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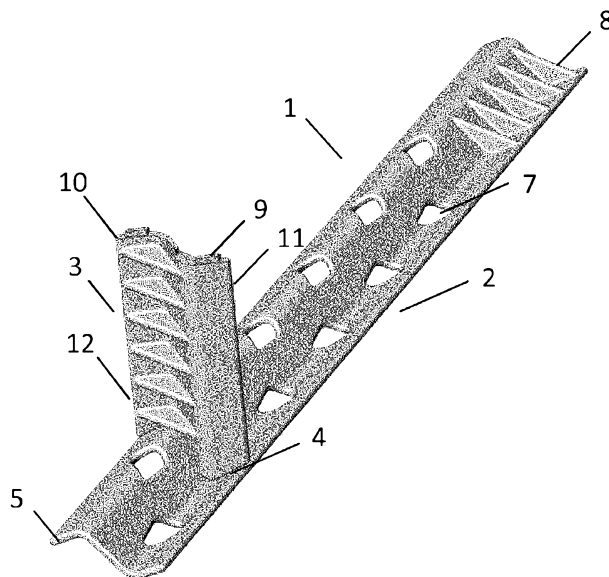


Figure 2c

(57) Abstract: A mixing paddle is described comprising a first section (2) adapted for mixing a paint, and a second section (3) having at least one removing edge (4), wherein the removing edge (4) has a geometry complementary to a horizontal cross section (5, 6) of the first section (2), and wherein the second section (3) is detachably attached, and a corresponding method for removing excess paint from a mixing paddle is described.

WO 2016/079113 A1

Mixing Paddle

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Technical Field of the Disclosure

The present disclosure relates in general to a mixing paddle. More specifically, the disclosure relates to a mixing paddle that can be used for mixing paints, varnish, lacquer, or shellac or in general any kind of viscous fluid which needs to be mixed before use.

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Background

Paint may be stored in cans for some time until the paint is finally applied. When paint is stored for a longer time, heavier sediments or pigments making up the paint may gather on the ground, so that mixing or stirring of the paint may be required before the paint can be applied. Otherwise, the paint cannot be evenly applied, resulting in poor quality paintwork. Also, when blending differently colored paints together, it may be necessary to thoroughly mix the resulting paint to obtain a homogenous mixture.

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Traditionally, wooden sticks may be used for mixing, i.e. stirring, paints. However, these sticks may introduce impurities into the paint, and may result in a poor quality of the paint work. A more advanced mixing paddle, i.e. mixing stick, for mixing paints is shown in EP 1 279 523 A1. The problems associated with the use of wooden sticks are solved by a mixing paddle that is fabricated from injection molded plastic. In some embodiments, the mixing paddle can have through holes in its surface, so that the mixing paddle can be moved easier through the paint, which also enhances the mixing. Also, EP 1 279 523 A1 describes that the mixing paddle can comprise some curvature, which influences the fluid flow around the mixing paddle, such that vortices are created, which in turn enhance the mixing process.

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As modern paints may be very expensive it may be important to make sure that no paint is wasted. Unfortunately, it may be difficult to regain excess paint that sticks to curved mixing paddles. This may be because the paint sticking to the curvature cannot just be scraped off, for example at the rim of a paint can, like it may be possible with conventional flat mixing paddles.

EP 1 279 523 A1 describes in one embodiment a mixing paddle having a functionality similar to a carpet knife, where the paddle portion can be telescopically moved into the handle portion. As the paddle portion is telescopically moved into the handle portion, excess paint is removed from the paddle portion by a wiper surface that is included in the handle portion. Even though due to this mechanism excess paint can be removed from the paddle after use, such a mechanism may be complicated, and thus may be expensive to manufacture. Especially, such a mechanism may not economically viable for mixing paddles that are intended for single use only.

Therefore, there may be a need for single use mixing paddles that can be quickly and cheaply cleaned from excess paint.

It is to be understood that, if any prior art publication is referred to herein, such reference does not constitute an admission that the publication forms a part of the common general knowledge in the art, in Australia or any other country.

Summary of the Disclosure

The mixing paddle according to the present disclosure comprises a first section adapted for mixing a paint the first section including an edge, a front side, and a back side, wherein the front side and the back side define a horizontal cross section of the first section, and a second section frangibly coupled to the edge of the first section, the second section having at least one removing edge, wherein the removing edge has a

geometry complementary to an entirety of the front side of the horizontal cross section of the first section.

5 In some embodiments, the first section that is adapted for mixing might have a substantially flat shape and in the vertical direction, i.e. in the direction of holding the mixing paddle, an elongated shape for pushing against the liquid paint. In the simplest case, the first section might have a planar, i.e. a rectangular horizontal cross section along its vertical length. However, alternatively in some embodiments, the horizontal
10 cross section along the vertical length might be also non-planar, i.e. having a non-rectangular horizontal cross section along its vertical length. For example, the first section might be hollowed out along its vertical length, i.e. being made concave.

15 In some embodiments, the second section may be detachably attached to the first section either directly or indirectly. For example, in an embodiment where the second section is indirectly detachably attached to the first section, a third section can be located between the first section and the second section. The fact that the first section and the
20 second section are detachably attached to one another may allow the second section to become easily detached from the remainder of the mixing paddle. The detachable attachment of the first section to the second section or vice versa may be achieved by a perforation or tapering in the material of the mixing paddle. Hence, in a first state, the first
25 section and the second section may be connected to each other and once the connection is broken at the perforation or tapering in the material, the first section and the second section may be detached from one another. This kind of attachment may be a non-reversible attachment. However, it may also be possible that the attachment is reversible, such
30 that the first section and the second section may be detached and later on be attached again.

In some embodiments, the second section of the mixing paddle may be used for holding the first section during the mixing procedure. In some

embodiments, the second section may be an extension of the first section having substantially the same horizontal cross section than the first section.

5 Also, in some embodiments, the second section may have at least one removing edge, wherein the removing edge may have a geometry complementary to the horizontal cross section of the first section. This may mean that the complementary geometry of the removing edge forms together with the geometry of the horizontal cross section of the first section a complete whole, i.e. providing the positive or negative shape to fit into the negative or positive shape, respectively, of the horizontal cross section of the first section. For example, in some embodiments, if the first section is planar, i.e. having a rectangular horizontal cross section along its vertical length, then the geometry of the removing edge may also be planar. However, as described above, in some embodiments, the first section might also be non-planar, i.e. the first section might have a non-rectangular horizontal cross section along its length. For example, in some embodiments, the horizontal cross section of the first section might be made concave. Then, in this example, the removing edge of the second section may have a convex geometry to interact with the concave cross section of the first section, or vice versa, where the horizontal cross section of the first section might be convex and the removing edge of the second section might be concave. Alternatively, in some embodiments, the cross section of the first section might have convex and concave portions. Then the removing edge of the second section may be made correspondingly concave and convex to interact with the cross section of the first section.

30 In some embodiments, the horizontal cross section of the removing edge itself, might be either planar, like the blade of a knife, or might have a horizontal cross section like the horizontal cross section of the first section. Also, in some embodiments, the geometry complementary to the horizontal cross section of the first section may be formed on the removing edge by corresponding recesses and protrusions in the

material. In some embodiments, the recesses and protrusion in the removing edge might be pointed, i.e. sharpened, or just being blunt.

5 In some embodiments, once the user is done with mixing, the user may simply detach the second section, and align the removing edge to the horizontal cross section of the first section for removing the excess paint that is on the first section of the mixing paddle by moving the removing edge along the length of the first section. For example, in some
10 embodiments this may be done from the top down, i.e. the user moves the removing edge towards the end of the first section facing the paint can or reservoir where the excess paint may be collected. In some embodiments, the angle of alignment between removing edge and first section may be arbitrarily chosen. However, in some embodiments where the first section may have a non-rectangular horizontal cross
15 section due to recesses and protrusions, there may be one or two angles with which the removing of the excess paint may be achieved most efficiently. Once one side, e.g. the front side of the first section is cleaned, the user may simply turn over the first section from its front side to its back side where the process is repeated until all excess paint,
20 or at least most of the excess paint may be removed from the back side of the first section as well. Advantageously, excess paint may be efficiently removed from the first section of the mixing paddle after use by using the removing edge of the second section that corresponds to the horizontal cross section of the first section of the mixing paddle. For
25 example, in some embodiments this may be done by moving the second section along the length of the first section while the geometry of the removing edge having the complementary geometry of the first section interacts with the first section. Also, in some embodiments, by detaching a section of the mixing paddle there may be no need to use any separate
30 cleaning tools that must be individually stored, transported or even cleaned themselves. After cleaning, both the second and the first section, i.e. the remainder of the mixing paddle may, in some embodiments, be simply disposed of.

In one embodiment, the at least one removing edge may be opposite to the edge that results from detaching the second section. This manner of locating the at least one removing edge may have the advantage that the geometry, i.e. shape, of the removing edge does not constrict the user during mixing. For example, during mixing the user may hold the mixing paddle at the sides of the second section. However, in the present case the removing edge having the complementary geometry is the edge that points towards the user, since the edge that will result from detaching the second section is the edge that points towards the first section. Therefore, the user will most likely not hold the mixing paddle at the edge that points towards him. However, alternatively, the removing edge having the complementary geometry may also be the edge that results from detaching the part of the second section, or in another alternative one or both of the side edges of the second section may also have the complementary geometry.

In another embodiment the second section may be detachably attached by means of a perforation in the material of the mixing paddle. This perforation may be introduced during manufacturing of the mixing paddle, where small openings in the material of the mixing paddle are introduced. For example, these openings might be already introduced in the mold so that the resulting casted mixing paddle has corresponding perforation openings in its material. These openings may, for example, be arranged in a straight line for easy tearing, or can be arranged so that the breaking edge, i.e. the edge that results from detaching the second portion, has some specific geometry. For example, the breaking edge may have the complementary geometry to the horizontal cross section of the first section of the mixing paddle, as described above, so that the breaking edge may be used as removing edge.

Further, in yet another embodiment the second section may be detachably attached by means of a tapering in the material of the mixing paddle. Here, the term “tapering” refers to a reduction of material forming the area where the second section may be detachably attached.

For example, the second section may be detachably attached by making the section where the second section may be detachably attached less rigid compared to the surrounding material. This may be done so that the second section can break off easily.

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In another embodiment at least a part of the first section may have a non-rectangular horizontal cross section. Advantageously, as already described above, the first section of the mixing paddle that may be adapted for mixing the paint may have some curvature along its length to further create a vortex to enhance mixing. The first section of most conventional mixing paddles, may be generally even, i.e. planar, resulting in a rectangular horizontal cross section. However, a curvature may result in a non-rectangular horizontal cross section.

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In one embodiment at least the part of the first section of the mixing paddle may have a curved cross section. For example, the horizontal cross section of the first section might be concave. However, also differently curved shapes may be possible. In another embodiment at least the part of the first section of the mixing paddle may have an s-shaped horizontal cross section. Such an s-shaped horizontal cross section might be created by coiling the otherwise substantially rectangular and planar surface of the first section of the mixing paddle into an s-shape so that the resulting horizontal cross section may be also s-shaped. In another embodiment at least the part of the first section of the mixing paddle may have an z-shaped horizontal cross section. However, the horizontal cross section might be also an intermediate between s-shape and z-shape.

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In another embodiment the first section may comprise at least one through hole. By introducing through holes in the first section of the mixing paddle the resistance experienced by the user while mixing paint may be reduced. Better mixing results may also be achieved. For example, these through holes might be circular, or may have any

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geometrical shape such as being elliptical, or being shaped like a water drop.

5 In another embodiment the second section may be detachably attached to the first section. Advantageously, the second section may be used as a handle for holding the first section when the first section is used for mixing. Therefore, in yet another embodiment, the second section comprises a plurality of reinforcements spaced along the length of the second section. These reinforcements might be simple thickenings in the material of the second section or geometrical structures such as fins interlinking part of the horizontal cross section of the second section. 10 These reinforcements may help to improve the overall physical strength of the second section and also may allow better handling of the mixing paddle, i.e. these reinforcements may allow the user to get a better grip during mixing. However, additionally, at least part of the first section might also comprise these reinforcements, so that a user may also better hold the first section directly. 15

20 In another embodiment the mixing paddle may be made of recycled synthetic material. Advantageously, this material may provide an environmentally friendly alternative to organic materials such as wood.

25 In yet another embodiment a method for removing excess paint from a mixing paddle is described. The mixing paddle used may comprise a first section adapted for mixing a paint, and a second section having at least one removing edge, wherein the removing edge may have a geometry complementary to a horizontal cross section of the first section, the method may comprise detaching the detachably attached second section, and moving the removing edge along a length of the first section of the mixing paddle to remove excess paint. 30

In a further aspect of the disclosure is a mixing paddle comprising a first section adapted for mixing a paint, the first section including an edge, a front side, and a back side, wherein the front side and the back side

define a horizontal cross section of the first section, and wherein at least a part of the first section has a non-rectangular horizontal cross section; and a second section detachably coupled to the edge of the first section, the second section having at least one removing edge, wherein the removing edge has a geometry complementary to an entirety of the front side of the horizontal cross section of the first section.

In yet a further aspect of the disclosure is a mixing paddle comprising a first section adapted for mixing a paint, the first section including an edge, a front side, and a back side, wherein the front side and the back side define a horizontal cross section of the first section, and wherein at least a part of the first section of the mixing paddle has an s-shaped horizontal cross section; and a second section detachably coupled to the edge of the first section, the second section having at least one removing edge, wherein the removing edge has a geometry complementary to an entirety of the front side of the horizontal cross section of the first section.

Brief Description of the Figures

In the following the mixing paddle according to the present disclosure is further described by reference to the schematic illustrations shown in the figures, wherein:

Figures 1a, 1b, 1c, 1d are different views of an embodiment of a mixing paddle according to the disclosure,

Figure 2a is a front view of a mixing paddle according to the disclosure with the second section detached,

Figure 2b is a front view of a mixing paddle according to the disclosure where the removing edge of the second section is aligned with the first section, and

Figure 2c is a dimensional view of a mixing paddle according to the disclosure where the removing

edge of the second section is aligned with the first section.

Detailed Description of an Embodiment of the Disclosure

5 Figures 1 show different views (front-, side-, back-, top-, end-, and dimensional view) of an embodiment of a mixing paddle 1 according to the disclosure with a first section 2 adapted for mixing a paint and a second section 3 having a removing edge 4. The horizontal cross sections 5, 6 are schematically indicated on the very top in Figures 1a and 1c, 10 where Figure 1a shows the front side of the mixing paddle 1, whereas Figure 1c shows the back side of the mixing paddle 1. As it can be seen in the Figures, the geometry of the removing edge 4 is complementary to the horizontal cross section 5, 6 of the first section 2 extending in the vertical direction. Advantageously, that may allow fitting the removing 15 edge 4 into the geometry, i.e. into the profile, of the first section.

In the here shown embodiment the first section 2 comprises several openings such as opening 7 in its material. These openings allow easier and more efficient mixing of the paints. The openings in Figures 1 are 20 disposed throughout the first section 2 and are tear-shaped. However, this example shall not be limiting and it is evident for a person skilled in the art that the openings can have any shape, such as circular or rectangular, and are disposed in any pattern on the first section 2. Also, in the embodiment as shown in Figures 1 the cross section 5, 6 of the 25 first section 2 is s-shaped. However, in alternative embodiments the cross section may be also rectangular, convex/concave, having a V-shape, etc.

30 Figures 1 also show enforcements like enforcement 8 being arranged along the vertical length of the second section 3 and partly along the length of the first section 2. The here shown enforcements 8 are in the shape of fins that are located in the s-shaped horizontal cross-section 5, 6. Advantageously, these enforcements 8 may add extra stability to the mixing paddle. They may also be helpful for the user to reliably hold the 35 mixing paddle 1, even when the entire mixing paddle is covered with slippery paint.

In the here shown embodiments it is shown that the first section 2 and the second section 3 are hold together by a perforated strip 9. If the user starts bending the first section 2 and the second section 3 relative to each other, both parts will break apart along the perforation strip 9. However, the person skilled in the art would also know alternative ways how the second section 3 could be detached from the first section 2 such as for example by thinning the material along the strip, i.e. tapering the material.

Figure 2a shows like Figure 1a the front view of the mixing paddle 1. In the here shown example, the second section 3 is detached from the first section 2. As already described above, this can be done by bending both sections 2, 3 relative to each other until they break apart along the perforation strip 9. Figure 2a shows that both sections 2, 3 are separated from each other along a straight horizontal line leaving an edge 10 in the second section 3 opposite the removing edge 4. Alternatively, however, the edge 10 could also, or instead, have the geometry of the removing edge 4. The geometry of the removing edge could also be realized on either or both sides 11, 12 of the second section 3.

Figures 2b and 2c show a front view and a dimensional view of the mixing paddle 1 where the removing edge 4 of the second section 3 is aligned with the cross section 5, 6 of the first section 2.

After the second section 3 was detached, the user can hold the first section 2, preferably on the very top part where there is no or less paint. For removing the excess paint the removing edge 4 is simply aligned with the horizontal cross section 5, 6 of the first section 2, i.e. the removing edge 4 having a geometry complementary to the horizontal cross section 5, 6 of the first section 2 is simply pushed into the horizontal cross section 5, 6 of the first section 2.

For removing the excess paint, the removing edge 4 is moved down along the length of the first section 2 to scrape the paint off. Advantageously, when the removing edge 4 is moved down along the

length of the first section 2 for the first time most of the excess paint may be already removed from the first section 2 due to the drop shaped through holes 7 in the first section 2. The removing edge 4 can be moved down along the length of the first section 2 more than once to make sure that as much excess paint as possible is being collected.

The first section 2 can be then turned over to its back side where the process is repeated until all excess paint, or at least most of it is also removed from the back side of the first section 2.

In the claims which follow and in the preceding description of the invention, except where the context requires otherwise due to express language or necessary implication, the word “comprise” or variations such as “comprises” or “comprising” is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the invention.

Claims

- 5 1. A mixing paddle comprising:
a first section adapted for mixing a paint the first section including an edge, a front side, and a back side, wherein the front side and the back side define a horizontal cross section of the first section; and
- 10 a second section frangibly coupled to the edge of the first section, the second section having at least one removing edge, wherein the removing edge has a geometry complementary to an entirety of the front side of the horizontal cross section of the first section.
- 15 2. The mixing paddle of claim 1, wherein the at least one removing edge is opposite to an edge of the second section that results from detaching the second section from the first section.
- 20 3. The mixing paddle of any one of claims 1 or 2, wherein the second section is detachably coupled to the first section by a perforation in the mixing paddle.
- 25 4. The mixing paddle of any one of claims 1 to 3, wherein the second section is detachably coupled to the first section by a tapering in the mixing paddle.
- 30 5. The mixing paddle of any one of claims 1 to 4, wherein at least a part of the first section has a non-rectangular horizontal cross section.
6. The mixing paddle of any one of claims 1 to 5, wherein at least a part of the first section of the mixing paddle has a curved horizontal cross section.

7. The mixing paddle of any one of claims 1 to 6, wherein at least a part of the first section of the mixing paddle has an s-shaped horizontal cross section.
- 5 8. The mixing paddle of any one of claims 1 to 6, wherein at least a part of the first section of the mixing paddle has an z-shaped horizontal cross section.
9. The mixing paddle of any one of claims 1 to 8, wherein the first
10 section comprises at least one through hole.
10. The mixing paddle of any one of claims 1 to 9, wherein the second section comprises a plurality of reinforcements spaced along a length of the second section.
- 15 11. The mixing paddle of any one of claims 1 to 10, wherein the mixing paddle is made of recycled synthetic material.
12. The mixing paddle of any one of claims 1 to 11, wherein the
20 geometry of the removing edge is further complementary to an entirety of the back side of the horizontal cross section of the first section.
13. A mixing paddle comprising:
25 a first section adapted for mixing a paint, the first section including an edge, a front side, and a back side, wherein the front side and the back side define a horizontal cross section of the first section, and wherein at least a part of the first section has a non-rectangular horizontal cross section; and
30 a second section detachably coupled to the edge of the first section, the second section having at least one removing edge, wherein the removing edge has a geometry complementary to an entirety of the front side of the horizontal cross section of the first section.

14. The mixing paddle of claim 13, wherein at least a part of the first section of the mixing paddle has a curved horizontal cross section.
- 5 15. The mixing paddle of any one of claims 13 to 14, wherein at least a part of the first section of the mixing paddle has a s-shaped horizontal cross section.
- 10 16. The mixing paddle of any one of claims 13 to 15, wherein the geometry of the removing edge is further complementary to an entirety of the back side of the horizontal cross section of the first section.
- 15 17. A mixing paddle comprising:
a first section adapted for mixing a paint, the first section including an edge, a front side, and a back side, wherein the front side and the back side define a horizontal cross section of the first section, and wherein at least a part of the first section of the mixing paddle has an s-shaped horizontal cross section; and
20 a second section detachably coupled to the edge of the first section, the second section having at least one removing edge, wherein the removing edge has a geometry complementary to an entirety of the front side of the horizontal cross section of the first section.
- 25 18. The mixing paddle of claim 17, wherein the geometry of the removing edge is further complementary to an entirety of the back side of the horizontal cross section of the first section.
- 30

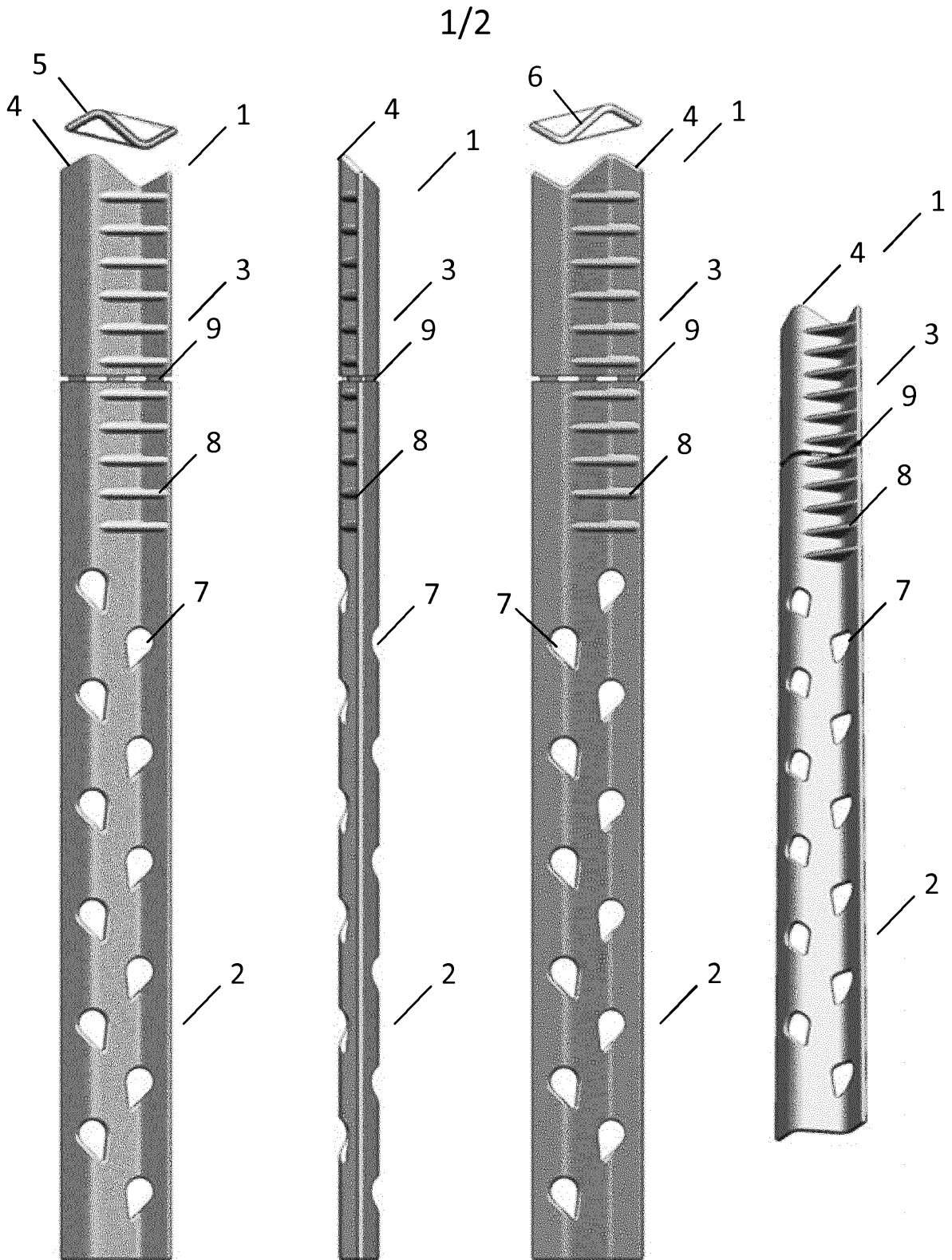


Figure 1a

Figure 1b

Figure 1c

Figure 1d

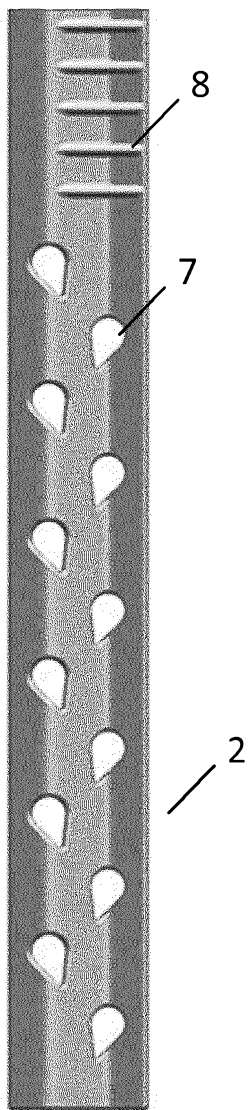
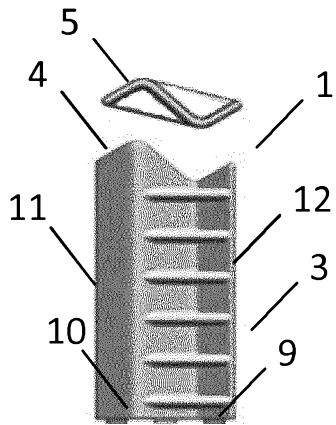


Figure 2a

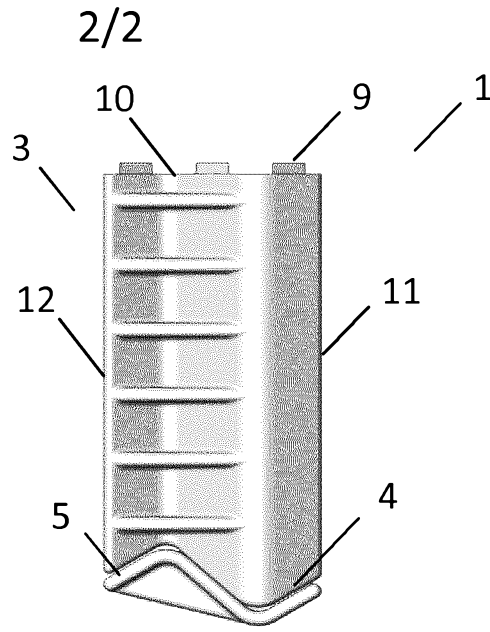


Figure 2b

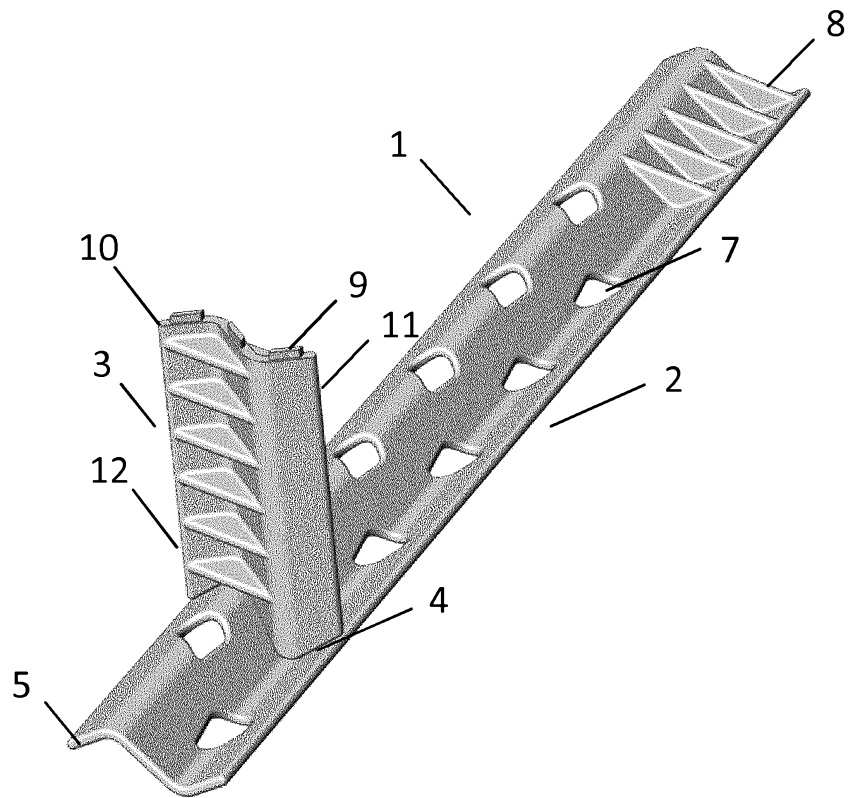


Figure 2c