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(54) **BRICK SLIP**

(57) The invention relates to a method and device for manufacturing a brick strip with a stretcher face and/or a header face that have the appearance of those of a brick, preferably a hand-shaped brick, in which a malleable raw material (1) is moulded between at a moulding face (3) of a mould (2) and a counter-moulding face (9) of a counter mould (8) by moving the mould (2) and the counter mould (8) towards each other with the malleable raw material (1) between the mould (2) and the counter mould (8) into a closed position with moulded malleable raw material (1) between the mould (2) and the counter mould (8), wherein the moulded malleable raw material (1) is made to dry in the mould (2), after which the dried moulded malleable raw material (1) is removed from the mould (2) and then fired.

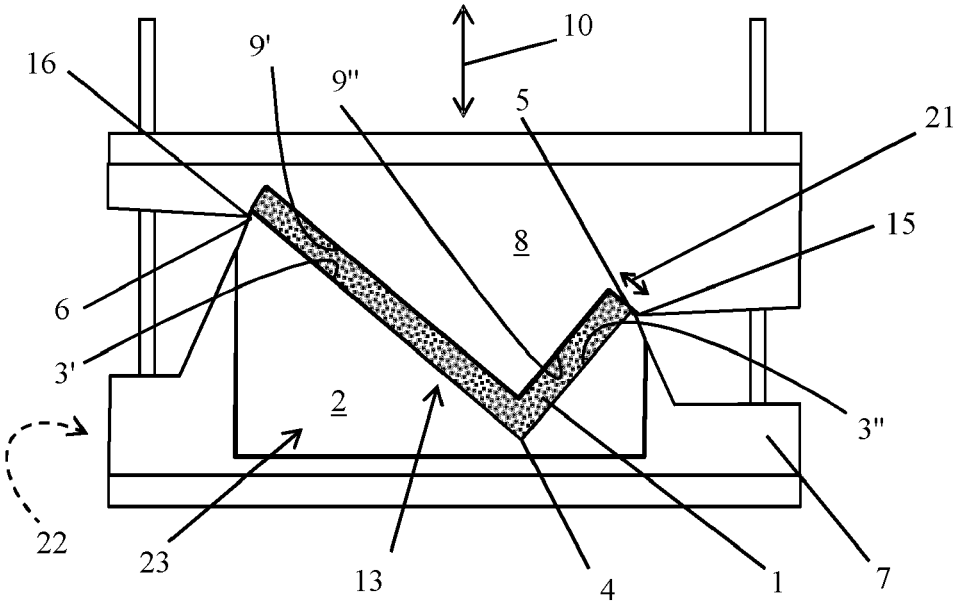


Fig. 1

EP 3 670 124 A1

Description

[0001] The invention relates to a method and device for manufacturing a brick strip with a stretcher face and/or a header face of a brick or which has the appearance of those of a brick, preferably a hand-shaped brick. Consequently, the strip has a visible side with the appearance of a stretcher face and/or a header face of a brick, preferably a hand-shaped brick.

[0002] When forming a classic hand-shaped brick, a lump of clay, either or not sanded, is thrown into a tray-shaped mould, pressed and possibly levelled off. Next, the formed clay, also known as unfired brick or green brick, is successively removed from the mould, dried and finally fired. As a result of this known production method, in which clay is thrown into such a mould, the stretcher faces and header faces of the bricks at the level of the upright walls of the mould acquire a typical irregular grain structure.

[0003] In comparison with these classic hand-shaped bricks, brick strips are relatively thin. They have a visible side that corresponds to a stretcher face and/or a header face of a brick. The brick strips are applied to a substrate, such as an insulation panel, to imitate classic brickwork. Corners are finished here with L-shaped corner brick strips comprising a stretcher face and a header face that are at right angles to each other. Corner brick strips may also comprise a bed face and a stretcher face and/or a header face which are at right angles to each other.

[0004] Compared to ordinary bricks, these brick strips are too thin to be manufactured using a traditional production method as described above. It is, for example, not possible to throw clay in the same manner into a tray-shaped mould that is the size of the thin brick strip. Moreover, it would not be possible to remove the mould without deforming the formed clay.

[0005] Existing brick strips typically have a thickness of about 2 to 3 cm and a length and height depending on the size of the imitated brick. The length, for example, can be 18 to 25 cm, while the height, for example, can be 5 to 7 cm. Other sizes are of course also possible.

[0006] According to the current state of the art, for example, handmade brick strips are obtained by sawing them off from a classic fired hand-shaped clay brick. In this way, two straight brick strips or one L-shaped corner brick strip can be obtained from one brick. However, a relatively large part of the brick is waste in this case. As sawing the corner brick strips is not easy, straight mitred strips are also glued together at right angles in order to obtain such an L-shaped corner brick strip.

[0007] According to another known technique, the stretcher faces and/or the head faces are cut from a lump of clay formed in a mould before they are dried and fired. The unused clay can be reprocessed to reduce waste. Straight strips can be obtained in this way quite easily, but they remain sensitive to deformation. Corner strips, however, are quite difficult to cut accurately and are very sensitive to undesirable deformation.

[0008] Strips and corner strips can also be formed by extrusion. This technique makes it possible to produce all sorts of shapes of brick strips, such as, for example, arched strips with a curved hollow or convex surface. However, it is not possible to obtain the typical irregular grain structure of hand-shaped bricks.

[0009] European patent application EP0567339A1 describes a method and device for manufacturing dinnerware, such as plates, and also tiles in a mould. It describes a drying process to release the formed products from the mould. In addition, it is described that when using a plastic mould, this drying process is unnecessary, so that it can be skipped. The composition and nature of the raw material used for bricks and dinnerware or tiles is also very different. In the case of bricks, the problem therefore hardly arises that the formed raw material remains stuck in the mould.

[0010] European patent application EP1447191A2 describes a method and device for forming flat ceramic products, more specifically tiles. The clay is extruded into shape and then pressed together with a press and finally cut to size. The method does not use a mould to shape the clay. No further drying process is described.

[0011] European application EP2826608A1 describes a method in which the clay for brick strips is formed by means of a lateral press in order to obtain a visible side with a desired structure. However, the problem that the moulded clay is sensitive to deformation is not solved.

[0012] The invention aims to remedy these disadvantages by proposing a method and a device with a mould that makes it possible to easily obtain straight strips, corner brick strips and/or arched strips with the appearance of bricks, in particular, hand-shaped bricks.

[0013] To this end, the invention proposes a method in which a malleable raw material is formed between at least one moulding face of a mould and at least one counter-moulding face of a counter mould by moving the mould and the counter mould towards each other with the raw material between the moulding face of this mould and the counter-moulding face of this counter mould into a closed position with malleable raw material that is shaped between the mould and the counter mould.

[0014] Practically, the moulded raw material is then dried in the mould, after which the dried moulded raw material is removed from the mould and finally fired, as claimed in the appended claims.

[0015] Preferably, the malleable raw material is applied to the mould on the moulding face, after which the counter mould and the mould are moved towards each other. Preferably, the counter mould is moved towards the mould. Preferably, the counter mould and the mould are thus moved towards each other by means of a translational movement.

[0016] The malleable raw material is shaped using the mould and the counter mould, preferably without significantly compressing them. The density of the malleable raw material is therefore, preferably, not changed by moulding it in this way.

[0017] In order to obtain corner brick strips, the malleable raw material is shaped into a strip with a stretcher face and a header face at an angle to each other, in which the angle is preferably mostly 90°.

[0018] Preferably, the moulding face of the mould is provided with at least two partial moulding faces positioned at an angle towards each other of preferably 90° and/or, preferably, the counter-moulding face of the counter mould is provided with at least two partial counter-moulding faces positioned at an angle towards each other of, preferably, mostly 90°. In this way it is possible to form an inside or outside corner. It goes without saying that other angles can also be formed which are different from 90°, such as 30°, 45°, 60°, 120°. Corner strips can also possibly comprise a bed face and a stretcher face and/or a header face.

[0019] In order to obtain arched brick strips, the malleable raw material is shaped into a strip with a stretcher face and/or a header face that at least partially shows a curved surface. Thus, for example, the arched strip can show a surface that may be partly hollow and/or convex. The arched strip can also, for example, show a surface that is completely hollow or convex. For this purpose, the moulding face of the mould and/or the counter-moulding face of the counter mould is provided at least partly with a curved surface.

[0020] In an interesting manner, the counter-moulding face is provided with at least a bulge to provide a recess in the brick strip for hanging this brick strip on.

[0021] Advantageously, a profiled surface is provided extending over at least part of the moulding face and/or the counter-moulding face. Thus, preferably, the profiled surface is an imprint of at least part of a stretcher face or a header face of a hand-shaped brick.

[0022] In a very advantageous manner, when the counter mould and the mould are moved towards each other, excess raw material is allowed to simultaneously flow out between the mould and the counter mould. In this way, the excess raw material is allowed to flow out, preferably over the entire length of the moulding face of the mould, between the mould and the counter mould, preferably on both sides of the mould. Preferably, this excess raw material is cut off along the longitudinal sides of the moulding face, preferably when the mould and the counter mould are moved towards each other in the closed position. The cut-off excess raw material can be further reused for a following brick strip.

[0023] Thus, preferably, the excess raw material between the mould and the counter mould is allowed to flow freely out over a height of at least 50 % of the distance between the moulding face and the counter moulding face when the mould and the counter mould are moved towards each other in the closed position, which height preferably amounts to at least 75 %, and in particular to at least 100 %.

[0024] Preferably, when the mould and the counter mould are moved towards each other in a closed position of the press, an opening should be left on at least one side of the mould, adjacent to the moulding face, between this mould and counter mould, with a height perpendicular to the moulding face of at least 50 % of the thickness of the moulded malleable raw material, which preferably amounts to at least 75 % and, in particular, almost 100 %. The thickness of the moulded malleable raw material is the distance between the moulding face and the counter moulding face when the malleable raw material has been moulded and the mould and counter mould are moved towards each other in the closed position of the press.

[0025] In a special manner, in the closed position, the opening extends over the full length of the moulding face and the full height between the moulding face and the counter-moulding face.

[0026] In a very special manner, the moulded malleable raw material is allowed to dry in the mould until it has a rigidity allowing to remove the mould from the moulded raw material without deforming it. In particular, this is up to a moisture content of less than 10 %, preferably less than 5 % and, in particular, less than 2 % by weight.

[0027] Thus, preferably, the moulded malleable raw material is allowed to dry in the mould, as a result of which it cures so that, preferably, it will not plastically deform any more.

[0028] Preferably, the mould is provided in a detachable manner in the press with the counter mould, and the mould is removed from the press to allow the moulded malleable material to dry in the mould.

[0029] The invention also relates to a device and a mould for manufacturing a brick strip with a stretcher face and/or a header face of a brick, or which has the appearance of those of a brick, preferably a hand-shaped brick, as also claimed in the attached claims.

[0030] This device contains a mould and a counter mould which are arranged movably in relation to each other in a press and at least movable in relation to each other between a closed and an open position. In the closed position, at least one moulding face of the mould and at least one counter-moulding face of a counter mould are moved towards each other, and a space is provided between the moulding face of the mould and the counter-moulding face of the counter-mould to contain a certain amount of malleable raw material for the brick strip. In this closed position, at least one opening extends between the mould and the counter mould on at least one longitudinal side of the moulding face of the mould, preferably over the entire length of the moulding face, and this opening is provided to allow excess raw material to flow freely out, wherein the opening in the closed position, when the mould and counter mould are moved towards each other, has a height perpendicular to the moulding face of at least 50 % of the distance between the moulding face and the counter moulding face in the closed position, preferably at least 75 %, and in particular almost 100 %. In addition, the opening is provided with cutting means to cut off the excess raw material that has flowed out through this opening. The

mould is hereby placed detachably in a holder in the press. The device contains drying means, such as a drying kiln, to dry the malleable raw material moulded by the mould and the counter mould inside the mould, and the device contains means of transport, such as a conveyor belt and/or a conveyor roller system, to transport the malleable raw material moulded by the mould and the counter mould inside the mould to the drying means.

[0031] Advantageously, the moulding face of the mould contains at least two partial moulding faces at an angle to each other of preferably mostly 90°, and/or the counter-moulding face of the counter mould contains at least two partial counter moulding faces at an angle to each other of preferably mostly 90°.

[0032] Other peculiarities and advantages of the invention will become clear from the following description of actual embodiments of the method and device according to the invention; this description is given as an example only and does not limit the scope of the protection claimed; the following reference figures refer to the attached figures.

Figure 1 is a schematic representation with a side view of a device with a mould for making L-shaped corner brick strips, in which in a closed position of the press, the mould and the counter mould are moved towards each other, with a malleable raw material moulded into in a corner strip.

Figure 2 is a schematic view in perspective of a device with a mould according to figure 1, without malleable raw material.

Figure 3 is a schematic view in perspective of a device with a mould according to figure 1, wherein the mould and the counter mould are moved away from each other, in an open position of the press, and the mould has been removed from the holder, with malleable raw material not yet moulded.

Figure 4 is a schematic view in perspective of a mould according to Figure 1.

Figure 5 is a schematic view in perspective of a counter mould according to Figure 1.

Figure 6 is schematic view in perspective of a holder for a mould according to Figure 1.

Figure 7 is a schematic view in perspective of a mould with malleable raw material moulded into a corner strip according to Figure 1.

Figure 8 is a schematic view in perspective of a malleable raw material moulded into a corner strip according to Figure 1 with a visible side having an outer corner.

Figure 9 is a schematic view in perspective of a malleable raw material moulded into a corner strip according to Figure 1 with a visible side having an inside corner.

Figures 10 to 15 are schematic views in perspective of a malleable raw material formed into an arched strip having at least one curved hollow and/or convex surface.

[0033] In the different figures, the same reference figures refer to identical or analogous elements.

[0034] The invention generally relates to a method for manufacturing brick strips with a visible side that has the appearance of a stretcher face and/or a header face of a brick, preferably a hand-shaped brick. Thus, the brick strips may consist of, for example, straight strips or corner strips. Straight strips have a visible side corresponding to the stretcher face of the brick. If necessary, a smaller straight strip can be made where the visible side corresponds to the head face of the brick. The corner strips have a visible side that may correspond partly to the stretcher face and partly to the head face of the brick. The visible side may have a predominantly perpendicular angle between the head section and the stretcher section. Corner strips may also have a bed face with a stretcher face and/or a header face that, for example, are at right angles to each other. In addition, it is also possible to manufacture other forms of strips, such as, for example, arched strips with a surface that is at least partly concave and/or at least partly convex.

[0035] According to the invention, malleable raw material for the brick strip known as such is moulded in a mould by means of a press. In the press, the raw material is pressed into the right shape, preferably without significantly compressing it. Thus, a green brick is obtained with a consistency similar to that of a green brick obtained in the classic manufacture of a hand-shaped brick. Since the press-formed green brick for a brick strip is relatively thin compared to a classic brick, this green brick with said consistency is susceptible to deformation.

[0036] According to the invention, the moulded raw material is dried in the mould, at least until it has acquired sufficient rigidity. Next, the dried green brick is removed from the mould, possibly further dried and finally fired. The mould can then be used again to manufacture a following brick strip.

[0037] According to a first embodiment of the method of the invention, corner strips are manufactured by using a press, shown in Figures 1 to 3. This method starts from a malleable raw material known to the person skilled in the art for manufacturing bricks, such as hand-shaped bricks. This malleable raw material may contain, for example, loam, clay, mortar, cement mortar and/or plastically deformable mineral materials or compositions thereof, possibly mixed with additives such as, among others, dyes, sand. Other recovery materials known to those skilled in the art can also be used.

[0038] The malleable raw material 1 is put into a mould 2. Possibly this raw material can be pre-formed by extrusion, wherein, on the one hand, the quantity and, on the other hand, the shape is adapted to the mould and the strip to be formed, not shown in the figures. Possibly the mould can be provided in advance with a layer of moulding sand, depending on the desired surface structure of the visible side of the brick strip.

[0039] The mould 2 in this embodiment has a seat-shaped moulding face 3, as shown in Figure 4, onto which

the malleable raw material 1 is applied. This moulding face is elongated with a transverse line 4 which divides the moulding face 3 into two partial moulding faces 3' and 3" which are at an angle 19 with respect to each other which is mostly 90°. Consequently, the partial moulding faces 3' and 3" are mainly perpendicular to each other. The transverse line 4 with the angle in the moulding face 3 of this mould 2 is deeper than the far ends 5 and 6 of the moulding face 3.

[0040] The mould 2 is provided detachably in a holder 7 of the press, also shown in Figure 6. The press contains a counter mould 8 with a counter-moulding face 9 which, in conformity with the moulding face 3 of the mould 2, contains two partial counter-moulding faces 9' and 9" which have a corresponding angle 11 in relation to each other, also mostly at 90°, as shown in figure 5. Consequently, the partial counter-moulding faces 9' and 9" are also perpendicular to each other.

[0041] As the mould 2 and the counter mould 8 are moved towards each other when the press closes, the malleable raw material 1 is moulded in the press between the moulding face 3 of the mould 2 and the counter-moulding face 9 of the counter mould 8.

[0042] Preferably, the counter mould 8 is placed in the press such that it can move in relation to the mould 2, so that it can be moved with an up and down movement 10. In the downward movement, the press is closed, while in the upward movement the press is opened. Preferably, the mould 2 in the press is located under the counter mould 8. The up and down movement 10 is also, preferably, mainly vertical.

[0043] Preferably, during this up and down movement 10, the moulding face 3 is always mainly parallel to the corresponding counter-moulding face 9. More specifically, the partial moulding faces 3' and 3" are each always mainly parallel to the corresponding partial counter-moulding faces 9' and 9", respectively. Thus, in this embodiment, the counter mould 8 preferably makes a translational movement with respect to the mould 2.

[0044] The structure of the visible side 12 of the corner strip is formed on the underside of the malleable raw material 1 in the mould 2 on the moulding face 3. Such, in order to obtain a malleable raw material 1 as shown in Figure 8 with a visible side 12 showing an outer corner. Optionally, the visible side 12 can be formed at the top against the counter-moulding face 9. In this way, a moulded malleable raw material 1 is obtained as in figure 9 with a visible side 12 having an inside corner.

[0045] When closing the press, the excess raw material 1 is pushed out, along the moulding face 3, not shown in the figures. Excess malleable raw material 1 which is located between the mould 2 and the counter mould 8, flows out on both sides of the moulding face 3 and the counter-moulding face 9 through longitudinal openings 13 and 14 between the mould 2 and the counter mould 8, over the edge of the mould 2. Preferably, openings 13 and 14 extend over the entire length of the moulding face 3 and thus, preferably, also the counter-moulding face 9.

[0046] As the excess raw material 1 is being pushed out and thereby allowed to flow freely, the accumulated pressure and possible compression of the raw material 1 is limited. This makes it possible to obtain a brick strip with the same density as that of a classic hand-shaped brick. Preferably, this also avoids or at least limits any internal tensions being built up in the moulded malleable raw material 1. This therefore results in low internal material stresses. If too high internal material stresses are built up in the moulded malleable raw material 1, or also the green brick, there is a high risk of deformation occurring during the drying thereof.

[0047] When, in the closed position of the press, the mould 2 and the counter mould 8 are moved completely towards each other, the distance 21 between the moulding face 3 and the counter-moulding face 9 is preferably a constant corresponding to the thickness of the moulded malleable raw material 1. Thus, the moulding face 3 is mainly parallel to the corresponding counter-moulding face 9 here. More specifically, the partial moulding faces 3' and 3" are each mainly parallel to the corresponding partial moulding faces 9' and 9" respectively.

[0048] On the far ends 5 and 6 of the moulding face 3 and the counter-moulding face 9, any excess malleable raw material 1 is preferably cut off by a cutting edge 15 and 16 at the counter mould 8. Possibly, instead of or additionally, the mould 2 can also be provided with a cutting edge at the far ends 5 and 6, not shown in the figures. Using these cutting edges 15 and 16 of the mould 2 and/or the counter mould 8, the malleable raw material 1 is cut off at the ends 5 and 6 between the mould 2 and the counter mould 8 over mainly the entire width of the mould 2.

[0049] According to a possible variant, not shown in the figures, openings could also be provided at the far ends 5 and 6 to allow excess raw material to flow away. This excess raw material can then be removed by means of a cutting knife or a cutting wire.

[0050] Any excess malleable raw material 1 at the longitudinal openings 13 and 14 on either side of the mould 2 shall, preferably, be cut using a cutting wire or knife, not shown in the figures. This is done, preferably, in the closed position of the mould 2 and the counter mould 8.

[0051] It is also possible to provide a longitudinal raised edge for this purpose on, for example, the mould 2, extending in the opening 13 and 14 between the mould 2 and counter mould 8 here, not shown in the figures. The raised edge ensures that the weight of any excess raw material 1, which is pushed out through the openings 13 and 14, breaks off at the height of this longitudinal raised edge.

[0052] After the removal of the excess raw material 1, there remains only a quantity of malleable raw material 1 for the brick strip between the mould 2 and the counter mould 8 in the closed position. Preferably, the space between the moulding face 3 and the counter-moulding face 9 is completely filled here.

[0053] After the moulding of the raw material 1, the

counter mould 8 and the mould 2 are moved away from each other again into an open position.

[0054] The mould 2 with the moulded malleable raw material 1 is removed from the holder 7 of the press. The moulded malleable raw material 1 is dried in the mould 2, as shown in Figure 7.

[0055] Drying takes place in a manner known to those skilled in the art until the moulded raw material 1 has sufficient rigidity to remove the mould 2 from the moulded raw material 1 without deformation. A drying kiln can be used for this purpose.

[0056] Preferably, this corresponds to drying until the moisture content of the moulded raw material 1 is less than 10 %, preferably less than 5 %, in particular less than 2 %, expressed as a percentage by weight.

[0057] After drying, the dried moulded malleable raw material 1, shown in Figure 8, is removed from the mould and then fired according to a method known as such. In the meantime, the mould 2 can be put back into the press for manufacturing another strip.

[0058] According to this first embodiment, corner strips with a header face and a stretcher face can thus be formed with an outer corner or an inner corner which amounts to 90°, as shown in Figures 8 and 9.

[0059] According to a variant of this first embodiment of the method, corner brick strips can be formed with an outer corner or an inner corner between the head face and the stretcher face deviating from an angle of 90°. Thus, for example, it may also amount to 45°. For this purpose, the angles between the partial moulding faces 3' and 3" and between the partial counter-moulding faces 9' and 9" are adjusted accordingly.

[0060] According to another variant of the first embodiment of the method, straight brick strips are manufactured that consist only of a stretcher face or a header face, not shown in the figures. The moulding face or the counter-moulding face of the mould and the counter mould, respectively, are preferably not divided in partial faces, but at least the moulding face or the counter-moulding face is situated mainly in one plane.

[0061] According to a further variant of the first embodiment, the moulding face of the mould is at least partly provided with a profiled surface, not shown in the figures. Preferably, this profiled surface corresponds to the profile of an imprint of a stretcher face or a header face of a hand-shaped brick. The profiled surface may, for example, be incorporated in the mould or may consist of an insert strip that is laid in the mould on the moulding face. The mould with the profiled surface may also be sanded before applying the malleable raw material. In this way, the structure of the stretcher face of a hand-shaped brick can be imitated on the underside of the applied malleable raw material. Further variations can be obtained by sanding with moulding sand and also by using a series of different profiles or also a combination of different profiles and sand.

[0062] It is also possible to provide the counter-moulding face at least partly with such a profile in order to provide the top of the malleable raw material with the structure.

[0063] According to a further variant of the first embodiment, the counter-moulding face and/or the moulding face is/are provided with raw material guides, such as ribs and/or notches, not shown in the figures, as a result of which the malleable raw material is guided to the longitudinal openings. The ribs and/or notches are, for example, mainly at right angles to the longitudinal openings.

[0064] According to an interesting variant of the first embodiment, the applied quantity of malleable raw material may be adapted to the mould and the strip to be formed, so that no excess raw material flows out and needs to be removed. For this purpose, for example, an exact amount of raw material can be pre-formed by extrusion and distributed between the mould and the counter mould.

[0065] A second embodiment, not shown in the figures, differs from the first embodiment in that the mould in this embodiment shows a moulding face in which the transverse line with the angle dividing the moulding face is situated higher than the far ends of the moulding face. The counter mould with the counter-moulding face is adapted accordingly to the mould, so that when the mould and the counter mould are moved towards each other, in the closed position of the press, the distance between the mould face and the counter mould face is mainly a constant corresponding to the thickness of the moulded malleable raw material. The structure of the visible side of the corner strip can be formed in this embodiment on the top side of the malleable raw material against the counter mould so as to produce a corner strip with a visible side with an outer corner, as shown in Figure 8. The structure of the visible side of the corner strip in this embodiment may of course also be formed on the underside of the malleable raw material against the mould to produce a corner strip with a visible side having an inside corner, as shown in Figure 9.

[0066] A third embodiment, not shown in the figures, differs from the above embodiments in that the mould is mainly located next to the counter mould instead of under the counter mould. The mould and the counter mould move in relation to each other through a mainly horizontal movement.

[0067] A fourth embodiment, not shown in the figures, differs from the first embodiment in that the counter mould makes a rotational movement in relation to the mould when the press is opened and closed. Instead of the described translation in the first embodiment, the counter mould rotates over a rotation axis that is either parallel to the longitudinal axis of the mould or perpendicular to this longitudinal axis of the mould.

[0068] According to a special variant of this fourth embodiment, the axis of rotation is perpendicular to the longitudinal axis of the mould and it is located in the vicinity of one of the far ends of the moulding face of the mould, so that the counter-mould makes a hinge movement in relation to this mould.

[0069] According to a special other variant of this fourth embodiment, the rotation axis is parallel to the longitudinal axis of the mould, so that the counter mould at least partly makes a pendulum movement in relation to this mould.

[0070] A fifth embodiment, not shown in the figures, differs from the above embodiments in that the counter mould makes both a rotational movement and a translational movement in relation to the mould when the press is opened and closed. When closing the press, this is preferably a rotational movement towards the mould followed by a translational movement towards the mould.

[0071] A sixth embodiment differs from the above embodiments in that an arched strip is formed as shown, for example, in Figures 10 to 15. The malleable raw material 1 is moulded here so that the stretcher face 17 and/or the head face 18 show at least partly a curved surface.

[0072] In this way, the moulding face of the mould can be provided at least partially with a curved surface, not shown in the figures. In the same way, the counter-moulding face of the counter mould can be at least partly provided with a curved surface, not shown in the figures. Thus, the moulding face and/or the counter-moulding face can be at least partly provided with a concave and/or convex surface. Thus, for example, a corner brick strip may be manufactured as an arched strip wherein only the stretcher face or the head face has a convex surface, as shown, for example, in Figures 10 and 13. In this way, an arched strip can be manufactured with a hollow and a convex side, as shown in Figure 10.

[0073] In a seventh embodiment according to the method of the invention, when the mould and the counter mould are closed, the moulded strip is provided with recesses, perforations or protrusions. For this purpose, the counter-moulding face can be provided with at least one protrusion resulting in a recess in the formed brick strip with which this brick strip can be hung up. In this way, brick strips can be manufactured that can be attached without using mortar or other adhesives.

[0074] A possible device according to the invention for carrying out the above methods comprises the mould 2 and the counter mould 8 which are arranged in the press such that they can move in relation to each other and are at least movable in relation to each other between the closed position and the open position. The mould can be made of, for example, a known suitable plastic, while the counter mould can be made of, for example, steel. The mould 2 is, preferably, placed detachably in a holder 7. This holder herein supports the mould. The mould 2 may possibly be formed by an insert plate which is placed in the holder 7.

[0075] In the closed position, at least the moulding face 3 of the mould 2 and at least the counter-moulding face 9 of the counter mould 8 are moved towards each other. The space between the moulding face 3 and the counter-moulding face 9 in this position is herein provided to contain the determined amount of malleable raw material 1 for the brick strip. Furthermore, in this position between the mould 2 and the counter mould 8, at least the opening 13 and/or 14 extends on at least one longitudinal side of the mould 2 which is provided to allow any excess raw material 1 to flow out freely.

[0076] Preferably, the opening 13 and/or 14 extends over the full length of the moulding face 3. Furthermore, in the closed position, the height of the opening 13 and/or 14 perpendicular to the moulding face 3 should preferably be at least 50 % of the distance 21 between the moulding face 3 and the counter-moulding face 9 in this closed position. In particular it should be at least 75 % or at least almost 100 %.

[0077] Depending on the shape of the brick strips to be manufactured, the moulding face 3 and the counter-moulding face 9 can be subdivided into partial faces 3', 3", 9', 9", which are at an angle in relation to each other and/or which show a curved surface. This curved surface may be concave or convex.

[0078] Preferably, a profiled surface extends over at least part of the moulding face 3 and/or the counter-moulding face 9. The profiled surface may, for example, be an imprint of at least part of a stretcher face or a header face of a hand-shaped brick. The profiled surface may, for example, be provided on the mould and/or the counter mould or on an insert that can may be made of, for example, plastic.

[0079] Dosing means agents may be provided to mould a preformed quantity of raw material 1 so as to apply it between the mould 2 and the counter mould 8. The quantity of raw material 1 to be applied contains at least the determined raw material 1 for the brick strip and possibly also the excess raw material 1.

[0080] Furthermore, drying agents, such as a drying kiln, are provided to dry the moulded raw material 1 in the mould 2. Transport means, such as a conveyor belt, are also provided to transport the moulded raw material 1 in the mould 2 from the press to the drying means.

[0081] The invention is by no means limited to the methods and devices described above.

[0082] For example, the moulding face and/or the counter-moulding face may possibly be provided with one or more release agents, such as loose sand, water and/or oil, before the raw material is applied, which makes it easier for the raw material to come loose from the mould and/or the counter mould. To this end, a vibrating mechanism can also be provided on, for example, the counter mould.

[0083] For example, the counter-moulding face of the counter mould may be slightly bevelled towards the longitudinal openings, so that the moulded malleable raw material has a cross-section with a V-shaped recess on the side opposite to the visible side. In the closed position, the distance between the moulding face and the counter-moulding face will thus increase from the longitudinal edges towards the centre of the moulding face.

[0084] For example, the moulding face of the mould can be made rougher than the counter-moulding face of the counter mould, as a result of which excess raw ma-

terial will experience less resistance when flowing out via the counter-moulding face than via the moulding face.

[0085] For example, the visible sides of the brick strips can be provided with a corrugated or a toothed surface. In this way, all kinds of patterns and signs can also be printed on this visible side.

[0086] For example, brick strips can be formed having a format that differs from the format of the stretcher face and/or head face of classic bricks.

[0087] For example, the shape and size of the brick strips can easily be adjusted by using a modified mould and counter mould or by using different inserts in the mould and counter mould.

[0088] For example, several brick strips can be formed next to each other in the mould. They may possibly be separated from each other before the drying by means of, for example, a cutting wire.

[0089] For example, the mould can be made up of several parts, wherein, for example, the moulded brick strip is dried in a first part of the mould while another part of the mould is already being reused to make a following strip.

Claims

1. Method for manufacturing a brick strip with a stretcher face (17) and/or a header face (18) that have the appearance of those of a brick, preferably a hand-shaped brick, in which a malleable raw material (1) is moulded between at least one moulding face (3) of a mould (2) and at least one counter-moulding face (9) of a counter mould (8) by moving the mould (2) and the counter mould (8) towards each other with the malleable raw material (1) between the mould (2) and the counter mould (8) into a closed position with moulded malleable raw material (1) between the mould (2) and the counter mould (8), **characterised in that** the moulded malleable raw material (1) is made to dry in the mould (2), after which the dried moulded malleable raw material (1) is removed from the mould (2) and then fired.

2. Method according to claim 1, in which the moulding face (3) of the mould (2) is provided with at least two partial mould faces (3',3") which are at an angle (19) towards each other which is preferably mostly 90°, and/or in which the counter-moulding face (9) of the counter mould (8) is provided with at least two partial counter-moulding faces (9',9") which are at an angle towards each other which preferably amounts to mostly 90°.

3. Method according to claim 1 or 2, in which the malleable raw material (1) is moulded into a corner strip with a stretcher face (17) and a header face (18) which are at an angle towards each other, in which the angle preferably amounts to mainly 90°.

4. Method according to any one of claims 1 to 3, in which the moulding face (3) of the mould (2) and/or the counter-moulding face (9) of the counter mould (8) is provided with an at least partly curved surface.

5. Method according to any one of claims 1 to 4, in which the moulded malleable raw material (1) is allowed to dry in the mould (2) to a moisture content of less than 10 %, preferably less than 5 % and in particular less than 2 %.

6. Method according to any one of claims 1 to 5, in which a profiled surface is provided which extends over at least a part of the moulding face (3) and/or the counter-moulding face (9).

7. Method according to claim 6, in which the profiled surface is an imprint of at least a part of a stretcher face or header face of a hand-shaped brick.

8. Method according to any one of claims 1 to 7, in which the moulding face (3) is sanded with moulding sand before the raw material (1) is put in the mould (2).

9. Method according to any one of claims 1 to 8, in which the counter mould (8) and the mould (2) are moved towards each other by means of a translational movement.

10. Method according to any one of claims 1 to 9, in which, by moving the counter mould (8) and the mould (2) towards each other, excess raw material (1) is simultaneously made to flow out on at least one longitudinal side of the mould (2), preferably over substantially the full length of the moulding face (3) of the mould (2).

11. Method according to claim 10, in which the excess raw material (1) is cut off along the longitudinal side of the moulding face (3), preferably when the mould (2) and the counter mould (8) are moved towards each other in the closed position.

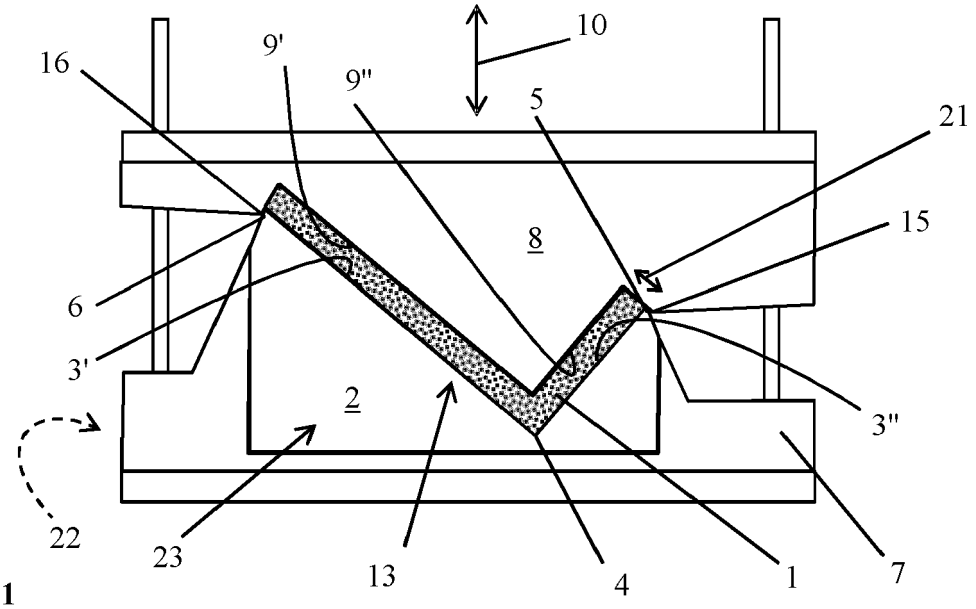
12. Method according to any one of claims 1 to 11, in which, when the mould (2) and the counter mould (8) are moved towards each other in the closed position, an opening (13) is left on at least one side of the mould (2) between the mould (2) and the counter mould (8), with a height perpendicular to the moulding face (3) which is at least 50 % of the distance (21) between the moulding face (3) and the counter-moulding face (9) in this closed position, which is preferably at least 75 % and in particular almost 100 %.

13. Method according to any one of claims 1 to 12, in which the mould (2) is detachably provided in a press

with the counter mould (8), and the mould (2) is removed from the press to allow the moulded malleable raw material (1) to dry inside the mould (2).

14. Device for manufacturing a brick strip with a stretcher face (17) and/or a header face (18) which have the appearance of those of a brick, preferably a hand-shaped brick,
wherein it comprises a mould (2) and a counter mould (8) positioned in a press such that they can move in relation to each other, and such that they can at least move in relation to each other between a closed and an open position,
wherein in the closed position, at least one moulding face (3) of the mould (2) and at least one counter-moulding face (9) of a counter mould (8) are moved towards one another, and the space between the moulding face (3) of the mould (2) and the counter-moulding face (9) of the counter mould (8) is thereby provided to contain a certain amount of malleable raw material (1) for the brick strip, **characterised in that**
in the closed position between the mould (2) and the counter mould (8), at least one opening (13,14) extends on at least one longitudinal side of the moulding face (3) of the mould (2), preferably over the entire length of the moulding face (3), and which is provided to allow excess raw material (1) to flow freely out,
wherein the opening (13,14) in the closed position, when the mould (2) and the counter mould (8) are moved towards each other, has a height perpendicular to the moulding face (3) which is at least 50% of the distance (21) between the moulding face (3) and the counter-moulding face (9) in the closed position, which is preferably at least 75 % and in particular almost 100 %,
wherein the opening (13,14) is provided with cutting means to cut off the excess raw material (1) which has flowed out through this opening (13,14),
wherein the mould (2) is placed in a holder (7) in the press in a detachable manner,
wherein the device includes drying means, such as a drying kiln, to dry the malleable raw material (1) which has been moulded by the mould (2) and the counter mould (8) inside the mould (2),
wherein the device includes transport means, such as a conveyor belt, to transport the malleable raw material (1), which has been moulded by the mould (2) and the counter mould (8), inside the mould (2) towards the drying means.

15. Device according to claim 14, wherein the moulding face (3) of the mould (2) includes at least two partial moulding faces (3',3") which are at an angle (19) towards each other which is, preferably, mostly 90°, and/or wherein the counter-moulding face (9) of the counter mould (8) includes at least two partial counter-moulding faces (9',9") situated at an angle towards each other which, preferably, amount to mostly 90°.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9'
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10
5
21
15
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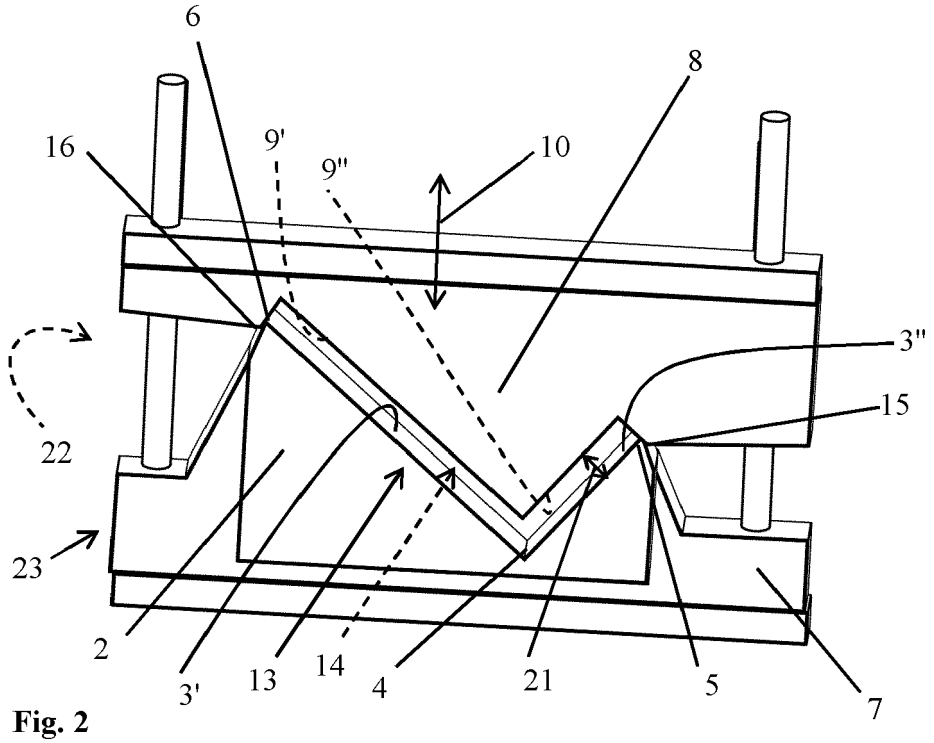
6
3'
2
3"
22
23
13
4
1
7

Fig. 1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21
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Fig. 2

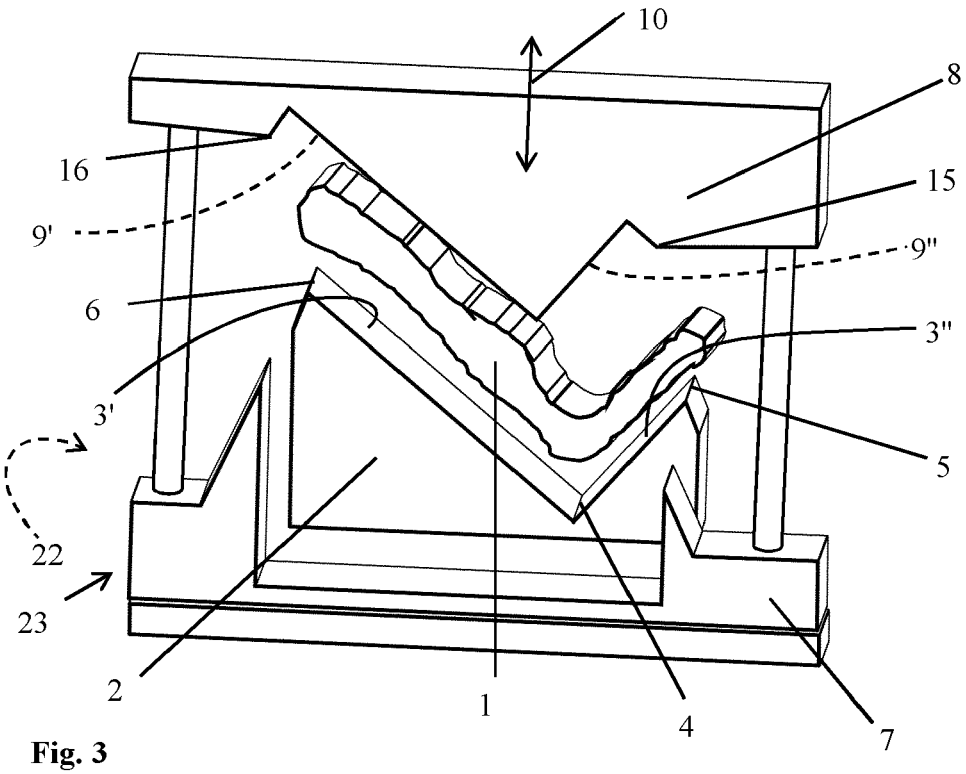
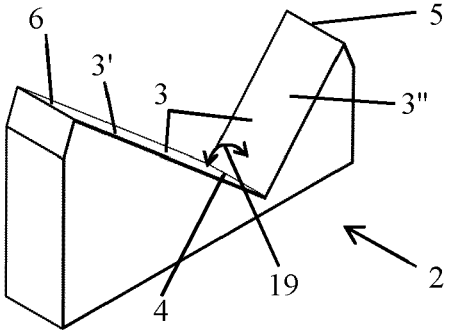


Fig. 3



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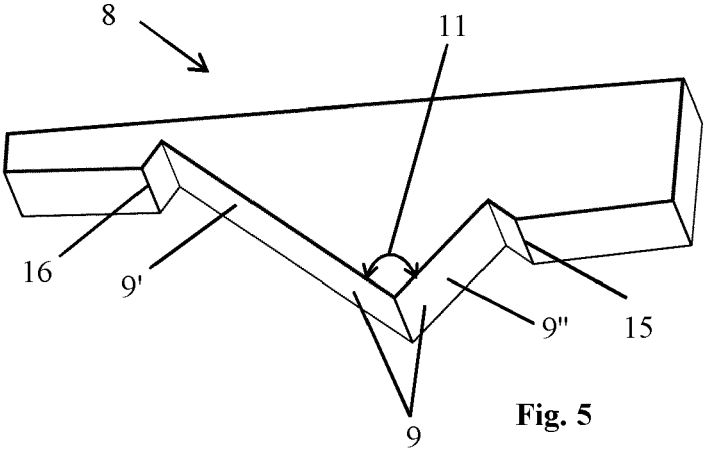
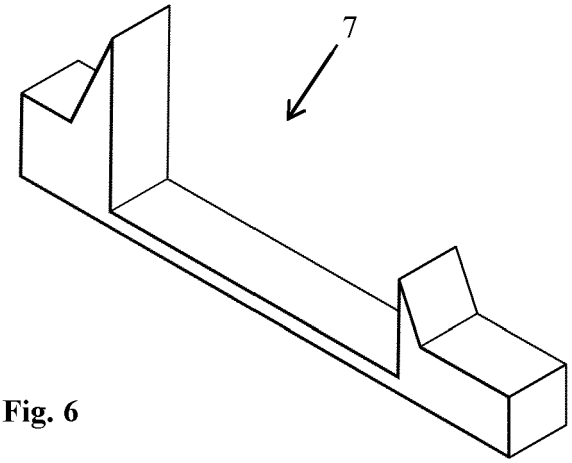


Fig. 5



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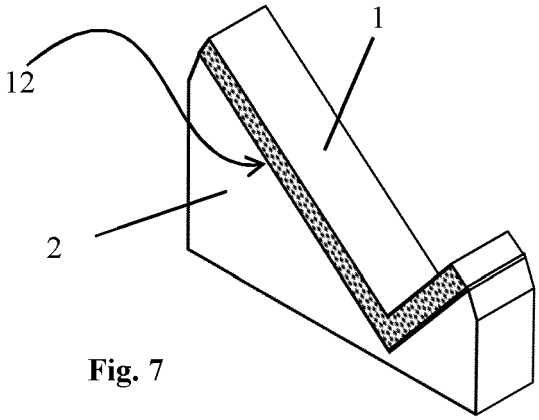

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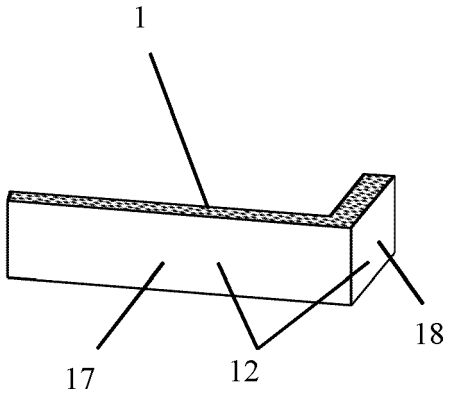

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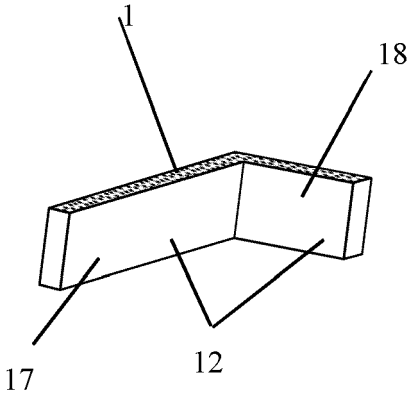

Fig. 9

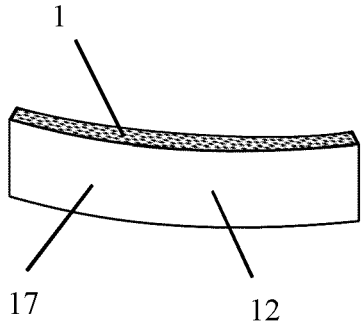

Fig. 10

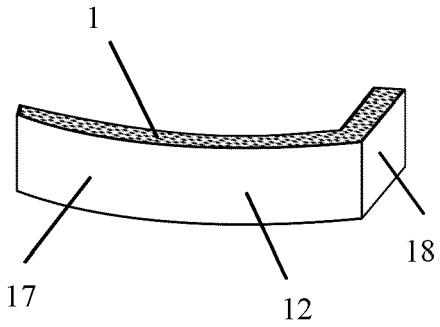

Fig. 11

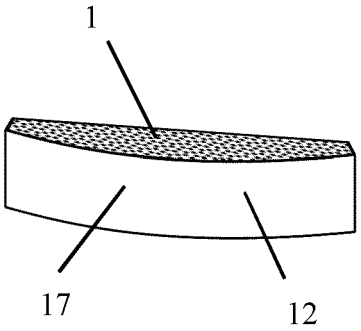

Fig. 12

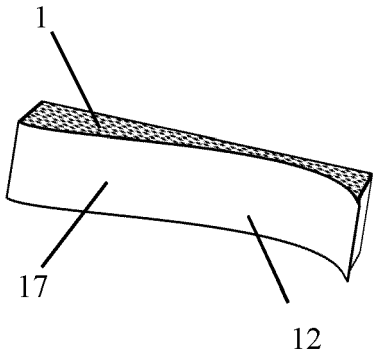

Fig. 13

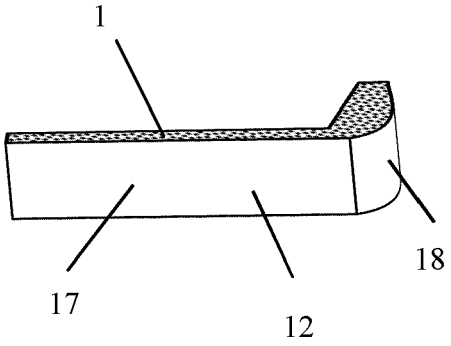

Fig. 14

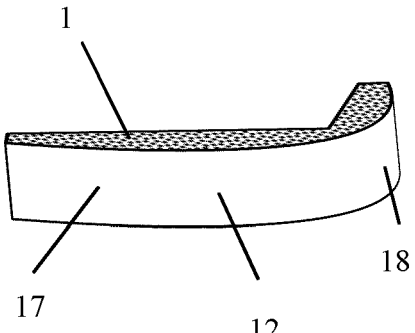

Fig. 15

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EUROPEAN SEARCH REPORT

Application Number
EP 19 21 7682

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	EP 0 567 339 A1 (BRITISH CERAMIC RES LTD [GB]) 27 October 1993 (1993-10-27) * column 1, lines 1-4 * * column 2, line 19 - column 4, line 24; claims 1,2,9,10,14; figures * -----	1,4,5,9 2,3,6-8, 10-15	INV. B28B3/02 B28B11/24
X A	EP 1 447 191 A2 (KESTRO INTERNAT LTD [IE]) 18 August 2004 (2004-08-18) * paragraph [0017] - paragraph [0027]; claims 1-8; figures * -----	1,5,9-12 2-4,6-8, 13-15	
A	EP 2 826 608 A1 (VANLEEMA B V [NL]) 21 January 2015 (2015-01-21) * paragraph [0027] * * paragraph [0030] - paragraph [0054]; claim 1; figures * -----	1-15	

TECHNICAL FIELDS SEARCHED (IPC)

B28B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	8 April 2020	Orij, Jack

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 19 21 7682

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08-04-2020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0567339 A1	27-10-1993	NONE	
EP 1447191 A2	18-08-2004	EP 1447191 A2	18-08-2004
		EP 2210724 A1	28-07-2010
EP 2826608 A1	21-01-2015	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 0567339 A1 **[0009]**
- EP 1447191 A2 **[0010]**
- EP 2826608 A1 **[0011]**