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(54) **Trowel**

(57) Trowel (20) comprising a blade (23) having a rear part and a front part, a handle (22) and an arm (21). The arm (21) comprises a first bend (26) and a second bend (28) and connects the blade (23) with the handle (22). The arm (21) is connected with a first end to the blade (23) at the heel (24) of the blade and is connected with a second end to the handle (22) in such a manner that a forward reaching part (25) of the arm (21) is positioned above the blade (23) in the longitudinal direction of the blade (23). The second bend (28) of the arm leads from the forward reaching part (25) to the second end of the arm, where the handle (22) is connected. The arm (21) is elevated a distance in excess of 3 centimetres above the blade (23) at the heel (24) of the blade, and the arm (21) comprises an upward reaching part (29), which is connected to said forward reaching part (25) of the arm (21).

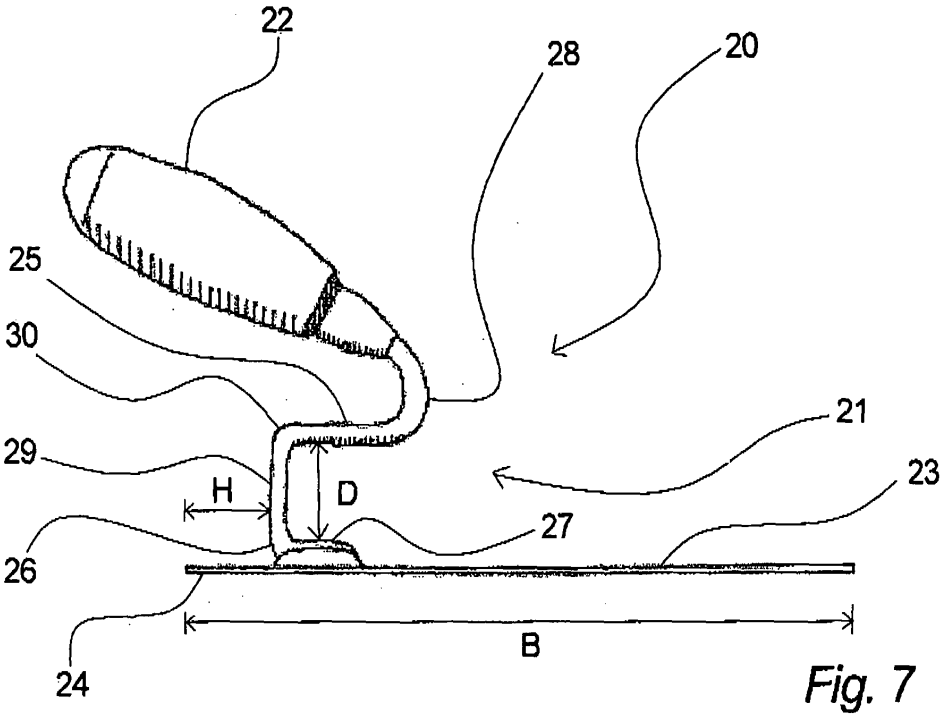

Fig. 7

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Description

Field of the invention

[0001] The invention relates to a trowel, e.g. a masonry trowel, a bricklayer's trowel, a trowel for bricklaying work, plaster work, etc., which trowel comprises a blade with a rear part, e.g. a heel, and a front part, a handle and an arm, which arm comprises a first bend and a second bend and connects the blade with the handle.

Background of the invention

[0002] On such presently used trowels the arm, which connects the handle with the blade, is bent at the heel of the blade, thereby creating said first bend, in such a manner that the arm and the blade forms an acute angle above the blade. Here, the arm is positioned only a small distance above the blade, typically about 2 to 3 centimetres over the blade. This bend, i.e. the first bend of the arm, serves the purpose of supporting the trowel, when it is placed on the edge of e.g. a mortar tub or mortar pail. Presently used trowels are intended for use in connection with old fashioned mortar tubs of steel or iron (e.g. an oil barrel cut in half), where the edge is relatively thin and sharp, e.g. corresponding to the thickness of the steel barrel wall. This design of mortar tubs has been exclusively used for 50 years or more.

[0003] Today, however, tubs, pails or buckets, etc. made out of plastic are used, where the edge or rim is not sharp but wide, which wide edge serves the purpose e.g. of giving the tub the necessary strength. This presently used mortar tub design has the negative effect that it is not possible to hang or rest the trowel on the tub, pail or bucket during work, since the trowel will easily fall down, e.g. down on the scaffold or down on the ground. Because of this, the trowel is often thrown into the tub instead, where it is easily covered with mortar, or the trowel is placed on the bricks, which have been brought to the work place. In both instances, this is a great nuisance for the bricklayers as well as for the bricklayer's assistants, hodman or other persons involved in the work.

[0004] An example of such a prior art trowel is disclosed in DE 100 35 014 A. Here, a trowel is described having an arm, which is curved in such a manner that a first part of the arm, which is connected to the blade at the heel, projects away from the upper side of the blade and in a rearward direction, i.e. away from the tip of the blade. Following this, the arm is curved in a direction towards the tip of the blade, but still away from the upper side of the blade. Finally, the arm turns backwards again and at the end of the arm a handle is placed, the end of which handle points in a direction away from the tip of the blade and slightly in an upward direction, i.e. away from the upper side of the blade.

[0005] It is an object of the invention to provide an improved trowel. In particular, it is an object to provide such a trowel, by means of which the disadvantages and nuisances, which are experienced when using present day mortar tubs, pails or buckets can be alleviated. Even further, it is an object of the invention to provide such a trowel, which as regards ergonomic characteristics corresponds to the prior art trowels or even provides improvements in this respect.

[0006] These and other objects are achieved by the invention as it will be explained in detail in the following.

Summary of the invention

[0007] The invention relates to a trowel comprising

- a blade having a rear part and a front part,
- a handle and
- an arm,

wherein the arm comprises a first bend and a second bend and connects the blade with the handle, said arm being connected with a first end to the blade at the heel of the blade and connected with a second end to the handle in such a manner that a forward reaching part of the arm is positioned above the blade in the longitudinal direction of the blade, said second bend of the arm leading from said forward reaching part to the second end of the arm, to which the handle is connected. In accordance with the invention, the arm at the heel of the blade is elevated a distance above the blade, and the arm comprises an upward reaching part, which is connected to said forward reaching part of the arm.

[0008] Hereby, it is achieved that the trowel can reliably and stably be placed at the edge or rim of the modem type mortar tub, bucket or pail, since the arm in this manner has been provided with a form, e.g. with a bend or curvature, which allows the trowel to hang or rest on a tub with a wide edge or rim in a safe and reliable manner, e.g. since the wide edge or rim of the tub can be accommodated at the rear part of the arm, thus allowing the centre of gravity for the trowel to be located well below the point of support on the edge of the tub, when the trowel is hung on the tub. Furthermore, when the trowel according to the invention is resting on the edge of the rim of a tub, most part of the trowel will be located below the rim or edge of the tub, whereby the risk that the trowel is accidentally touched, contacted or pushed, etc. and possibly overturned by the bricklayer or other persons working nearby is minimized.

[0009] It is noted that the trowel may be a trowel commonly referred to as a bricklayer's trowel, a masonry trowel, etc., but it will be understood that the invention relates to a wide range of trowels with different shapes and sizes, such as for example trowels for plaster work, pail-type trowels, etc.

[0010] According to a preferable embodiment, as specified in claim 2, the arm may at the heel of the blade be elevated above the blade in such a manner that an inside distance D in excess of 3 centimetres above the blade is provided.

[0011] Due to such a design of the arm and the blade it is easy to hang or rest the trowel on the edge or rim of the tub because the arm is elevated more than 3 cm, which is suitable for commonly used modem day tubs, buckets, pails, etc.

[0012] According to a further preferable embodiment, as specified in claim 3, the arm may at the heel of the blade be elevated above the blade in such a manner that an inside distance D in excess of 4 centimetres above the blade is provided.

[0013] Hereby, a further flexibility is achieved as regards the use of the trowel in connection with a wide range of modem day tubs, pails, buckets, etc. that are provided with relatively wide rims. Further, such a trowel with an inside distance D in excess of 4 centimetres may be advantageous in connection with trowels having a relatively wide or broad blade, since the width of the blade in connection with the curvature of the side wall of the tub may require a relatively large distance D for the trowel to rest in an optimal manner on the edge or rim of the tub.

[0014] According to an advantageous embodiment, as specified in claim 4, the arm may comprise a third bend, by means of which the upward reaching part of the arm is connected to the forward reaching part of the arm.

[0015] Hereby, it is achieved that the enhanced inside distance D can be provided in an expedient manner, i.e. by introducing the third bend on the arm. It will be understood that the third bend may be e.g. a rather sharp and distinct bend, e.g. a 90° bend, or a rounded, curved shaped bend, and further that many variations here between are possible.

[0016] Advantageously, as specified in claim 5, the forward reaching part of the arm may at least in part be essentially parallel with the blade.

[0017] Hereby, an expedient design is provided, whereby the necessary distance from the elevated arm to the blade is achieved while simultaneously the height of the handle is maintained essentially unchanged, which is desirable in view of user ergonomics. However, it will be understood that the forward reaching part of the arm may be inclined in relation to the blade as well. Further, it will be understood that the forward reaching part of the arm may also be rounded or curved.

[0018] According to a further advantageous embodiment, as specified in claim 6, the upward reaching part of the arm may at least in part be essentially perpendicular to the blade.

[0019] Hereby, it is achieved that since the arm is almost or essentially vertical, at least in part, at the connection to the blade, the trowel will be located well and reliably on the edge. This effect may be further enhanced when the blade of the trowel is relatively wide, e.g. in cases of triangular blades or rectangular blades.

[0020] However, it will be understood that the upward reaching part of the arm may be inclined in relation to the vertical direction as well and that furthermore the upward reaching part of the arm may also be rounded or curved.

[0021] Preferably, as specified in claim 7, the arm may be connected to the blade at the heel of the blade by means of a connecting part, which is connected to the blade, for example by means of welding, soldering, etc.

[0022] It will be apparent to the skilled person that other suitable manners of connecting the arm to the blade may be used. Furthermore, it is apparent that in case the connecting part is positioned at least partly above the level of the blade, the distance D or the distance that the arm is elevated above the blade may refer to the distance between the connecting part and the arm above this instead of the distance between the blade and the arm, in particular when the difference is significant.

[0023] According to a preferable embodiment, as specified in claim 8, the connecting part, which is connected to the blade, may be positioned at a distance H from a rear end of the blade.

[0024] Hereby, an improved balance of the trowel may be achieved as well as improved ergonomic characteristics for the trowel. In particular, it is achieved that the centre of mass along the longitudinal axis of the trowel can be optimized and/or adjusted to correspond to the centre of mass for the prior art trowels, whereby it is achieved that the "feel" of the trowel will be similar to that of a prior art trowel and that furthermore improvements may be achieved.

[0025] Advantageously, as specified in claim 9, the distance H from a rear end of the blade to the position of the connecting part may be in an interval from 0.5 centimetres to 3.0 centimetres and preferably in an interval from 0.5 centimetres to 1.5 centimetres.

[0026] Suitable distances may for example be approximately 0.5 centimetres, approximately 1.0 centimetres and approximately 1.5 centimetres, even though it will be understood that other distances may be preferable.

[0027] According to a further preferable embodiment, as specified in claim 10, the distance H from a rear end of the blade to the position of the connecting part may be dependent on the length B of the blade.

[0028] Hereby, optimal balance of the trowel may be achieved as well as improved ergonomic characteristics for the trowel, e.g. the centre of mass along the longitudinal axis of the trowel can be optimized and/or adjusted to correspond to the centre of mass for the prior art trowels or even be improved.

[0029] Advantageously, as specified in claim 11, the blade may be essentially triangular or essentially rectangular, even though it will be understood that other forms and shapes may be applied.

The figures

[0030] The invention will be explained in further detail below with reference to the figures of which

Fig. 1 shows in a side view an example of a prior art trowel,

Fig. 2 is a perspective view of the trowel depicted in fig. 1,

Figs. 3 and 4 show in a perspective view from the side examples of prior art trowels placed on the edge of a current type mortar tub, e.g. a plastic tub,

Fig. 5 shows in a perspective view from the side a further example of a prior art trowel with the blade placed essentially in a horizontal plane,

Fig. 6 shows in a perspective view from the side an embodiment of a trowel according to the invention with the blade placed essentially in a horizontal plane,

Fig. 7 shows in a side view a further example of an embodiment of a trowel according to the invention,

Fig. 8 is a perspective view of the trowel depicted in fig. 7,

Fig 9. shows in a perspective view from the side an embodiment of a trowel according to the invention placed on the edge of a current type mortar tub, e.g. a plastic tub,

Fig. 10 shows the trowel depicted in fig. 9, but seen from above when placed on the edge of a current type mortar tub, e.g. a plastic tub, and

Fig. 11 shows seen in a perspective view from the side a trowel according to an embodiment of the invention placed together with two examples of prior art trowels for comparison, all placed with the blades in an essentially horizontal plane.

Detailed description

[0031] Figs. 1 and 2 show an example of a prior art trowel 1, which is commonly used within the field of bricklaying, plaster work, etc. The trowel 1 is shown in fig. 1 seen from the side and with the blade 3 placed essentially horizontally. This position will serve as a reference position for the purpose of this application. Thus, when in the following as well as in the previous parts of the description mention is made of relative directions and/or position, for example upwards, above, elevated, raised, etc., this will be understood to be with reference to the position of the trowel in fig. 1, unless otherwise specifically stated. Similarly, it will be understood that the forward direction will be the direction from the handle and toward the front of the trowel (e.g. toward the tip in case of e.g. a triangular blade or a blade having another pointed shape), i.e. from left to right in fig. 1. Similarly, it will be understood that the arm 5 of the trowel is connected to the blade 3 at the rear of the blade, e.g. at the heel 4 of the blade 3.

[0032] As it will be apparent to a skilled person, the prior art trowel shown in fig. 1 and 2 comprises a blade 3, which is connected to a handle or grip 2 by means of an arm 5. This arm 5 comprises a connecting part 7, by means of which the arm 5 is connected to the blade 3 at the heel 4 of the blade, e.g. at the rear of the blade 3. Further, the arm 5 comprises a first bend 6 having an acute angle, where the arm 5 from the connecting part 7 is bent forward in such a manner that a substantially straight and forward reaching part 9 of the arm 5 is positioned in an inclined position as shown in figs. 1 and 2. Thus, as shown, due to the acute angle of the bend 6, only a relatively small distance d is present between the connecting part 7 and the part 9. Further, the arm 5 is turned backwards again via a second bend 8, which has a rounded curvature and which allows the handle 2 to be connected to the arm 5 in such a manner that the handle points rearwards and upwards, thus forming a predetermined angle in relation to the blade, which angle is designed in view of user friendliness, e.g. allowing the trowel 1 to be handled with comfort.

[0033] As regards the first bend 6 with the acute angle, which provides for a relatively small distance d, it is noted that this is normally used for holding the trowel 1, when this is not used, by placing or hanging the trowel on the edge of for example a mortar tub, which traditionally has been designed with a relatively sharp upper edge, with the blade 3 positioned in a vertical direction and the inner side of the first bend 6 placed on the edge of the tub. In this position, the trowel 1 will be placed in a stable position, since the centre of gravity in this position (i.e. turned substantially 90° in relation to the position shown in fig. 1) is placed below the edge of the tub, and further since the blade 3 will be supported against the side of the tub.

[0034] However, as mentioned above, currently used mortar tubs are made out of plastic materials and have commonly been designed with a relatively wide upper edge or rim in order to provide the necessary strength etc. Thus, as shown in figs. 3 and 4, wherein a further example of a prior art trowel 1 depicted in fig. 5 is shown positioned on such a current type mortar tub 10 with a relatively broad edge or rim 12, the trowel 1 tends to be unstably positioned. Therefore, the trowel 1 is prone to fall down on the ground or on the scaffolding. As a result, bricklayers may instead place the trowel 1 in the mortar in the tub, which is undesirable, since for example the handle 3 may get covered with mortar, or the trowel 1 may be placed on e.g. a stack of bricks, which also is undesirable.

[0035] In fig. 6 an embodiment of a trowel 20 according to the invention is shown in a perspective view from the side with the blade 23 placed essentially in a horizontal plane, i.e. in the reference position mentioned above.

[0036] This trowel 20 has a handle or grip 22, which by means of an arm 21 is connected to a blade 23. This arm 21 is connected to the blade 23 by means of a connecting part 27, which may be connected to the blade 23 at the heel 24 of the blade 23 in any suitable manner, e.g. by welding in general, friction welding, resistance welding, soldering, etc. From the connecting part 27 the arm is turned upwards via a first bend 26, leading to an upward reaching part 29 of the arm 21. At the upper end

of the arm 21 a second bend 28 is located, which second bend 28 of the arm 21 may have a rounded form as also shown in connection with the prior art trowels, and which second bend 28 leads directly to the handle or grip 22.

[0037] As also shown in fig. 6, the arm comprises a forward reaching part 25, which is connected to the upward reaching part 29 via a third bend 30. Due to the upward reaching part 29, a substantially large distance D is present between the arm 21 and the connection part 27 (or the upper side of the blade 23), e.g. a distance essentially perpendicular to the blade 23. This distance D allows the trowel according to the invention to be placed hanging on the edge of a current type tub or bucket, i.e. a tub or bucket made out of for example plastic material and comprising a relatively wide edge or rim. This is shown in figs. 9 and 10, where in fig. 9 the embodiment of the trowel 20 shown in fig. 6 is shown in a perspective view from the side placed on the edge or rim 12 of a current type mortar tub 10, and where in fig. 10 the trowel depicted in fig. 9 is seen from above when placed on the edge or rim 12 of a current type mortar tub 10.

[0038] The distance D may be in excess of 3 centimetres or more, for example 4 centimetres or more, 5 centimetres or more, 6 centimetres or even more.

[0039] The trowel 20 shown in fig. 6 is shown with an upwards reaching part 29, which is essentially perpendicular to the blade 23, but it will be understood that this need not be the case. The upwards reaching part 29 may incline forward or backwards as long as the necessary distance D is provided for. Similarly, it is noted that even though in fig. 6 it is shown that the forward reaching part 25 of the arm 21 is essentially or nearly parallel with the blade 23, this need not be the case either. Also the third bend 30 is shown as being an essentially right angle, which is only an example. The angle may be more or less than 90° and further it will be understood that the third bend may be rounded, e.g. in the shape of a curvature between the upwards reaching part 29 and the forward reaching part 25.

[0040] In fig. 7 a further example of an embodiment of a trowel 20 according to the invention is shown in a side view, which trowel furthermore is shown in a perspective view in fig. 8. The same reference signs as used in connection with figs. 6 are used here.

[0041] As shown in fig. 7, the connecting part 27 may be located at the heel 24 of the blade 23 with a distance H to the rear edge of the blade. Further, the arm 21, e.g. the upwards reaching part 29, does not extend behind the rear edge of the blade 23 as is the case for the prior art trowel 1 as shown for example in fig. 1. The location of the connecting part 27 of the arm 21 in a distance H from the rear edge of the blade 23 is of importance to the balance of the trowel 20, e.g. the balance when the trowel is handled by a bricklayer, for example when lifting the trowel with a load of mortar, when placing the load of mortar on a brick, when scooping or scraping up the mortar, when handling the trowel without a load, etc., and contributes to the ergonomic properties of the trowel 20. The distance H may vary in view of e.g. the total length of the blade B (shown in fig. 7). The total length B may for example be 210 mm, 220 mm, 230 mm, etc. and in view hereof the distance H may vary from 0 mm - 30 mm, from 5 mm to 30 mm, from 0 mm to 25 mm, etc. According to a particular design the distance H may be comprised in an interval from 5 mm to 15 mm.

[0042] As indicated in fig. 8 with punctuated lines, the blade 23 need not have an essentially triangular shape as shown in the figures, but may have an essentially rectangular form 23' or a rounded form 23". It will be apparent to the skilled person that any other suitable form of the blade is possible, for example other regular or irregular forms, rounded forms, oblong forms, oval forms, combinations hereof, etc.

[0043] Finally, in fig. 11 a trowel 20 according to an embodiment of the invention is shown in a perspective view and from the side placed together with two examples of prior art trowels 1 for comparison, all placed with the blades in an essentially horizontal plane. Here, it is shown that even though the blades 23 and 3, respectively, are located in the same level, the handle 23 of the trowel 20 according to the invention will be located in essentially the same height as the handles 2 of the prior art trowels 2, even though a greater distance or gap between the blade and the arm at the heel of the blade has been provided for by the trowel 20 according to the invention. It will be understood that this is of significance to the users of the trowel, e.g. bricklayers, since the trowel according to the invention in this respect is similar to the prior art trowels, even though the desired enhanced distance D has been achieved.

[0044] The trowel according to the invention may be manufactured using materials and techniques corresponding to the materials and techniques used when manufacturing prior art trowels. Thus, the blade may be made out of steel or other suitable metals, the arm may preferably be made out of metal rod, e.g. steel or iron rod, and the handle may be wooden or may be made out of a mouldable material, e.g. a plastic materiel, even though it will be understood that other materials may be used.

[0045] The invention has been exemplified above with reference to specific examples. However, it should be understood that the invention is not limited to the particular examples described above and shown in the figures, but may be designed in a multitude of varieties within the scope of the invention as specified in the claims.

List of references

[0046]

1	Prior art type trowel
2	Handle or grip
3	Blade
4	Heel of the blade
5	Arm connecting the handle with the blade

6	First bend with an acute angle
7	Connecting part of arm 5
8	Second bend
9	Substantially straight forward reaching part of arm 5
10	Current type of tub
12	Edge of tub
20	Trowel according to an embodiment of the invention
21	Arm connecting the handle with the blade
22	Handle or grip
23, 23', 23"	Blade
24	Heel of the blade
25	Forward reaching part of arm 21
26	First bend
27	Connecting part of arm 21
28	Second bend
29	Upward reaching part of arm 21
30	Third bend
d, D	Gap between blade or connecting part and arm at the heel
B	Length of blade

Claims

1. Trowel (20) comprising

- a blade (23) having a rear part and a front part,
- a handle (22) and
- an arm (21),

wherein the arm (21) comprises a first bend (26) and a second bend (28) and connects the blade (23) with the handle (22), said arm (21) being connected with a first end to the blade (23) at the heel (24) of the blade and connected with a second end to the handle (22) in such a manner that a forward reaching part (25) of the arm (21) is positioned above the blade (23) in the longitudinal direction of the blade (23), said second bend (28) of the arm leading from said forward reaching part (25) to the second end of the arm, to which the handle (22) is connected,
characterized in that the arm (21) at the heel (24) of the blade is elevated a distance above the blade (23), and that the arm (21) comprises an upward reaching part (29), which is connected to said forward reaching part (25) of the arm (21).

2. Trowel according to claim 1, wherein the arm (21) at the heel (24) of the blade is elevated above the blade (23) in such a manner that an inside distance D in excess of 3 centimetres above the blade (23) is provided.

3. Trowel according to claim 1 or 2, wherein the arm (21) at the heel (24) of the blade is elevated above the blade (23) in such a manner that an inside distance D in excess of 4 centimetres above the blade (23) is provided.

4. Trowel according to claim 1, 2 or 3, wherein the arm (21) comprises a third bend (30), by means of which the upward reaching part (29) of the arm (21) is connected to the forward reaching part (25) of the arm (21).

5. Trowel according to any of claims 1 to 4, wherein the forward reaching part (25) of the arm (21) is at least in part essentially parallel with the blade (23).

6. Trowel according to any of claims 1 to 5, wherein the upward reaching part (29) of the arm (21) is at least in part essentially perpendicular to the blade (23).

7. Trowel according to any of claims 1 to 6, wherein the arm (21) is connected to the blade (23) at the heel (24) of the blade (23) by means of a connecting part (27), which is connected to the blade (23), for example by means of welding, soldering, etc.

8. Trowel according to claim 7, wherein said connecting part (27), which is connected to the blade (23), is positioned at a distance H from a rear end of the blade (23).

9. Trowel according to claim 8, wherein said distance H from a rear end of the blade (23) to the position of the connecting part (27) is in an interval from 0.5 centimetres to 3.0 centimetres, preferably in an interval from 0.5 centimetres to 1.5 centimetres.

10. Trowel according to claim 8 or 9, wherein said distance H from a rear end of the blade (23) to the position of the connecting part (27) is dependent on the length B of the blade (23).

11. Trowel according to any of claims 1 to 10, wherein the blade (23) is essentially triangular or essentially rectangular (23').

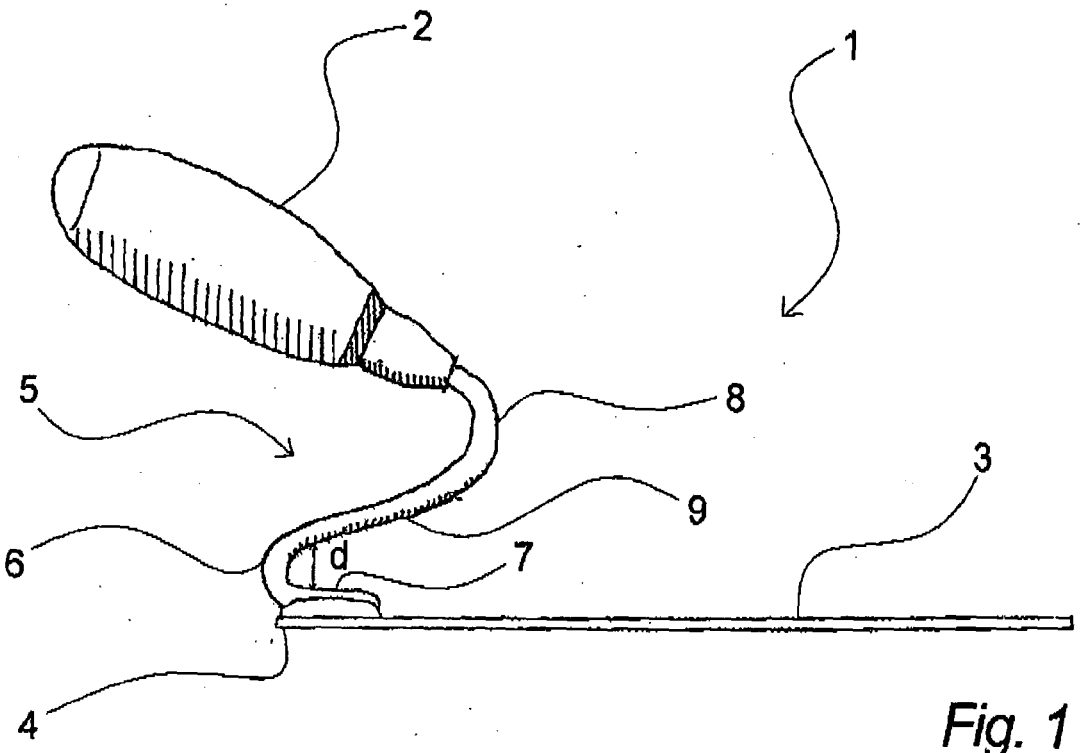

Fig. 1

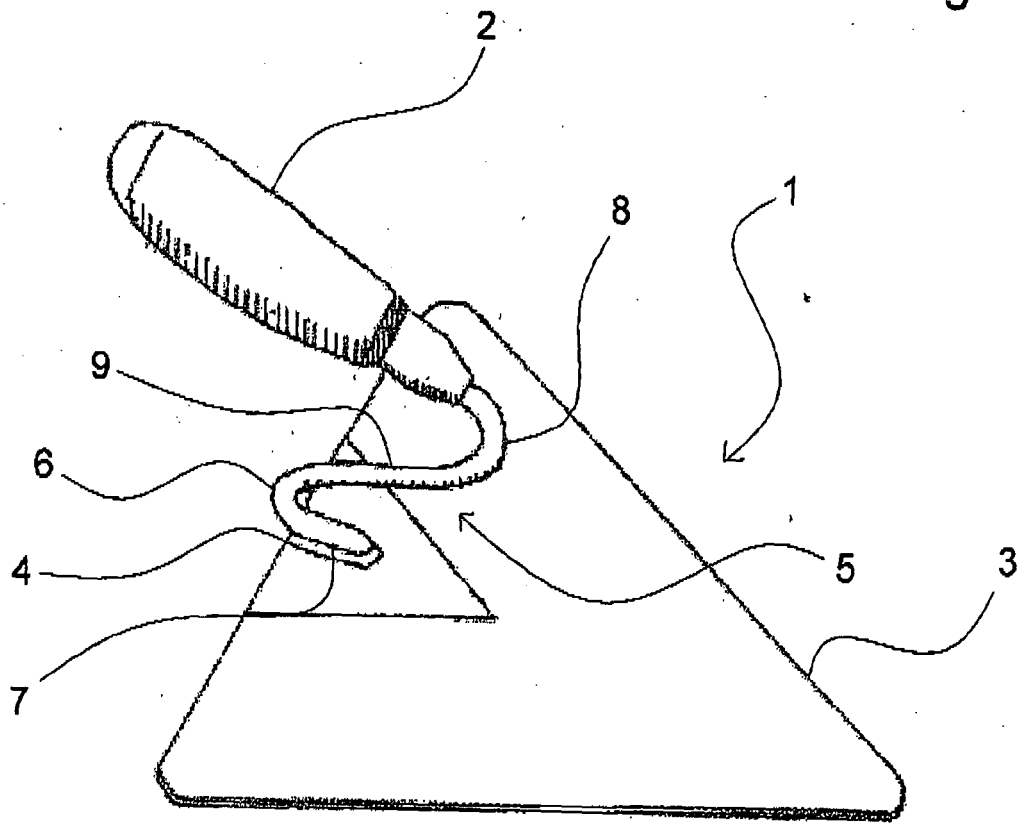

Fig. 2

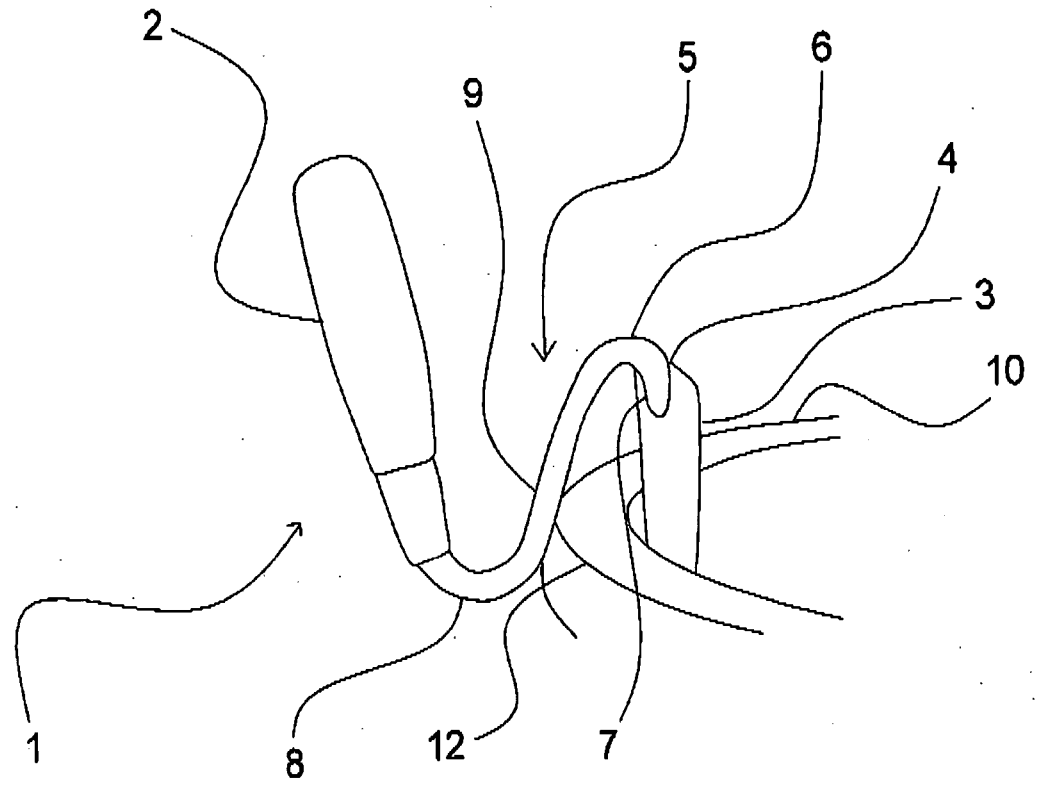

Fig. 3

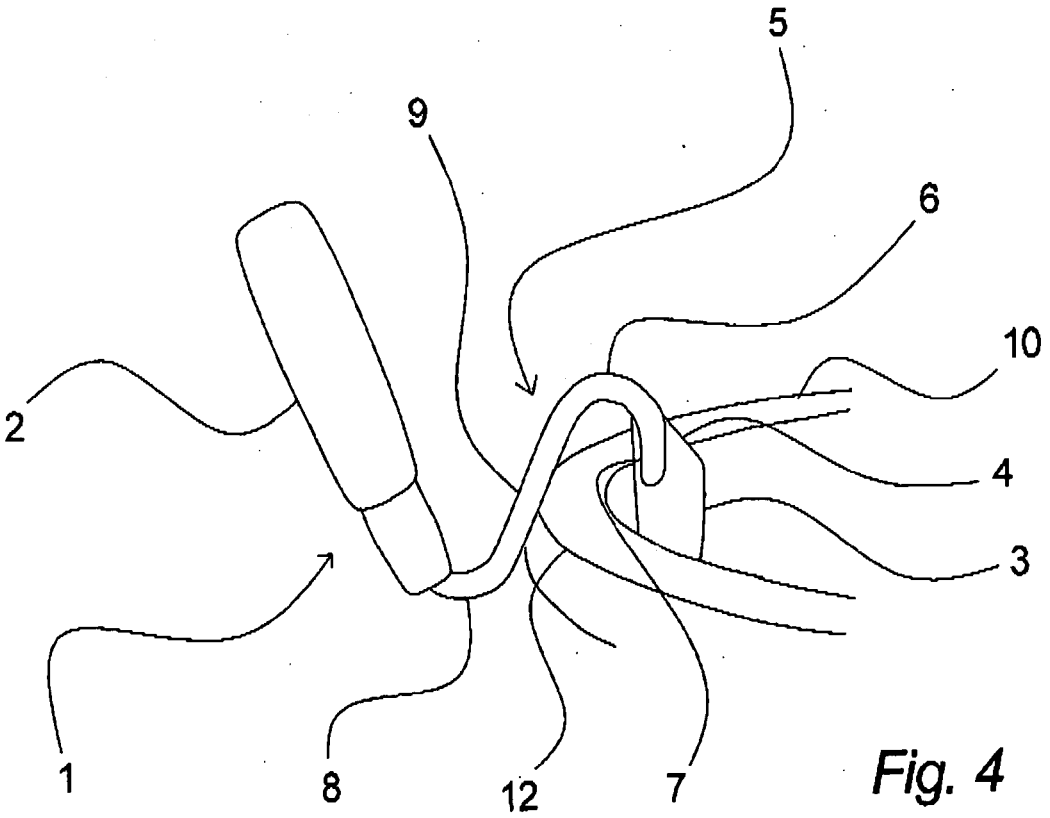

Fig. 4

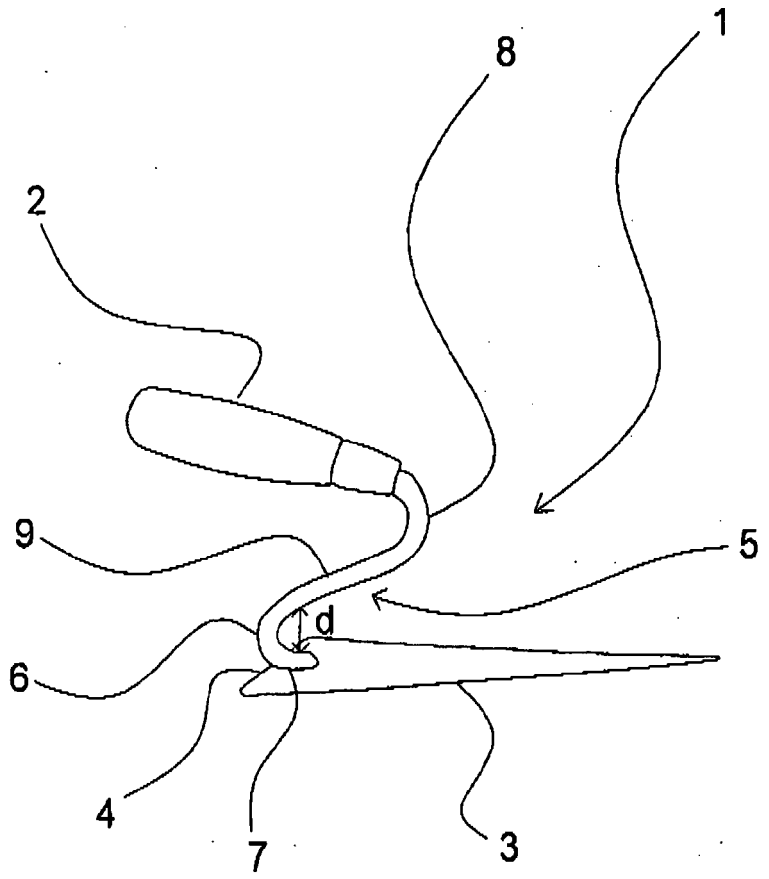

Fig. 5

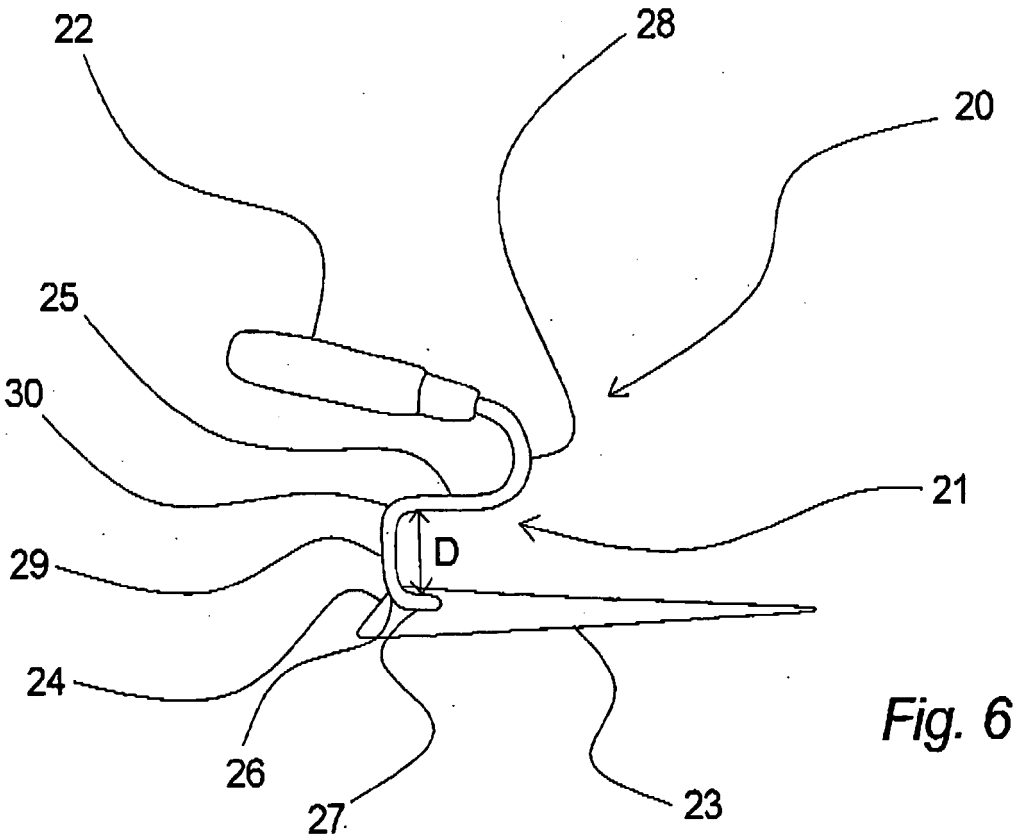

Fig. 6

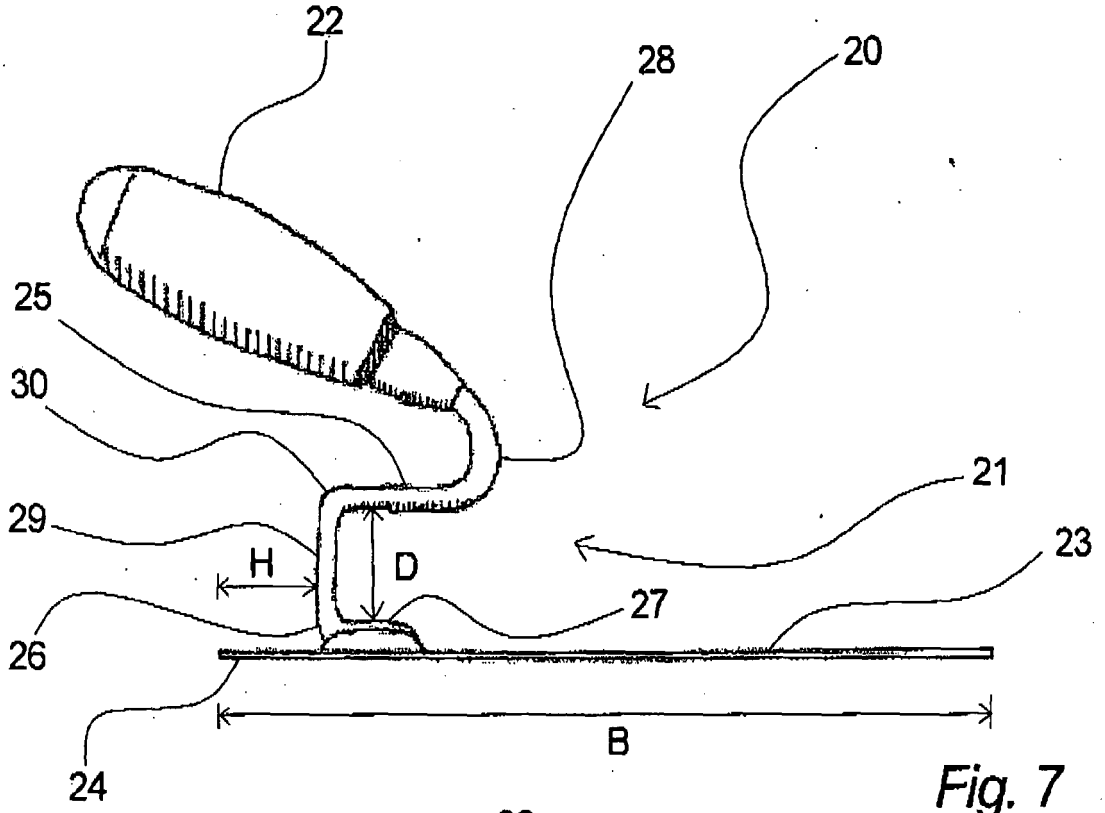
22
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Fig. 7

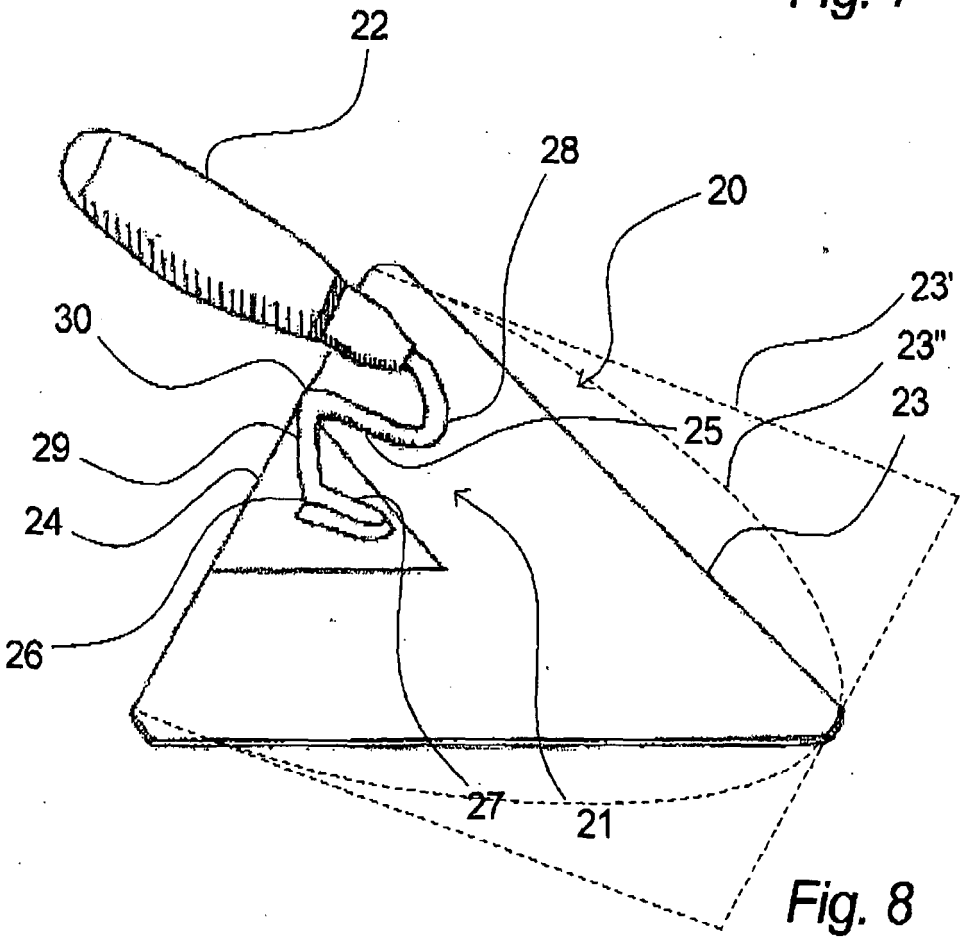
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Fig. 8

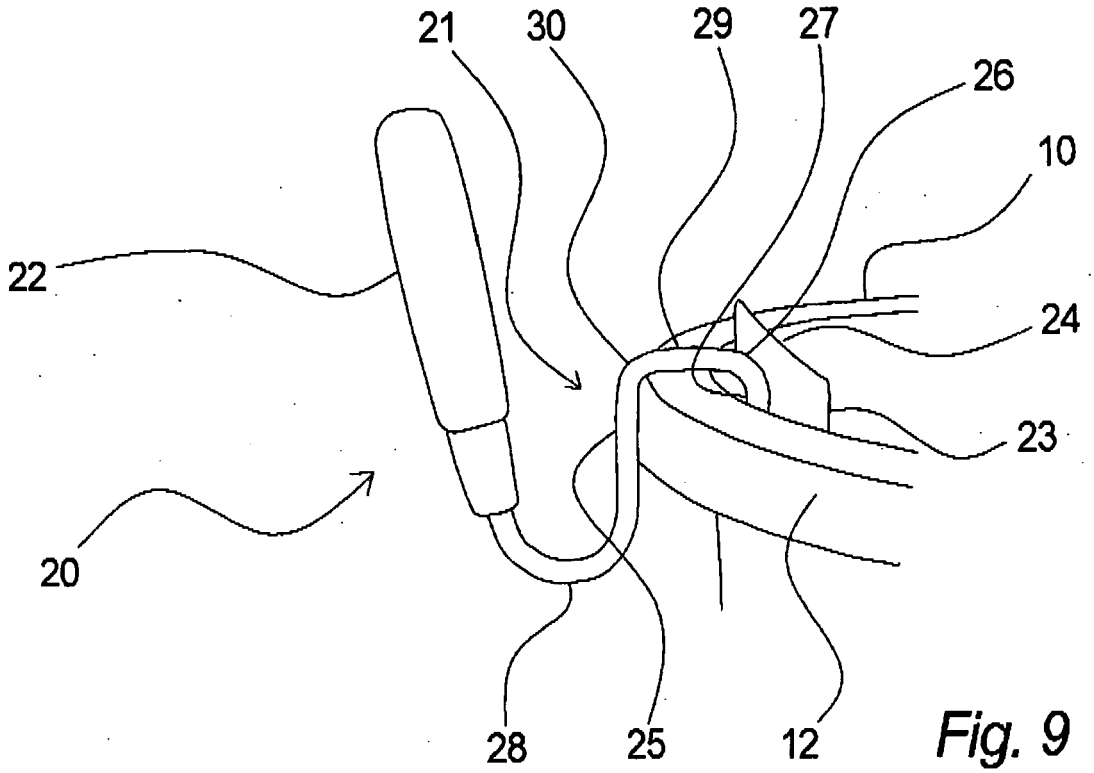
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Fig. 9

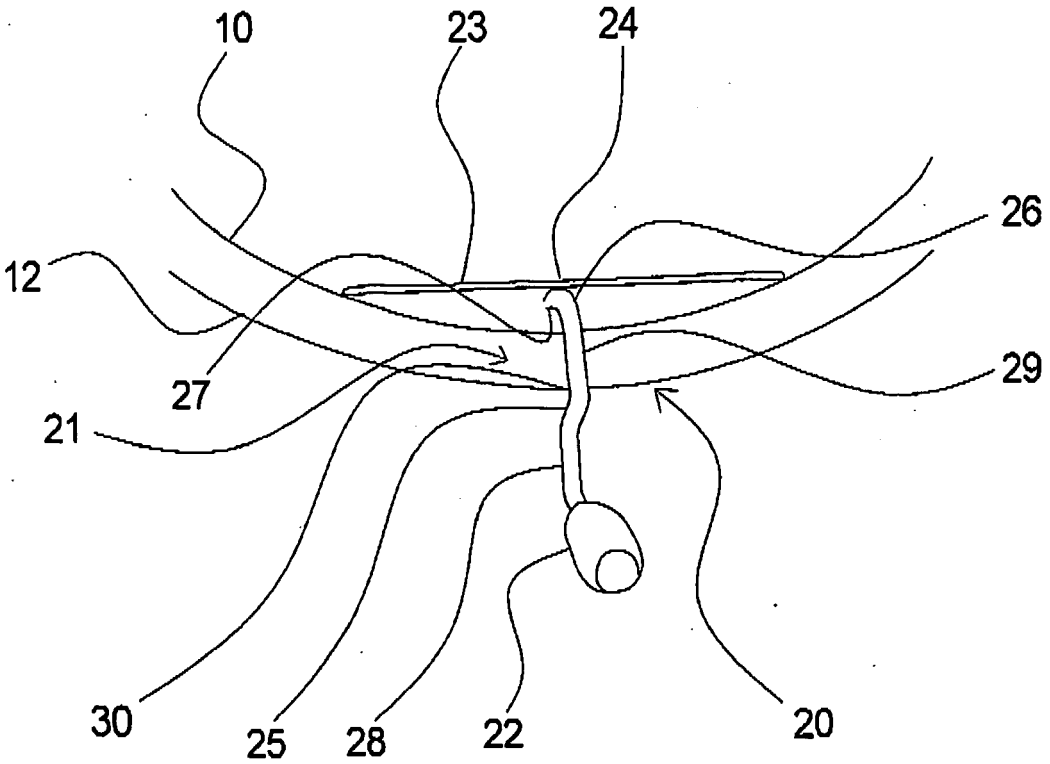
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Fig. 10

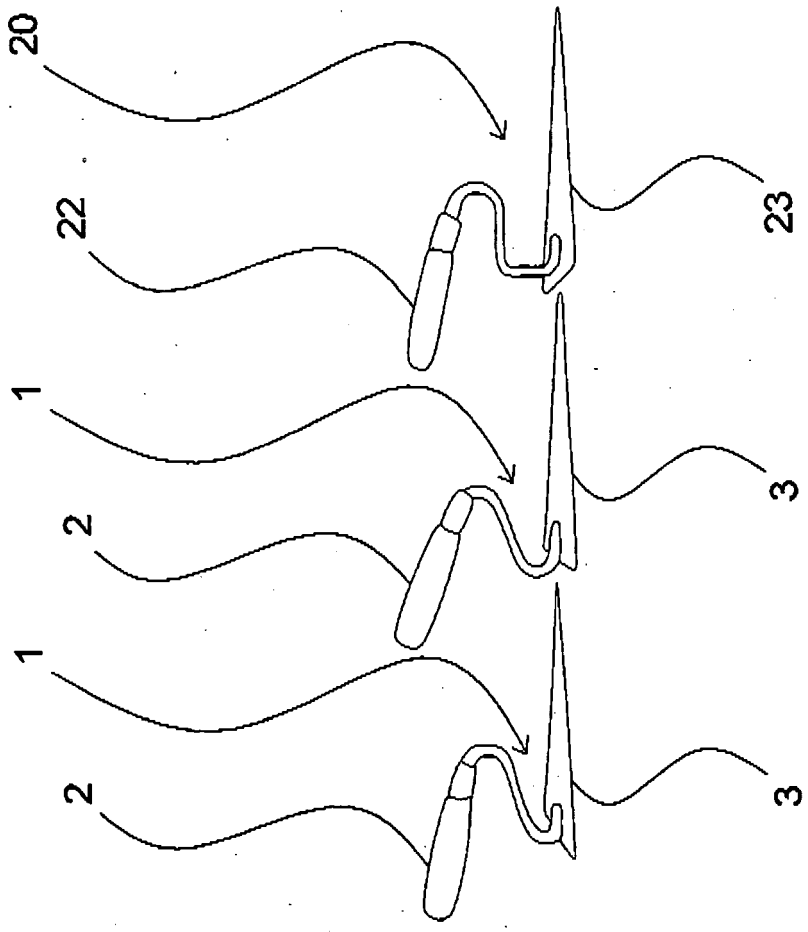

Fig. 11

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EUROPEAN SEARCH REPORT

Application Number
EP 08 00 5801

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	DE 36 39 978 A1 (HAPPE HERBERT FA [DE]) 1 June 1988 (1988-06-01) * figure 1 *	1-4,7,11	INV. E04F21/06
X	DE 201 22 640 U1 (DICKHAUS & PARTNER GMBH [DE]) 19 October 2006 (2006-10-19) * paragraph [0005]; figures 1,2 *	1-7,11	
X	DE 295 01 861 U1 (MILOVANOVIC ILIJA [DE]) 11 May 1995 (1995-05-11) * figures 3,4 *	1-3,6-11	
X	FR 909 860 A (ANCIENS ETABLISSEMENTS SOMBORN) 21 May 1946 (1946-05-21) * figures 1,7 *	1-3,6-11	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04F B25G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 June 2008	Severens, Gert

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11-06-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3639978 A1	01-06-1988	NONE	
DE 20122640 U1	19-10-2006	NONE	
DE 29501861 U1	11-05-1995	NONE	
FR 909860 A	21-05-1946	FR 53932 E	13-01-1947

EPO FORM P0459

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Patent documents cited in the description

- DE 10035014 A **[0004]**