Knitting tool bar of a knitting machine and process for forming knitting tool bar which includes a body composed of a fiber-reinforced synthetic. The body has at least two open profiles arranged to form walls surrounding a hollow space extending in the longitudinal direction. The instant abstract is neither intended to define the invention disclosed in this specification nor intended to limit the scope of the invention in any way.
KNITTING TOOL BAR

CROSS-REFERENCE TO RELATED APPLICATIONS


BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention
[0003] The invention relates to a knitting tool bar of a knitting machine with a body composed of a fiber-reinforced synthetic in which the body has walls surrounding a hollow space extending in the longitudinal direction.
[0004] 2. Discussion of Background Information
[0005] Knitting machines have several bars that carry knitting tools. For the sake of simplicity, "knitting tools" covers all the elements that are involved in the knitting process, e.g., needles, guide needles, comb plates, pile sinks, knock-over sinks, etc.
[0006] A bar can extend over a relatively large length, e.g., over the entire length of a knitting machine. In individual cases it can achieve a length in the order of magnitude of approx. 6 m. Certain demands are made on the mechanical stability of the bar even with shorter lengths. In particular, the bar should have a certain stiffness and not oscillate. However, it is desired to keep the mass of the bar as small as possible, because it has to be accelerated at each cycle of the knitting machine. The smaller the mass, the smaller the forces necessary for acceleration and the higher the working speed of the knitting machine can be.
[0007] Usually the bars of a knitting machine are made of a light metal, such as magnesium or aluminum. Although these materials are relatively light, a bar made thereof still has a considerable mass. It has therefore been proposed, e.g., in DE 38 40 531 C1, to make the bar out of a reinforced synthetic. To this end the bar has a hollow profile with a hollow space that is limited all around by largely closed circumferential walls. Two attachment profiles are formed outside on the hollow profile, which attachment profiles are used for the clamping attachment of holding arms or thread guide holders.
[0008] With such an embodiment of the bar, although a relatively small mass and a higher mechanical load capacity can be achieved, the load capacity is limited.
[0009] In DE 41 11 108 C2 it has been proposed to form a bar of reinforced synthetics in that the hollow profile is made of bands of synthetics laid flat overlapping on top of each other with respectively a mat knitted or woven of reinforced fibers. A molded body is arranged in the hollow space, which molded body remains in the hollow space permanently and contains female thread pieces for attaching components.
[0010] However, such an embodiment has the disadvantage that the mass increases again due to the molded body. Moreover, the female thread pieces have to be positioned relatively precisely in advance. Changing the position afterwards is virtually no longer possible.

SUMMARY OF THE INVENTION

[0011] The present invention provides a bar with small mass and high mechanical stability.
[0012] Accordingly, the invention provides a bar of the type mentioned at the outset in which the body is assembled from at least two open profiles.
[0013] An open profile is a profile that is accessible from all sides. Thus, the body is first produced by assembling the profiles. The hollow space is thus also first formed. This means that, before assembly, the profiles are freely accessible from all sides, includes from their inside, so that a great number of processing measures can be used before the profiles are assembled. Thus, this avoids, e.g., the necessity of placing female thread parts purely by way of precaution at positions where they will later not be necessary at all. No superfluous material areas on the body are therefore required either which might have to be tolerated if the body were manufactured directly as a hollow profile, e.g., through extrusion.
[0014] Preferably at least one profile is embodied as a molded part. It is discernible that the "strength" of the bar increases at any rate within certain limits with the force with which a profile is molded. If the body is now assembled from profiles, at least one profile, but preferably all profiles, can be produced in a high-strength manner in that they are produced in a press. In a press the necessary pressure can be controlled and applied as necessary. With a body that has a closed hollow profile, this could be achieved only by introducing a core. With greater lengths of the body, however, it is then extremely difficult to remove the core again. The alternative is to leave the core in the body (DE 41 11 108 C2). However, this leads to an increased mass.
[0015] The profiles preferably have at least one connecting surface in which they rest flat against one another. A relatively large contact surface can be provided via connecting surfaces, through which a connection can be made between two or more profiles with adequate reliability.
[0016] It is hereby preferred that the profiles are adhered to one another. A very high holding force results even with an adhesive with a low final strength because the adhesion occurs in a large-area manner over the connecting surfaces.
[0017] It is also advantageous that at least one profile is provided in the hollow space with an auxiliary anchoring attachment. The auxiliary anchoring attachment can be attached to the profile before the profiles are joined together.
[0018] This auxiliary anchoring element thus does not yet need to be taken into consideration in the production of the profile. Rather it can be placed on the inside of the profile which later limits the hollow space and attached there if this inside is still freely accessible.
[0019] It is hereby preferred that the auxiliary anchoring element is arranged in an area in which two profiles overlap one another. This embodiment has several advantages, e.g., the strength of the body is particularly strong in an area in which two profiles lie one on top of the other, and the auxiliary anchoring element can then be used not only to attach attachments, e.g., thread guide holders or the like, to the bar, but can be used at the same time to ensure or reinforce the connection between two profiles.
[0020] The auxiliary anchoring element is preferably glued in. This measure is expedient above all for producing the bar. If the auxiliary anchoring element is attached to the inside of the profile, it also retains its position during installation. As an auxiliary anchoring element, e.g., a nut can be used that provides a thread into which a screw bolt can later be screwed. Of course, in this case a hole will have to be made through the profile or profiles.

[0021] Preferably a profile has on its outside grooves running crosswise to the longitudinal direction, between which wave-form flanges are arranged. The grooves are used to hold needles, e.g., knitting needles. The flanges support the needles in the longitudinal direction with respect to one another and thus define a spacing between adjacent needles. An increased strength is provided because the flanges run in a wave-form manner. Since the profiles are made of fiber-reinforced synthetic, e.g., carbon fiber-reinforced synthetic, it is achieved through the wave, which basically has only one “hill,” that at least part of the fibers can be guided into a part of the profile in which the grooves have not yet penetrated. The flanges then have an increased resistance to damage.

[0022] Preferably a common longitudinal groove running in the longitudinal direction connects to the grooves, which groove is arranged in an additional profile that is arranged on a side of a profile arranged outside the hollow space. The longitudinal groove is used, e.g., to hold projections of knitting needles with which the knitting needles are fixed in the longitudinal direction with respect to a knitting needle bar. A weakening of the body is avoided because the longitudinal groove is not made in the profile that surrounds the hollow space. The bar thus remains extraordinarily stable and can nevertheless perform its function well of holding the needles, e.g., the knitting needles.

[0023] Preferably at least one profile is made from a prepreg. A prepreg is a semi-finished product in which fibers, e.g., carbon fibers, and synthetics are mixed in a predetermined ratio. Hereby the fibers are already arranged in the synthetic in a predetermined manner. The synthetic forms a matrix that is reinforced by the fibers. Prepregs are available, e.g., in the form of mats that can be inserted into a press. As a rule, a better distribution of the fibers in the synthetic matrix is obtained with the aid of a prepreg than with an addition of synthetics during the pressing operation. After the pressing operation, in which heat is also often added, the prepreg can harden and then retain its final form. Projecting parts of the prepreg that are not needed can be punched out during pressing or afterwards or can be sawn off or cut off in a separate processing operation.

[0024] It is hereby preferred that the prepreg is embodied as a UD (unidirectional) prepreg. With a UD prepreg, fibers run virtually exclusively in one direction. The profile made from the prepreg then has increased tensile strength in this direction. There is thus a considerable possibility for influencing the strength of the bar through the choice of the fiber direction.

[0025] Preferably the profile is made from at least two prepregs lying one on top of the other, the fiber directions of which enclose a predetermined angle. This angle can be, e.g., 90°. In this case there is an increased tensile strength and squash strength in virtually every direction.

[0026] Preferably at least one prepreg has a fiber direction that runs in the longitudinal direction and at least one prepreg has a fiber direction that runs crosswise to the longitudinal direction. Such an embodiment is advantageous above all with a bar that carries guides. In a cycle such a bar is moved both to and fro in the longitudinal direction and crosswise to the longitudinal direction. The fibers of the prepreg provide sufficient strength in both directions. Through the targeted alignment of the prepreg, the dimensional stability of the bar is maintained in all the fiber directions, i.e., a change of the dimensions depending on the temperature does not occur in the longitudinal direction or crosswise thereto.

[0027] It is hereby preferred that at least on one outer surface of the profile a prepreg is arranged with a fiber direction which runs crosswise to the longitudinal direction. This is particularly advantageous with the grooves mentioned above in connection with the knitting needle bar, because then the flanges lying in between have fibers at least on their surface and a layer lying beneath it, which fibers follow the direction of the flanges. The strength of the flanges is thus considerably increased.

[0028] Preferably the body has a higher fiber content than the prepreg. This can be achieved in that during production of at least one profile a press force is applied which ensures that a part of the synthetic is pressed out of the press. This can also be facilitated in that a prepreg prepared for a pressing is wrapped in a piece of textile fabric. The synthetic is thus guided more quickly to the surface and beyond this to the edge of the prepreg. If the prepreg has a fiber content of, e.g., 60%, through the higher press force the body can be provided with a fiber content of 70%.

[0029] Preferably at least one profile has a curved section. A curved section has an increased strength compared to a flat section. A curved section can be produced through a pressing operation.

[0030] It is also advantageous if at least one profile has an offset reinforcing strip that stands away from the hollow space. This reinforcing strip can be easily accommodated where space is available in the knitting machine. The reinforcing strip can also be used to facilitate the positioning of the bar in the knitting machine. Such a reinforcing strip can also easily be shaped during shaping in a press.

[0031] In a preferred embodiment it is provided that the profiles have a shape with which they can be placed against one another in only one alignment. The profiles are then as it were self-centering, i.e., they fit together in only one alignment. Such a shape can be achieved, e.g., in that the profiles are provided with curves or projections fitting one another.

[0032] The present invention is directed to a knitting tool bar of a knitting machine that includes a body composed of a fiber-reinforced synthetic. The body has at least two open profiles arranged to form walls surrounding a hollow space extending in the longitudinal direction.

[0033] According to the invention, at least one profile can be formed as a molded part.

[0034] In accordance with a feature of the present invention, the profiles may have at least one connecting surface structured and arranged to rest flat against one another.

[0035] According to another feature of the invention, the profiles can be adhered to one another.
The knitting tool bar may also include an auxiliary anchoring element coupled to at least one profile. The auxiliary anchoring element can be located within the hollow space. Further, the auxiliary anchoring element may be arranged in an area in which two profiles overlap one another. Also, the auxiliary anchoring element can be coupled by glue.

In accordance with still another feature of the instant invention, an additional profile can have its outside grooves running crosswise to the longitudinal direction, between which wave-form flanges are arranged. The additional profile may be arranged on a side of one of the at least two profiles outside of the hollow space, and the additional profile can include a common longitudinal groove oriented in the longitudinal direction that connects to the grooves.

Moreover, at least one of the at least two profiles can be formed from a prepreg. The prepreg may be embodied as a unidirectional prepreg. Further, the at least one profile can be formed of at least two prepregs lying on top of one another. The at least two prepregs may be arranged such that fiber directions of the at least two prepregs enclose a predetermined angle. At least one prepreg can have a fiber direction that runs in the longitudinal direction, and at least one prepreg can have a fiber direction which runs crosswise to the longitudinal direction. Also, the at least one prepreg may have a fiber direction running crosswise to the longitudinal direction is arranged at least on an external surface of the profile. The body may have a higher fiber proportion than the prepreg.

According to the invention, at least one profile may have a curved section.

In accordance with still another feature of the present invention, at least one of the at least two profiles can have an offset reinforcing strip that stands away from the hollow space.

The at least two profiles may be shaped so that the at least two profiles are couplable to each other in only one alignment.

The invention is directed to a process of forming a knitting tool bar of a knitting machine, and the process includes forming at least two open profiles, and arranging the at least two open profiles to define an open space extending in a longitudinal direction and to form a body. The body is composed of a fiber-reinforced synthetic.

According to the invention, the process can further include forming an additional profile composed of a plurality of wave shaped flanges separated by grooves extending crosswise to a longitudinal direction and a longitudinal groove. The process may also include positioning the additional profile on a side of one of the at least two profiles outside of the hollow space. The process can further include inserting knitting needles into the grooves located between the wave shaped flanges, and inserting a portion of the knitting needles into the longitudinal groove.

In accordance with the invention, the body can form a guide bar.

According to another feature of the invention, the body may form a sinker bar.

According to still another feature of the instant invention, the body can form a slider bar.

In accordance with still yet another feature of the present invention, the body may form a needle bar.

Other exemplary embodiments and advantages of the present invention may be ascertained by reviewing the present disclosure and the accompanying drawing.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention is further described in the detailed description which follows, in reference to the detailed description by way of non-limiting examples of exemplary embodiments of the present invention, in which like reference numerals represent similar parts throughout the several views of the drawings, and wherein:

**FIG. 1** illustrates a diagrammatic representation of a knitting area of a warp knitting machine;

**FIG. 2** illustrates a diagrammatic representation of a press mold for producing an open profile;

**FIG. 3** illustrates a profile of a guide bar;

**FIG. 4** illustrates a guide bar composed of two profiles;

**FIG. 5a** illustrates a needle bar;

**FIG. 5b** illustrates an enlarged section of FIG. 5a;

**FIG. 6a** illustrates a perspective representation of a needle bar; and

**FIG. 6b** illustrates an enlarged representation of a part of the needle bar according to FIG. 6a.

**DETAILED DESCRIPTION OF THE PRESENT INVENTION**

The particulars shown herein are by way of example and for purposes of illustrative discussion of the embodiments of the present invention only and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the present invention. In this regard, no attempt is made to show structural details of the present invention in more detail than is necessary for the fundamental understanding of the present invention, the description taken with the drawings making apparent to those skilled in the art how the several forms of the present invention may be embodied in practice.

**FIG. 1** shows several knitting tools of a knitting machine, namely guide bars 1a-1d, a sinker bar 2, a slider bar 3 and a needle bar 4. The guide bars 1a-1d supports guides 5 that are attached to the guide bar 1a-1d via a holder 6, which can also be called a thread guide holder. The sinker bar 2 supports sinkers 7. The slider bar 3 supports sliders 8 and the needle bar 4 supports knitting needles 9.

A guide bar 1a features a body that is composed of two profiles 10, 11. The two profiles 10, 11 surround a hollow space 12 that extends perpendicular to the drawing plane. The direction perpendicular to the drawing plane is referred to below as the "longitudinal direction" because it corresponds to the longitudinal direction of the knitting machine, the knitting area of which is shown in **FIG. 1**.
FIG. 2 shows a press mold 13 for producing the profile 11. The press form features an upper part 14 and a lower part 15, which are shown in FIG. 2 somewhat offset with respect to one another, as so to be able to show the profile 11.

The profile 11 is formed from at least two, preferably three UD prepregs, the fibers of which run in the longitudinal direction or crosswise thereto. To produce the profile 11, the UD prepregs placed one on top of the other and brought to the correct size are placed in the press mold 13. Upper part 14 and lower part 15 are moved towards one another with a predetermined force in order to shape the profile 11. If necessary, heat can also be applied. After the hardening of the prepreg, the profile 11 is obtained in the desired shape. Edge areas 16, 17 which are superfluous can be removed by sawing or stamping.

The profile 11 (the same applies to all other profiles as well) is embodied as an open profile, i.e., both sides of the profile 11 are accessible in their entirety.

FIG. 3 now shows the profile 11 with punched holes 18, 19 and an auxiliary anchoring element 20. The auxiliary anchoring element 20 is adhered to a flange 21 which on its outside has a connecting surface 22 with which the profile 11 can be connected to the profile 10, e.g., by adhesion. The auxiliary anchoring element 20 features for each hole 19 a threaded hole 23 into which later a screw bolt can be screwed to attach the guide bar 1a to a guide lever (or another carrier), not shown in further detail.

In a similar manner thread inserts 24 are inserted in the holes 18, into which thread inserts a bolt 25 can be screwed in order to attach the holders 6 of the guides 5 to the guide bar 1a.

The other profile 10 is in principle constructed identically to the profile 11. On its upper end it has a flange 26 that is provided with an opening 27. The flange features an offset reinforcing strip 28 that encloses e.g., an angle of 90° to the flange 26. The reinforcing strip 28 points away from the hollow space 12. It gives the guide bar 1a a relatively great stiffnes in the longitudinal direction but does not interfere further because in the installed state it is adjacent to the bolt that is guided through the threaded hole 23.

The guide bar 1d is even embodied such that the two profiles 10, 11 are embodied identically, i.e., identical profiles 10, 11 can be used and one can be folded by 180° in order to form the guide bar 1d. However, usually identical guide bars are used in a knitting machine.

The profile 11 features on the side opposite the flange 21 an extension 29 that likewise forms a connecting surface 30. The extension 29 in the installed state (FIG. 1 and 4) lies on a corresponding extension 31 of the profile 11.

To complete the guide bar 1d, the two profiles 10, 11 are produced in the press mold 13. The holes 18, 19 are likewise produced, e.g., by drilling or punching. Then the two profiles 10, 11 are assembled and connected to one another at the connecting surfaces 22, 30. This connection can be made, e.g., by adhesion. Since the adhesion takes place in a large-area manner over the entire bar length, an adhesive with low final strength can also be used and a very high holding force can still be achieved. In addition, the flanges 21, 26 or extensions 29, 31 lying on top of one another can also be used for screwing the knitting elements or for attaching the bar. With corresponding screwing, the adhesion is unimportant, so that, if necessary, it can also be omitted.

The sinker bar 2 also has two profiles 32, 33 that enclose a hollow space 34. The profiles 32, 33 lie against one another in sections 35, 36 or 37, 38 and can be connected to one another there. A bolt 39 is guided through the sections 35, 36, which bolt is screwed into a nut 40 that is attached to the inside of section 35, e.g., by adhesion. The bolt 39 does not only hold the sinker bar 2 on a holder 41, it also ensures a connection between the two profiles 32, 33.

In a similar manner to the guide bars 1a-1d, a thread insert 42 is guided through the sections 37, 38, into which thread insert a bolt 43 is screwed. The bolt 43 on the one hand holds the sinkers 7, but on the other hand it also connects the two profiles 32, 33.

Here, too, the section 36 features a reinforcing strip 44 which is offset approximately at right angles to the section 36 and thus points away from the hollow space 34.

The sliding bar 3 is also composed of two profiles, 45, 46 which surround a hollow space 47. Here both profiles 45, 46 respectively feature a reinforcing strip 48, 49, whereby the two profiles 45, 46 rest flat against one another at the reinforcing strips 48, 49. The reinforcing strip 48 is bent approximate at right angles to a section 50 of the lower profile 46. A nut 51 is adhered to the inside of the profile 46.

The profile 45 features two bent sections 52, 53. Bent sections give the profile an increased stiffness in the longitudinal direction. The profile 46 also features a bent section 54, whereby the bent sections 53 and 54 rest against one another. There the two profiles 45, 46 can be adhered to one another.

On the other side of the connecting surfaces that are embodied on the bent sections 53, 54, the two profiles 45, 46 form clamping arms 55, 56 between which sliders 8 with their holders are clamped. Of course, the sliders 8 can also be secured with a screw.

FIGS. 5 and 6 now show the needle bar 4 with further details. The needle bar first features two profiles 57, 58, which are connected to one another at their bent reinforcing strips 59, 60. A nut 61 is adhered to the inside of the profile 57. The nut is accessible through an opening 62, so that the needle bar 4 can be attached to a carrier (not shown in further detail).

Another profile 63 is arranged on the outside of the profile 58, which profile 63 is shown enlarged in FIG. 5b. The profile 63 forms a longitudinal groove 64, in which a projection 65 of each of needles 9 engages in order to fix the needle 9 in the movement direction via sliders.

All three profiles 57, 58, 63 are constructed of three layers, as can be seen from FIG. 5b. The layers are labeled by “-1”, “-2” and “-3.” Each layer is formed by a prepreg, i.e., a semi-finished product, in which fibers, in particular carbon fibers, are embedded in a synthetic matrix. In the present case the prepregs are embodied as UD prepregs (unidirectional prepregs), i.e., the fibers are all aligned in one direction. For manufacture, several prepregs, in the present case three, are laid on top of one another and then compressed with one another in a mold similar to that shown.
in FIG. 2. The prepregs with different orientations of their fibers are thereby laid on top of one another. The respective outer layers 58-1 and 58-3 and 63-1 and 63-3 are aligned such that their fibers lie parallel to the drawing plane, thus (in the non-molded state of the prepregs) parallel to the direction of the knitting needles 9. In contrast the prepreg 58-2 and the prepreg 63-2 are aligned so that their fibers lie in the longitudinal direction.

[0079] This applies in a similar manner to the prepregs of the layers 57-1 through 57-3.

[0080] If the profiles 58, 63 are now shaped in a corresponding press, then, as can be seen from FIG. 6b, they form a wave 66 in which the fibers of the layer 63-3 lie in a plane parallel to the knitting needles 9. After the shaping of the profile 63, not only is the longitudinal groove 64 sunk, whereby this longitudinal groove 64 penetrates only the two upper layers 63-1, 63-2, but also grooves 67 are produced in which later the knitting needles 9 can be arranged. The remaining flanges 68 are then formed from fibers of the outer layer 63-3, which emerge from the "underground" and sink back into the "underground" again so that the outer layer of the wave 66 is practically formed by a continuous fiber structure in which the ends of the fibers are anchored, thus not free. This contributes substantially to the stability of the waves 66. Similar considerations apply to the flanges 68. Their fibers are held in the underground at least on one side.

[0081] The knitting needles 9 are held in the grooves 67 with the aid of a holder 69. The holder 69 is held in place with the aid of a clamp piece 70 on the needle bar 4, whereby the clamp piece 70 is attached to the needle bar 4 by a screw 71, which is screwed into a thread piece 72 which is guided through the two profiles 58, 63. Otherwise, the profiles 57, 58, 63 are adhered to one another in the present exemplary embodiment.

[0082] In producing the profiles 10, 11, 32, 33, 45, 46, 57, 58, 63, the UD prepregs are placed in a respectively specially shaped press mold and then the press mold is acted on with pressure and, if necessary, also increased temperature. The pressure can thereby be chosen to be so high that a part of the synthetic of the synthetic matrix is squeezed out of the mold. Profiles are thus obtained in which the fiber proportion is greater than the fiber proportion of the prepregs. The strength of the bar which is later made from these profiles is thus increased. However, too much synthetic must not be removed from the profiles. Pressing out the synthetic can also be facilitated in that the prepregs are wrapped in a textile fabric that then disperses the synthetic outwards.

[0083] The individual profiles can still be processed after pressing. For example, they can be sawn or cut to the correct length. Parts projecting parallel to the longitudinal direction can likewise be cut off or punched off. Preferably the profiles of a bar are embodied such that they can be laid against one another only in a mutual alignment as shown, e.g., on the basis of the slider bar 3 through the curved areas 53, 54 and the reinforcing strips 48, 49.

[0084] It is noted that the foregoing examples have been provided merely for the purpose of explanation and are in no way to be construed as limiting of the present invention. While the present invention has been described with reference to an exemplary embodiment, it is understood that the words which have been used herein are words of description and illustration, rather than words of limitation. Changes may be made, within the purview of the appended claims, as presently stated and as amended, without departing from the scope and spirit of the present invention in its aspects. Although the present invention has been described herein with reference to particular means, materials and embodiments, the present invention is not intended to be limited to the particulars disclosed herein; rather, the present invention extends to all functionally equivalent structures, methods and uses, such as are within the scope of the appended claims.

1. A knitting tool bar of a knitting machine comprising:
a body composed of a fiber-reinforced synthetic, said body having at least two open profiles arranged to form walls surrounding a hollow space extending in the longitudinal direction.

2. The knitting tool bar in accordance with claim 1, wherein at least one profile is formed as a molded part.

3. The knitting tool bar in accordance with claim 1, wherein said profiles have at least one connecting surface structured and arranged to rest flat against one another.

4. The knitting tool bar in accordance with claim 1, wherein the profiles are adhered to one another.

5. The knitting tool bar in accordance with claim 1, further comprising an auxiliary anchoring element coupled to at least one profile.

6. The knitting tool bar in accordance with claim 5, wherein said auxiliary anchoring element is located within the hollow space.

7. The knitting tool bar in accordance with claim 5, wherein said auxiliary anchoring element is arranged in an area in which two profiles overlap one another.

8. The knitting tool bar in accordance with claim 5, wherein said auxiliary anchoring element is coupled by glue.

9. A knitting tool bar of a knitting machine comprising:
a body composed of a fiber-reinforced synthetic, said body having at least two open profiles arranged to form walls surrounding a hollow space extending in the longitudinal direction; and

an additional profile having on its outside grooves running crosswise to the longitudinal direction, between which wave-form flanges are arranged.

10. The knitting tool bar in accordance with claim 9, wherein said additional profile arranged on a side of one of said at least two profiles outside of the hollow space, said additional profile comprising a common longitudinal groove oriented in the longitudinal direction that connects to the grooves.

11. The knitting tool bar in accordance with claim 1, wherein at least one of said at least two profiles is formed from a prepreg.

12. A knitting tool bar of a knitting machine comprising:
a body composed of a fiber-reinforced synthetic, said body having at least two open profiles arranged to form walls surrounding a hollow space extending in the longitudinal direction;

wherein at least one of said at least two profiles is formed from a prepreg embodied as a unidirectional prepreg.

13. The knitting tool bar in accordance with claim 12, wherein at least one profile is formed of at least two prepregs lying on top of one another.
14. The knitting tool bar in accordance with claim 13, wherein said at least two prepregs are arranged such that fiber directions of said at least two prepregs enclose a predetermined angle.

15. The knitting tool bar in accordance with claim 14, wherein at least one prepreg has a fiber direction that runs in the longitudinal direction, and at least one prepreg has a fiber direction which runs crosswise to the longitudinal direction.

16. The knitting tool bar in accordance with claim 15, wherein said at least one prepreg having a fiber direction running crosswise to the longitudinal direction is arranged at least on an outer surface of the profile.

17. The knitting tool bar in accordance with claim 11, wherein said body has a higher fiber proportion than the prepreg.

18. The knitting tool bar in accordance with claim 1, wherein at least one profile has a curved section.

19. The knitting tool bar in accordance with claim 1, wherein at least one of said at least two profiles has an offset reinforcing strip that stands away from the hollow space.

20. The knitting tool bar in accordance with claim 1, wherein said at least two profiles are shaped so that said at least two profiles are couplable to each other in only one alignment.

21. A process of forming a knitting tool bar of a knitting machine comprising:

   forming at least two open profiles; and

   arranging the at least two open profiles to define an open space extending in a longitudinal direction and to form a body,

   wherein the body is composed of a fiber-reinforced synthetic.

22. A process of forming a knitting tool bar of a knitting machine comprising:

   forming at least two open profiles; and

   arranging the at least two open profiles to define an open space extending in a longitudinal direction and to form a body,

   wherein the body is composed of a fiber-reinforced synthetic; and

   forming an additional profile composed of a plurality of wave shaped flanges separated by grooves extending crosswise to a longitudinal direction and a longitudinal groove.

23. The process in accordance with claim 22, further comprising positioning the additional profile on a side of one of the at least two profiles outside of the hollow space.

24. The process in accordance with claim 23, further comprising inserting knitting needles into the grooves located between the wave shaped flanges.

25. The process in accordance with claim 24, further comprising inserting a portion of the knitting needles into the longitudinal groove.

26. The process in accordance with claim 21, wherein the body forms a guide bar.

27. The process in accordance with claim 21, wherein the body forms a sinker bar.

28. The process in accordance with claim 21, wherein the body forms a slider bar.

29. The process in accordance with claim 21, wherein the body forms a needle bar.

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