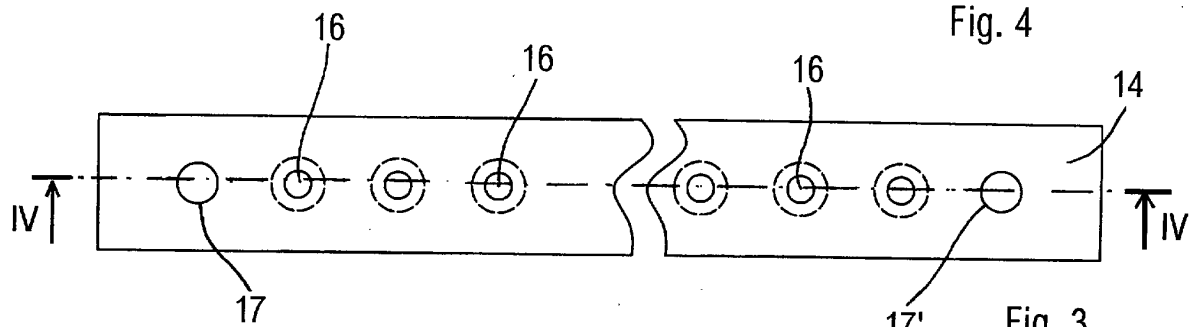


Fig. 3

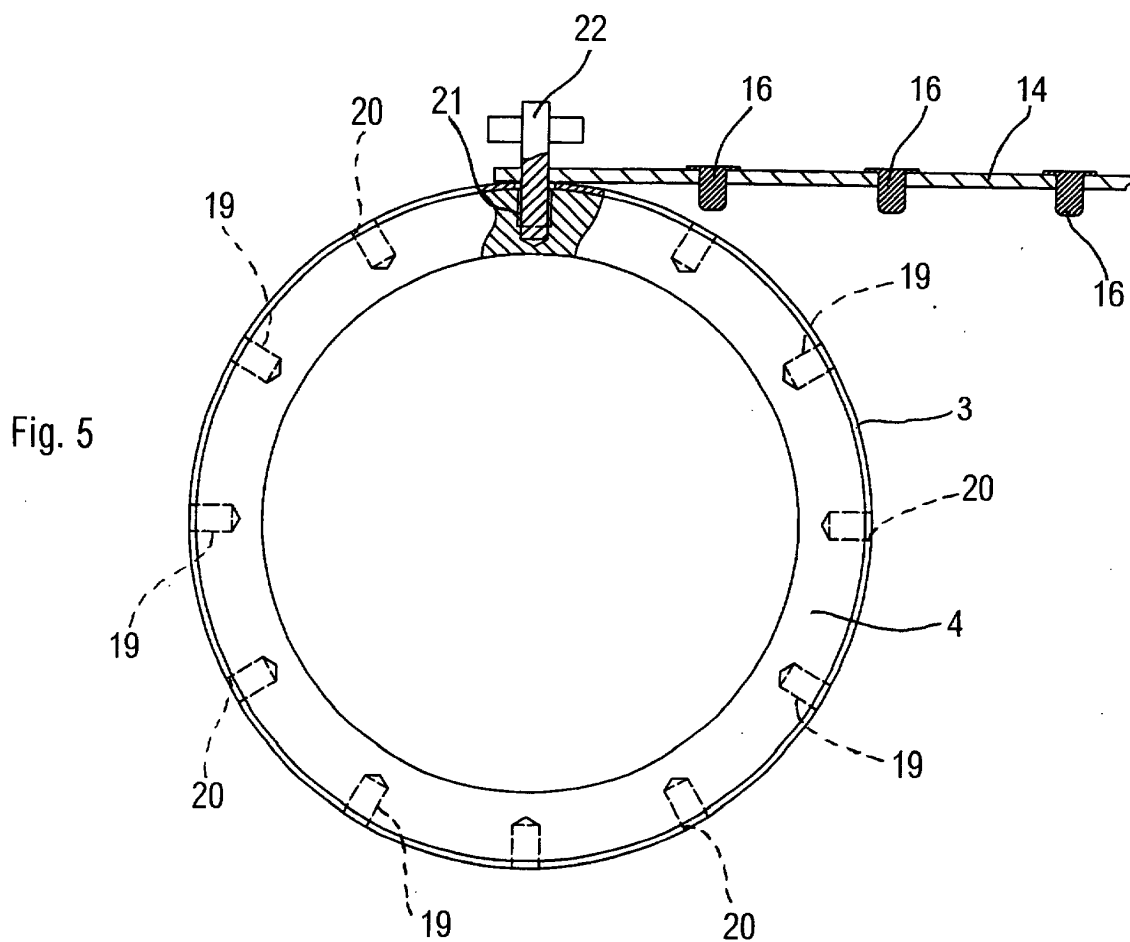


Fig. 5

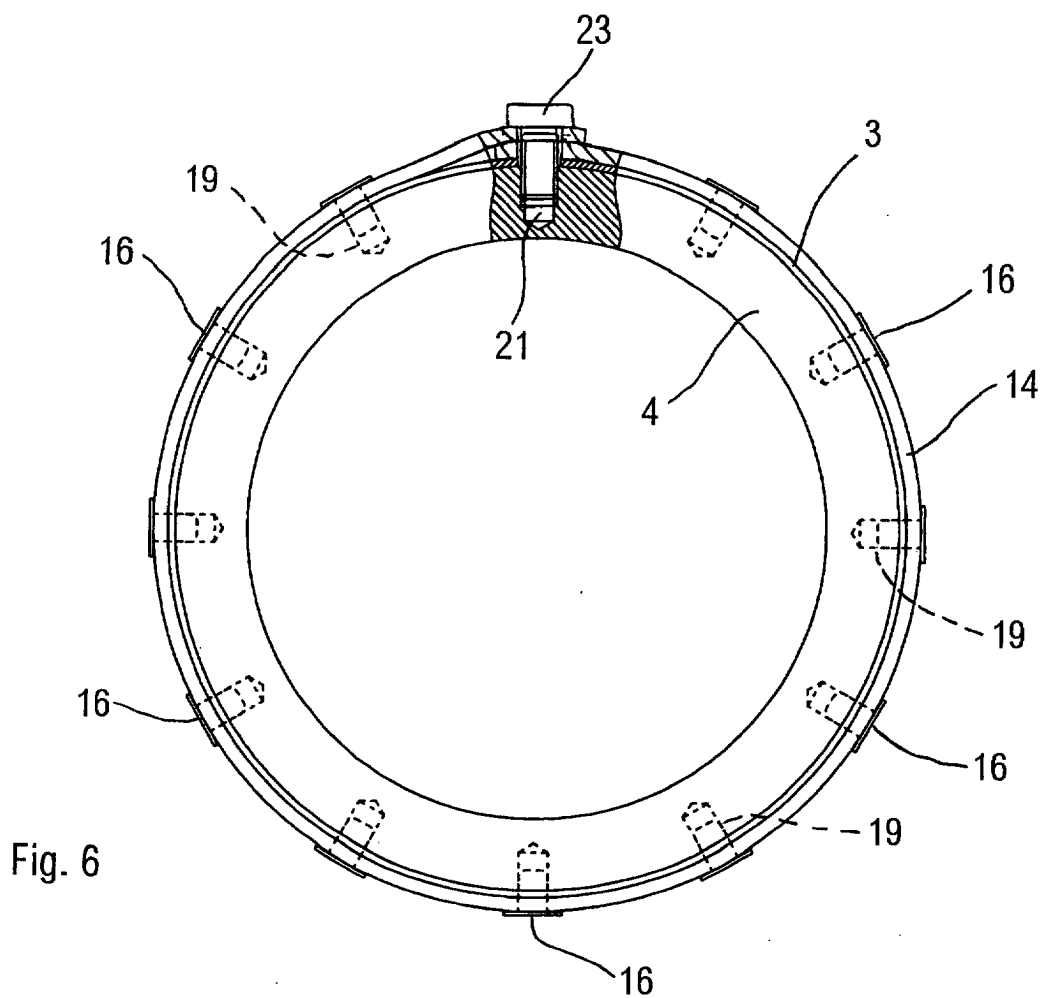


Fig. 6

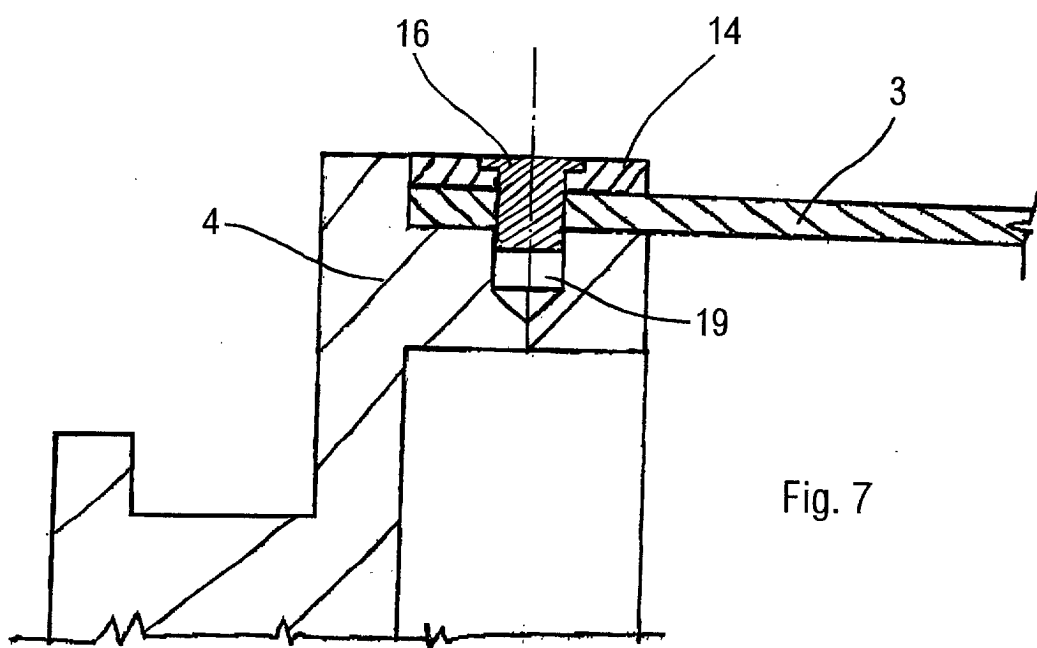


Fig. 7

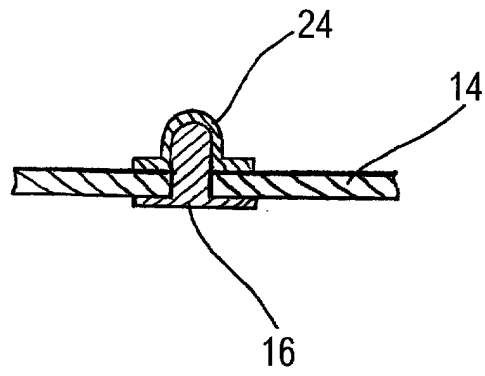


Fig. 8

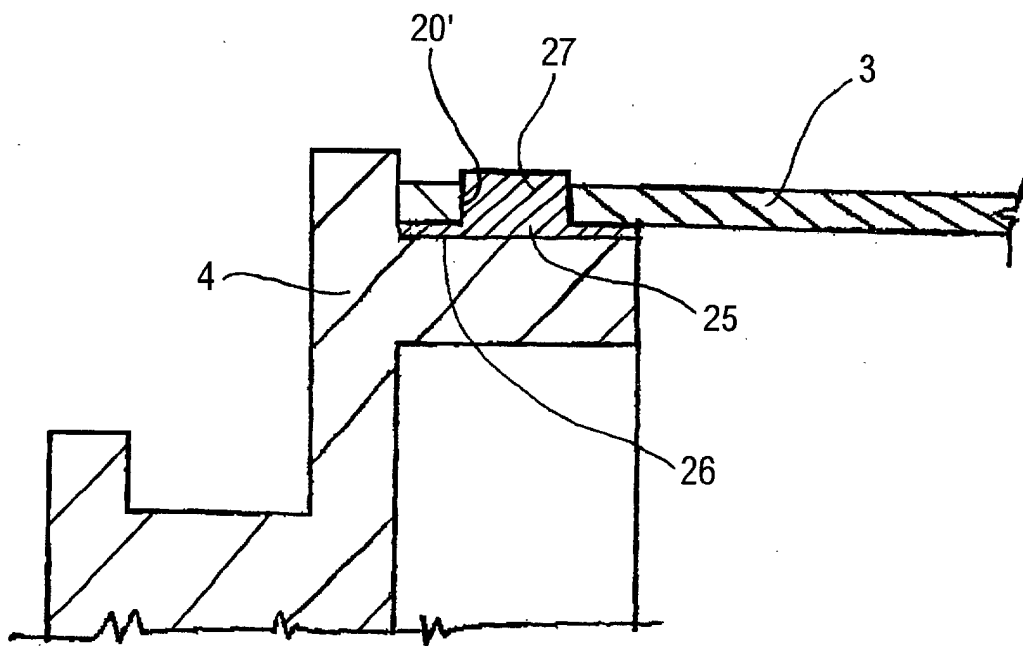


Fig. 9