Innovation, Sciences et Développement économique Canada
Office de la Propriété Intellectuelle du Canada

Innovation, Science and Economic Development Canada
Canadian Intellectual Property Office

CA 2856795 C 2019/09/24

(11)(21) 2 856 795

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(86) Date de dépôt PCT/PCT Filing Date: 2012/11/30
(87) Date publication PCT/PCT Publication Date: 2013/06/13
(45) Date de délivrance/Issue Date: 2019/09/24
(85) Entrée phase nationale/National Entry: 2014/05/23
(86) N° demande PCT/PCT Application No.: EP 2012/074012
(87) N° publication PCT/PCT Publication No.: 2013/083477
(30) Priorités/Priorities: 2011/12/05 (DE10 2011 056 061.0);
2011/12/06 (DE10 2011 056 091.2);
2012/02/29 (DE10 2012 101 660.7);
2012/05/03 (DE10 2012 103 858.9)

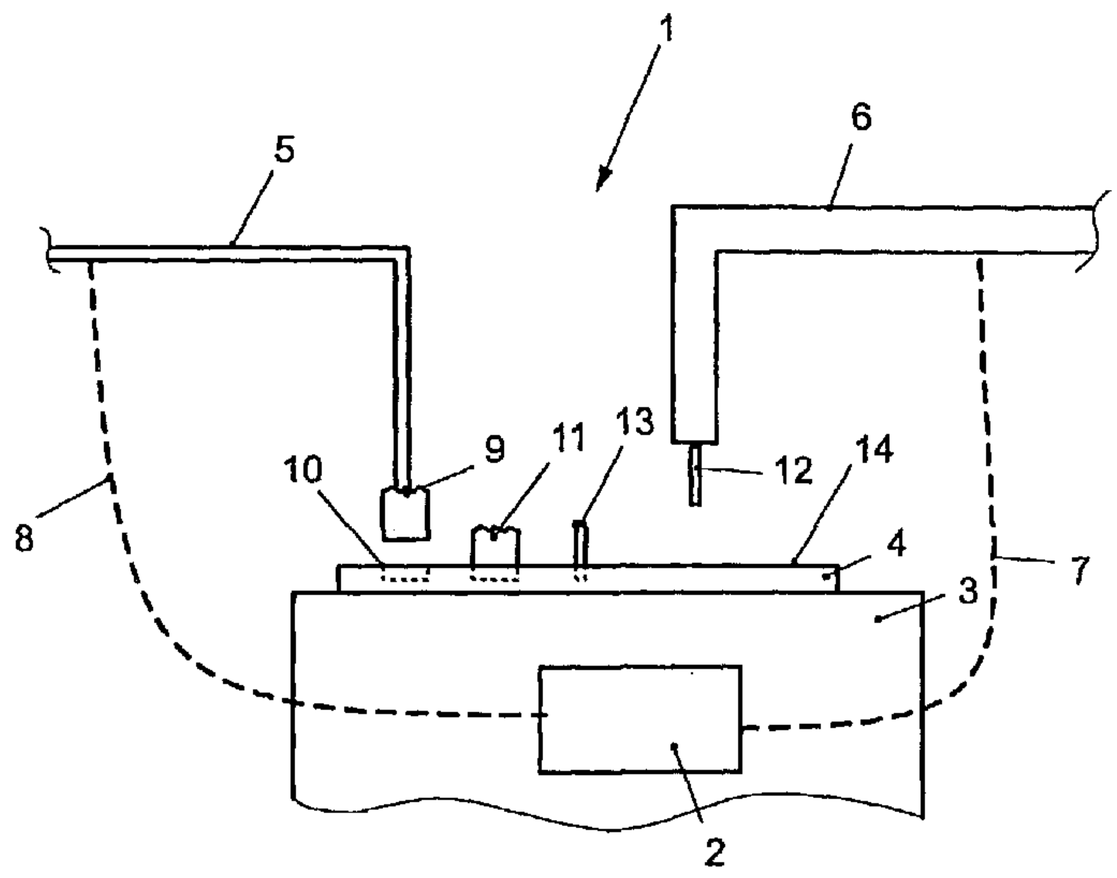
(51) Cl.Int./Int.Cl. *B26D 7/18* (2006.01),
B26F 1/44 (2006.01)

(72) Inventeur/Inventor:
JAKOB, JOACHIM, DE

(73) Propriétaire/Owner:
BOXPLAN GMBH & CO.KG, DE

(74) Agent: NORTON ROSE FULBRIGHT CANADA LLP/S.E.N.C.R.L., S.R.L.

(54) Titre : PROCEDE ET DISPOSITIF DE FABRICATION D'UN OUTIL DE CREVAGE
(54) Title: METHOD AND DEVICE FOR PRODUCING A STRIPPING TOOL



(57) Abrégé/Abstract:
The invention relates to a device (1) which is suitable for producing a stripping tool. Said device comprises - a control unit (2), - a receiving portion (3) for a stripper plate (4), - a stripper flat-strip insertion device (5), and - a stripper pin insertion device (6).

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro

(43) Internationales Veröffentlichungsdatum
13. Juni 2013 (13.06.2013)

WIPO | PCT

(10) Internationale Veröffentlichungsnummer
WO 2013/083477 A1

(51) Internationale Patentklassifikation:
B26D 7/18 (2006.01) *B26F 1/44* (2006.01)

(21) Internationales Aktenzeichen: PCT/EP2012/074012

(22) Internationales Anmeldedatum:
30. November 2012 (30.11.2012)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
10 2011 056 061.0
5. Dezember 2011 (05.12.2011) DE
10 2011 056 091.2
6. Dezember 2011 (06.12.2011) DE
10 2012 101 660.7
29. Februar 2012 (29.02.2012) DE
10 2012 103 858.9 3. Mai 2012 (03.05.2012) DE

(72) Erfinder; und
(71) Anmelder : **JAKOB, Joachim** [DE/DE]; 33, Lindenallee, 78315 Radolfzell (DE).

(74) Anwälte: **ARAT, Dogan** et al.; Dres. Weiss & Arat, 4, Zeppelinstrasse, 78234 Engen (DE).

(81) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare nationale Schutzrechtsart)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Bestimmungsstaaten *(soweit nicht anders angegeben, für jede verfügbare regionale Schutzrechtsart)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), eurasisches (AM, AZ, BY, KG, KZ, RU, TJ, TM), europäisches (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Veröffentlicht:

— *mit internationalem Recherchenbericht (Artikel 21 Absatz 3)*

(54) **Title**: METHOD AND DEVICE FOR PRODUCING A STRIPPING TOOL

(54) **Bezeichnung** : VERFAHREN UND VORRICHTUNG ZUM HERSTELLEN EINES AUSBRECHWERKZEUGES

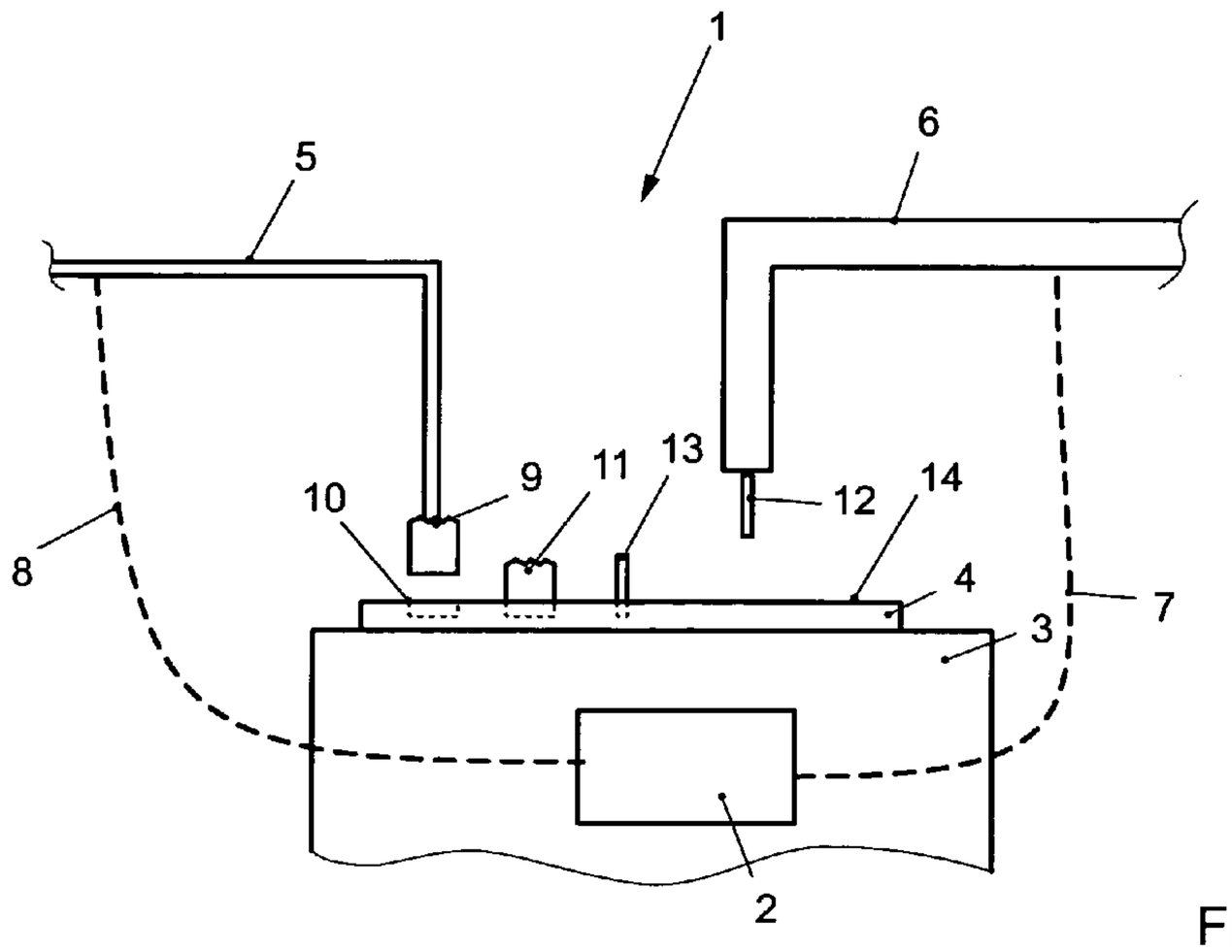


Fig. 1

(57) **Abstract**: The invention relates to a device (1) which is suitable for producing a stripping tool. Said device comprises - a control unit (2), - a receiving portion (3) for a stripper plate (4), - a stripper flat-strip insertion device (5), and - a stripper pin insertion device (6).

(57) **Zusammenfassung**: Eine Vorrichtung (1) geeignet zum Herstellen eines Ausbrechwerkzeugs, soll - eine Steuereinheit (2), - eine Aufnahme (3) für eine Ausbrechplatte (4), - eine Ausbrechflachstreifeneinbringeinrichtung (5)und - eine Ausbrechstifteinbringeinrichtung (6) aufweisen.

WO 2013/083477 A1

Method and Device for Producing a Stripping Tool

Technical Field

The invention relates to a device for producing a stripping tool, as well as a method for producing a stripping tool.

Prior Art

For stamping and stripping, usually stripper plates are used as the stripping tool, in which stripper pins or stripper flat-strips are inserted. One example of a stripper pin is the crown pin from the company Boxplan. The stripper pin has a circular cross-section.

One example of a stripper flat-strip is a stripper claw. This has a line with two points on its front surface. Normally, stripper flat-strips, due to their small strip-shaped cross-section, can only be placed manually in a stripper plate. For this, a hole is made in the stripper plate, which basically corresponds to a cross-section of the stripper flat-strip. Usually, these slits are laser cut.

In general, the insertion of the stripper pin can be done by machine, because these are relatively stable. For this, such pins have a conical tapering on an end that is inserted in the stripper plate. In addition, this pins usually have a recess on their surface. The stripper pins are driven directly into the material of the stripper plate at the end where the conical tapering is disposed. This is then deformed. A portion of the material is received in the recess on the surface of the stripper pin.

Alternatively, there is also the case that the pins are placed by means of a machine in a pre-drilled and/or laser cut and/or cut hole. This method, although rare and expensive, is also possible.

Disadvantageously, stripper tools, in which stripper pins and stripper flat-strips are provided, are difficult and complex to produce. In a first step, the slits for the stripper flat-strips are pre-cut. Then, the stripper pins are manually driven into the stripper plate. Subsequently, the stripper flat-strips are inserted in the slits in the stripper plate by hand.

Object of the Invention

The object of the invention is to provide a device for producing a stripper tool with which stripper pins and stripper flat-strips can be inserted in a stripper plate in a simple manner. Moreover, it is intended that a method for this also be provided.

Solution

In typical embodiment examples, a device for producing a stripping tool comprises a control unit, a receiving component for a stripper plate, a stripper flat-strip insertion device and a stripper pin insertion device. As a result, there is the advantage that stripper flat-strips having a strip-shaped cross-section, and stripper pins having a circular cross-section, can be inserted in a stripper plate in a simple manner in a production step. Independently thereof, the concept of the invention should also comprise a device by means of which the solely automated insertion of stripper flat-strips is available. In addition, however, the combination should also be protected in which, aside from the solely automated insertion of stripper flat-strips, the combined automated insertion of stripper flat-strips and stripper pins is also comprised in the concept of the invention.

Preferably, the stripper pin has a cross-section with a diameter of 1 mm – 10 mm, preferably between 1.8 mm and 5 mm. By this means, the best stripping results can be obtained.

Preferably, a stripper flat-strip has a rectangular cross-section. Preferably, the cross-section of the stripper flat-strip has a thickness of 0.1 mm – 3 mm. Preferably, the cross-section of the stripper flat-strip has a length of 2 mm – 30 mm. For practical purposes, the cross-section of the stripper flat-strip may have a bend.

In typical embodiment examples, the stripper flat-strip insertion device is suitable for inserting a stripper flat-strip in a slit already made in the stripper plate. Preferably, the slit corresponds in size to the cross-section of the stripper flat-strip. As a result, there is the advantage that the stripper flat-strips are retained in the slit in a press-fit.

In typical embodiment examples, the stripper flat-strip insertion device is suitable for removing a stripper flat-strip from a magazine. As a result, there is the advantage that the stripper flat-strips can be retrieved automatically.

In typical embodiment examples, the device has a detection means. Preferably, the detection means is suitable for identifying the slits in the stripper plate.

Preferably, the term "identifying" is used to mean that the control unit obtains the position from a CAD program, in which all of the positions and types of pins and metal strips have been determined, in terms of their types and positions, in advance.

As a result, there is the advantage that the stripper flat-strips can be inserted automatically, because the slits for receiving the stripper flat-strips are automatically identified.

In typical embodiment examples, the stripper pin insertion device is suitable for driving a stripper pin into the stripper plate. Preferably, the stripper pin is driven directly into the material, or the surface, respectively, of the stripper plate. This means that the stripper pins do not fully penetrate the stripper plate, but instead, merely penetrate the surface of the stripper plate to a depth of up to 2 mm, by way of example. Preferably, the stripper plate consists of wood. Other materials, however, are also conceivable, and should be comprised by the present invention.

In typical embodiment examples, the stripper pin insertion device is suitable for removing a stripper pin from a magazine. As a result, there is the advantage that the stripper pin can be automatically retrieved.

In typical embodiment examples, the control unit is suitable for controlling the stripper pin insertion device such that the stripper pin can be removed from the magazine and inserted in the stripper plate according to a predetermined plan or design.

In typical embodiment examples, the control unit is suitable for sliding the receiving component with the stripper plate to the stripper pin insertion device such that the stripper pin can be inserted according to a predetermined plan or design.

Separate protection is claimed for a method for producing a stripper tool. Preferably, the method comprises the steps: automatic placement of a stripper flat-strip in a stripper plate, and automatic placement of a stripper pin in a stripper plate.

In typical embodiment examples, the stripper flat-strips are placed in already existing slits in the stripper plate. As a result, there is the advantage that the stripper flat-strips are not deformed during the insertion, because no large forces need to be exerted on the stripper flat-strips.

In typical embodiment examples, the stripper pins are driven directly into the material of the stripper plate. As a result, there is the advantage that the production step "production of recesses for stripper pins," as was necessary prior to this invention, is omitted. This is possible because the stripper pins have a larger diameter than the stripper flat-strips, and thus are not deformed when they are driven in.

Short Description of the Figures

The invention shall be described briefly in the following, based on the attached drawings, wherein the individual figures show a schematic depiction of a device according to the invention for producing a stripping tool.

Embodiment Example

Figure 1 shows a device 1 according to the invention, for producing a stripping tool;

Figures 2 and 3 show different embodiment examples for stripper flat-strips;

Figure 4 shows a side view of an embodiment example for a stripper pin according to the invention;

Figure 5 shows a side view of another embodiment example of a stripper flat-strip according to the invention;

Figure 6 shows a top view of the stripper flat-strip according to Figure 5;

Figure 7 shows a side view of another embodiment example of a stripper flat-strip according to the invention;

Figure 8 shows a top view of the stripper flat-strip according to Figure 7.

The device 1 comprises a control unit 2 and a receiving component 3 for a stripper plate 4. The embodiment example shown here shows a combined automated insertion of stripper flat-strips and stripper pins. In addition, separate protection is sought for an embodiment example that is not shown, which is suitable for inserting stripper flat-strips in a stripper plate. The same effect is obtained when, with the design shown here, only the device for placing the stripper flat-strips is used.

Furthermore, the device 1 comprises a stripper flat-strip insertion device 5 and a stripper pin insertion device 6.

The stripper pin insertion device 6 is connected to a control unit 2. This connection is depicted by the broken line 7.

Analogously, the stripper flat-strip insertion device 5 is connected to the control unit 2. This connection is depicted by the broken line 8.

The control unit 2 is furthermore connected, in a manner not shown in greater detail, to the receiving component 3, or a traversing unit of the receiving component 3, not shown in greater detail.

The operating mode of the invention is as follows:

In order to produce a stripping tool, the stripper plate 4 is placed on the receiving component 3. Preferably, slits 10 are made in a surface 14 of the stripper plate 4 at the positions in the stripper plate 4 where a stripper flat-strip 9 is to be inserted.

The position of the slit 10 is conveyed to the control unit 2 by means of a detection device, not shown. Alternatively, the control unit 2 can read out the position of the slit, as well as the type and length of the element that is to be inserted, from a program and/or model, in particular, a CAD program and/or CAD model.

The stripper flat-strips 9 are placed in the slits 10 by the stripper flat-strip insertion device 5.

This procedure is repeated as often as needed for the assembly of the finished stripping tool. The embodiment example in Figure 1 shows a stripper flat-strip already inserted in the stripper plate 4.

Further stripper flat-strips can be removed from a magazine, not shown, by means of the stripper flat-strip insertion device 5.

For the positioning of the stripper flat-strip 11 in relation to the stripper plate 4, or the slit 10, respectively, preferably the stripper flat-strip insertion device 5 is moved. Alternatively, the receiving component 3, or the stripper plate 4, respectively, can be moved in relation to the stripper flat-strip insertion device 5.

When all of the stripper flat-strips have been placed, the stripper pin insertion device 3 starts inserting a stripper pin 12 in the stripper plate 4. For this, preferably no holes are present in the stripper plate 4.

In other, not depicted, embodiment examples, the stripper pins are placed in pre-cut holes. Although this method is somewhat more expensive, it is less likely to result in damage to the stripper pin.

The stripper pin 2 is driven directly into the stripper plate 4, or the material of the stripper plate 4, respectively. The stripper pin 12 does not, however, penetrate all the way through the stripper plate 4.

In order to position the stripper pin 12 in relation to the stripper plate 4, preferably the stripper pin insertion device 6 is moved in relation to the receiving component 3, or the stripper plate 4, respectively. Alternatively, the receiving component 3, or the stripper plate 4, respectively, can also be moved in relation to the stripper pin insertion device 6. The control of this relative movement occurs via the control unit 2.

This procedure can be repeated as often as needed for the assembly of the finished stripping tool.

Further stripper pins can be removed from a magazine, not shown, by the stripper pin insertion device 6. Figure 1 shows the embodiment example with a stripper pin 13 already inserted.

A stripper flat-strip 9/11 is shown in Figure 2. This stripper flat-strip has a stripper point 15, which has a fluting 16 in this embodiment example, in order to obtain better stripping results. Furthermore, a shoulder 17 is shown. This shoulder 17 can fulfill various tasks. For one thing, for example, the shoulder advantageously enables the stripper flat-strips 9/11 to be better retained by the device 1 according to the invention. Another advantage is that a too deep insertion of the stripper flat-strips 9/11 in the stripper plate 4 is prevented. This is obtained in that the side of the shoulder 17 facing the fluting 16 functions as a stop. In addition, however, stripper flat-strips, which do not have a stop of this type, should also be covered as embodiment examples. In this context, the insertion depths of the stripper flat-strips can also be determined via the traversing path of the drive for the device according to the invention. By this means, it is also possible to place stripper flat-strips at different depths, which is appropriate for modern stripping technology. A further insertion with the shoulder 17 into the stripper plate requires a greater force, which can be programmed such that the device 1 only exerts precisely enough force for the insertion, such that it is not sufficient for overcoming the resistance of the shoulder 17 in the insertion process.

Furthermore, the stripper flat-strips 9/11 have two notches 18.1 and 18.2. These notches 18.1 and 18.2 allow the stripper plate 4 to relax again after the insertion of the stripper flat-strips 9/11 in the stripper plate 4, and these notches 18.1 and 18.2 engage, and prevent the stripper flat-strips 9/11 from slipping out of the stripper plate 4, or having an insufficiently firm seating for serving as a component of the stripping tool. Other embodiment examples can have at least one notching.

Lastly, the stripper flat-strips 9/11 have a cutting edge 19. This cutting edge 19 serves as an end of the stripper flat-strip 9/11. The cutting edge 19 is ground in a manner similar to that of a cutting edge on a knife, and facilitates the penetration of the stripper flat-strip 9/11 into the stripper plate 4.

Furthermore, reference is made to Figure 3. There, the stripper point 15, the fluting 16, the shoulder 17 and the notches 18.1 and 18.2 are shown in the same manner. Because these features concern the same features as those in Figure 2, reference is made to the explanations

pertaining to Figure 2. However, it should be noted that there is no cutting edge 19 in Figure 3, but rather, a point 20, which is intended to enable another possibility for the simpler insertion of the stripper flat-strip 9/11 into the stripper plate 4.

The stripper pin 12/13 in Figure 4 has a cylindrical design. There as well, a crown-shaped fluting 21, a stripper point 22 and a shoulder 23 are shown, wherein the shoulder 23 of the stripper pin 12/13 does not serve as a stop. Instead, the shoulder 23 of the stripper pin 12/13 is partially inserted into the stripper plate 4.

An encompassing groove 24 is incorporated in the shoulder 23. This groove 24 serves to receive the relaxing stripper plate 4 after the insertion of the stripper pin 12/13 in the stripper plate 4. Furthermore, an end 25 is shown, which runs in a tapering manner away from the fluting 23. At the endpoints of the tapering, the end 25 can also be designed in a manner similar to a cutting edge. Lastly, there is a cavity 26 in the interior of the stripper pin 12/13. This cavity 26 is indicated by a broken line, because it is located in the interior of the stripper pin 12/13.

This cavity has, in turn, various advantages. For one thing, the substance of the stripper plate 4 must no longer be forced out during the insertion of the stripper pin 12/13 in the stripper plate 4 than is absolutely necessary, and secondly, the receiving of the substance of the stripper plate in the cavity 26 reinforces the stability of the later seating of the stripper pin 12/13 in the stripper plate 4.

A side view of another embodiment example of a stripper flat-strip 27 according to the invention is shown in Figure 5. There, a hole 28 has been made in a foot region 31. This hole 38 is intended to serve to receive material of the stripper plate 4 that has expanded back into place after the insertion in the stripper plate 4. By this means, a better anchoring of the stripper flat-strip 27 is obtained. Aside from the hole 28, the foot region 31 exhibits a tooth structure 32. Apart from this, a shoulder, not indicated in greater detail, and a stripper point, not indicated in greater detail, are shown.

Figure 6 shows a top view of the stripper flat-strip 27 according to Figure 5. It can be readily seen here that the stripper flat-strip 27 has a bend 29, and an angle 30, basically in the middle of the longitudinal extension thereof.

A side view of another embodiment example of a stripper flat-strip 33 according to the invention is shown in Figure 7. The stripper flat-strip 33 has, in addition to another hole 34 in an additional shoulder 35, which has a toothed structure 36, a curvature 37. This curvature 37 can be readily discerned in Figure 8, which shows a top view of the stripper flat-strip 33.

The curvature 37 shown in Figures 7 and 8 concerns merely one embodiment example among others. It is equally conceivable that a stripper flat-strip according to the invention has numerous curvatures. In the same manner, a stripper flat-strip according to the invention can have numerous bends. Lastly, it is conceivable that a combination of individual or numerous bends and curvatures are formed in a stripper flat-strip according to the invention.

List of Reference Symbols

1	device
2	control unit
3	receiving component
4	stripper plate
5	stripper flat-strip inserting device
6	stripper pin insertion device
7	line
8	line
9	stripper flat-strip
10	slit
11	stripper flat-strip
12	stripper pin
13	stripper pin
14	surface
15	stripper point
16	fluting
17	shoulder
18	notching
19	cutting edge
20	point
21	fluting
22	stripper point
23	shoulder
24	groove
25	end
26	cavity
27	stripper flat-strip
28	hole
29	bend
30	angle
31	foot region
32	toothed structure
33	stripper flat-strip
34	hole
35	shoulder
36	toothed structure
37	curvature

CLAIMS:

1. A method for producing a stripping tool comprising:

a) automated placing of a stripper flat strip in at least one slot which is already present in a stripper plate and wherein the position, type and length of the slot into which the stripper flat strip is automatically inserted are detected, localized and transmitted to a control unit and provided by at least one of a detection device, a CAD program, and a CAD model, for readout by the control unit; and

b) automated placing of a stripper pin into the stripper plate, wherein the stripper pin is driven directly into the material or a surface of the stripper plate, and wherein the position is provided by at least one of the CAD program and the CAD model for readout by the control unit.

2. A device for carrying out the method according to Claim 1 for producing the stripping tool having the control unit designed for carrying out the method steps of Claim 1 and a receiving means for the stripper plate, comprising

a stripper flat-strip insertion device for the stripper flat strip and a stripper pin insertion device for the stripper pin, wherein the stripper flat strip having a strip-shaped cross-section and the stripper pin having a circular cross-section may be inserted into the stripper plate, wherein the position, type and length of the slot in the stripper plate into which the stripper flat strip is automatically inserted and may be detected, localized and transmitted to the control unit and provided by at least one of the detection device, the CAD program, and the CAD model, for readout by the control unit, wherein the placing of the stripper pin into the stripper plate by driving the stripper pin directly into the material or the surface of the stripper plate, is automated,

wherein the position of the stripper pin to be placed is provided by at least one of the CAD program and the CAD model for readout by the control unit.

3. The device according to Claim 2, wherein the stripper flat-strip insertion device is suitable for introducing the stripper flat strip into the slot which is already incorporated in the stripper plate.

4. The device according to Claim 2 or 3, wherein the stripper flat-strip insertion device is suitable for removing the stripper flat strip from a magazine.

5. The device according to any one of Claims 2 to 4, wherein the stripper pin insertion device is suitable for removing the stripper pin from a magazine.

6. The device according to any one of Claims 2 to 5, wherein the control unit is suitable for controlling the stripper-pin insertion device such that a number of the stripper pins are placed according to a predetermined plan or pattern.

7. The device according to any one of Claims 2 to 6, wherein the control unit is suitable for displacing the receiving means with the stripper plate with respect to the stripper-pin insertion device in such a way that a number of the stripper pins are placed according to a predetermined plan or pattern.

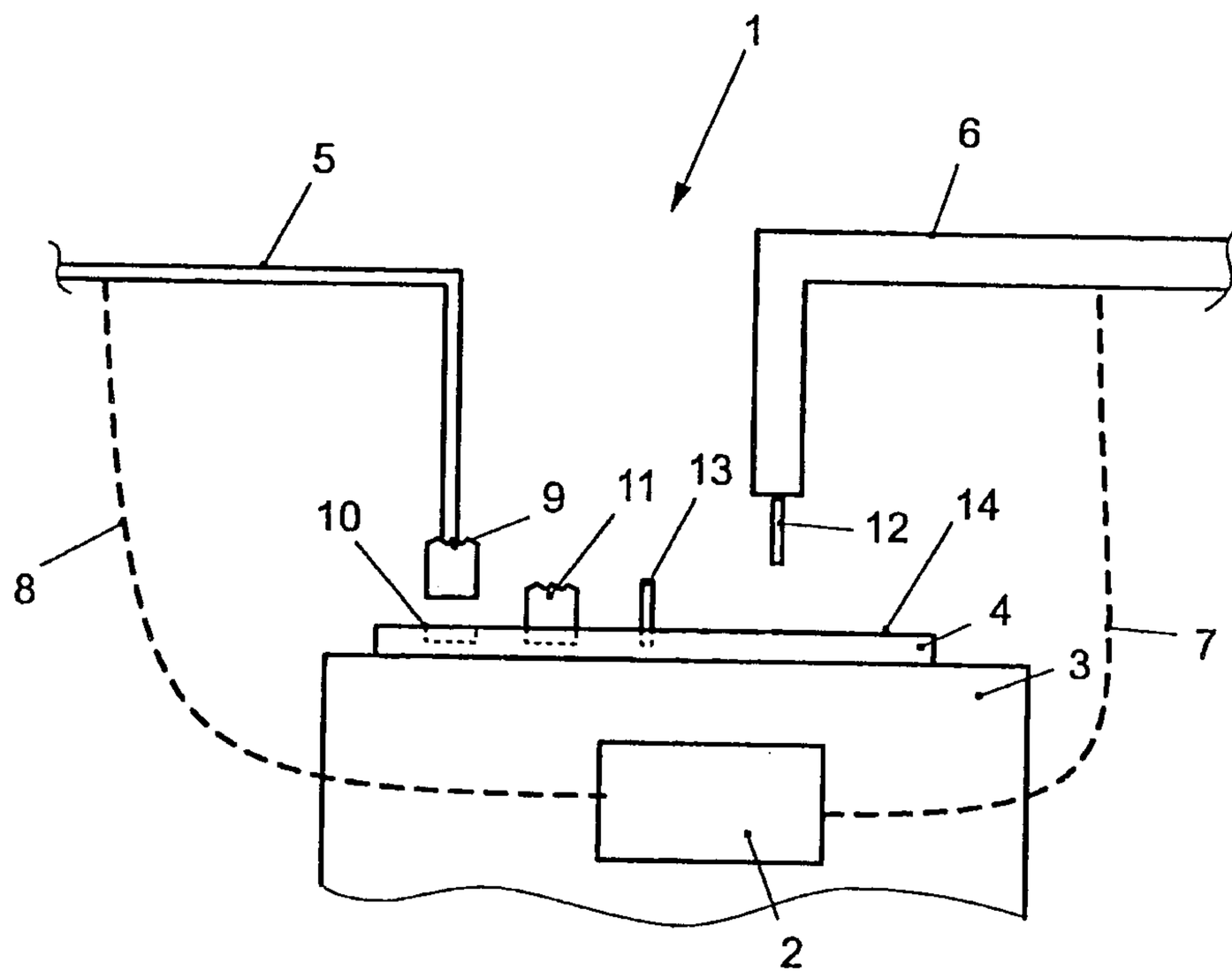


Fig. 1

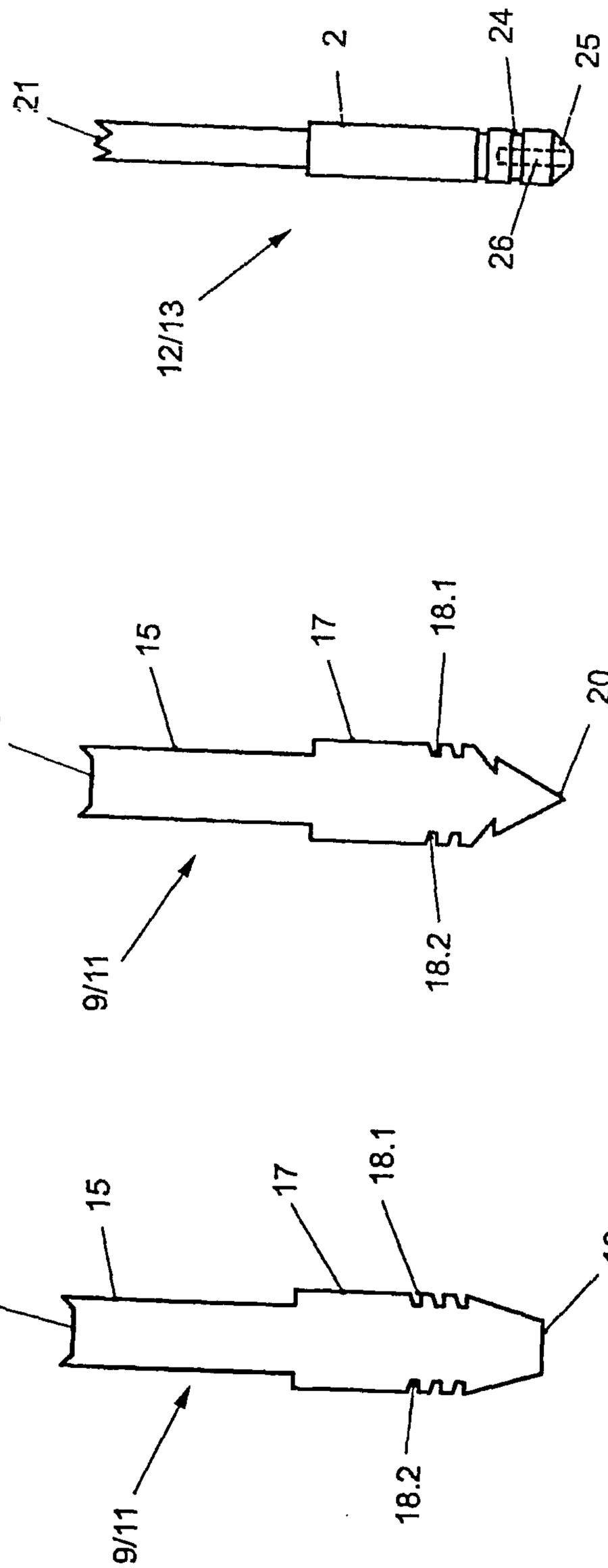


Fig. 4

Fig. 3

Fig. 2

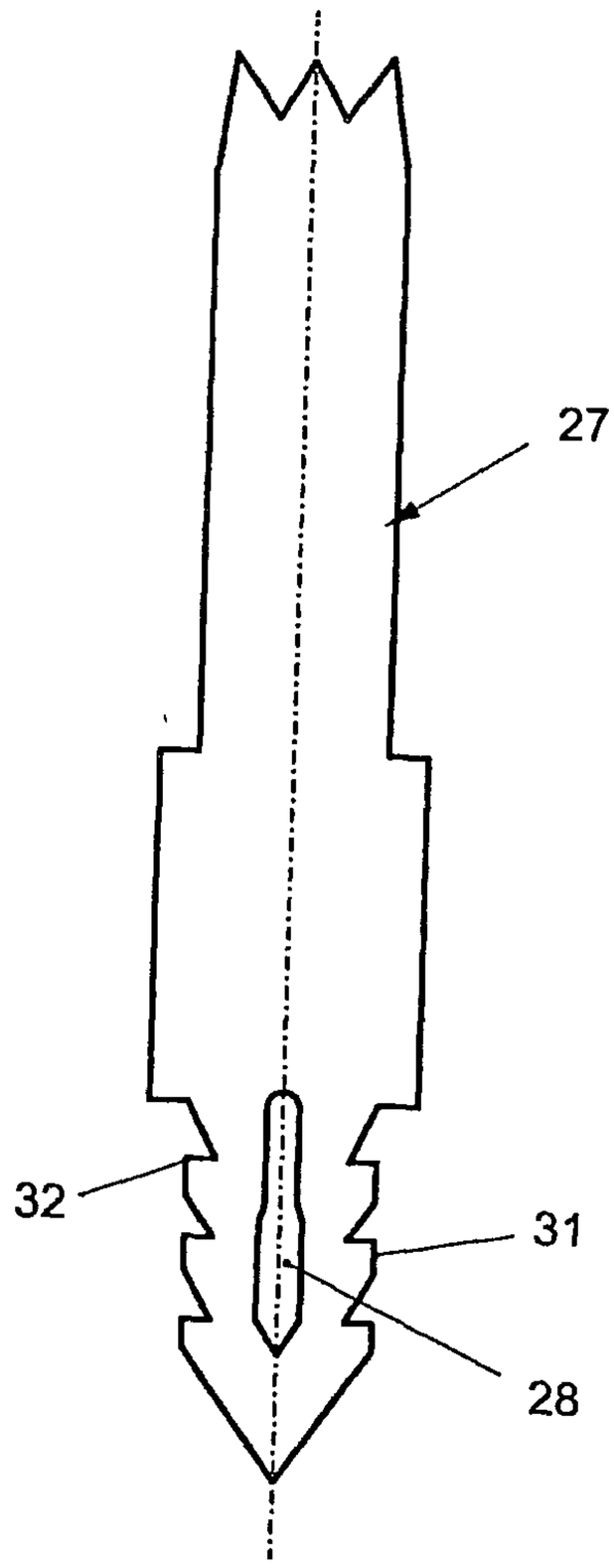


Fig. 5

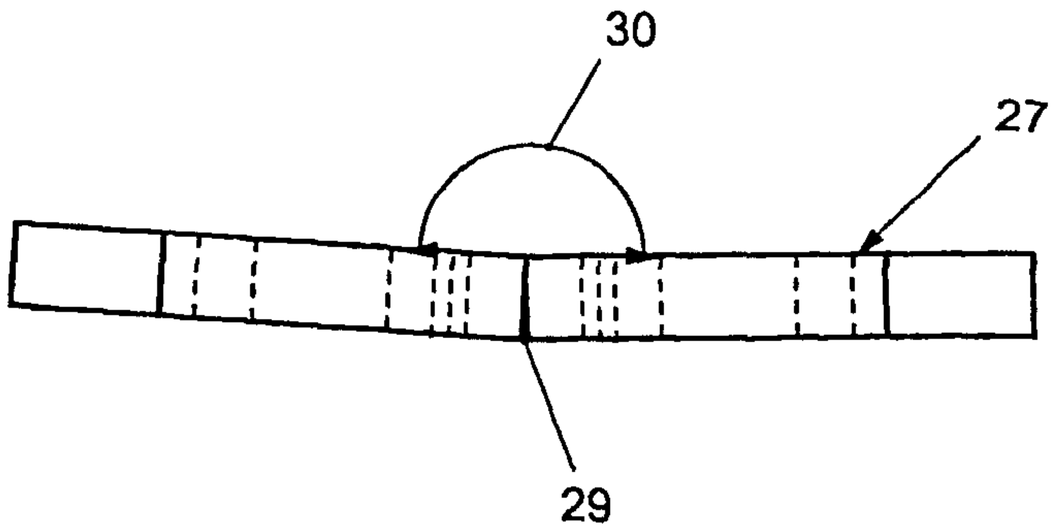


Fig. 6

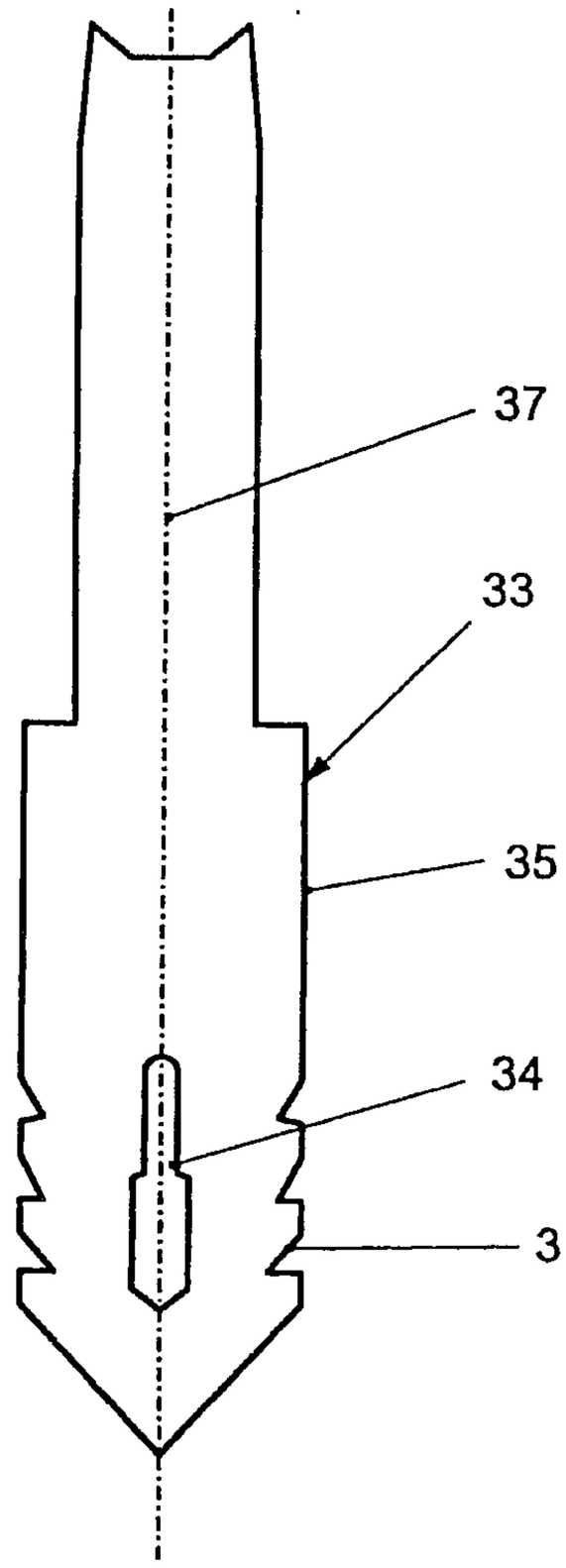


Fig. 7

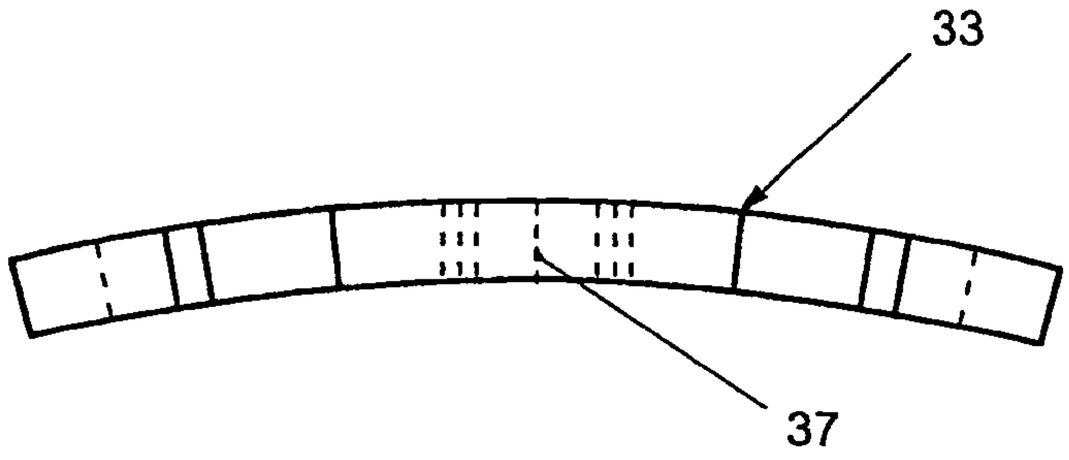
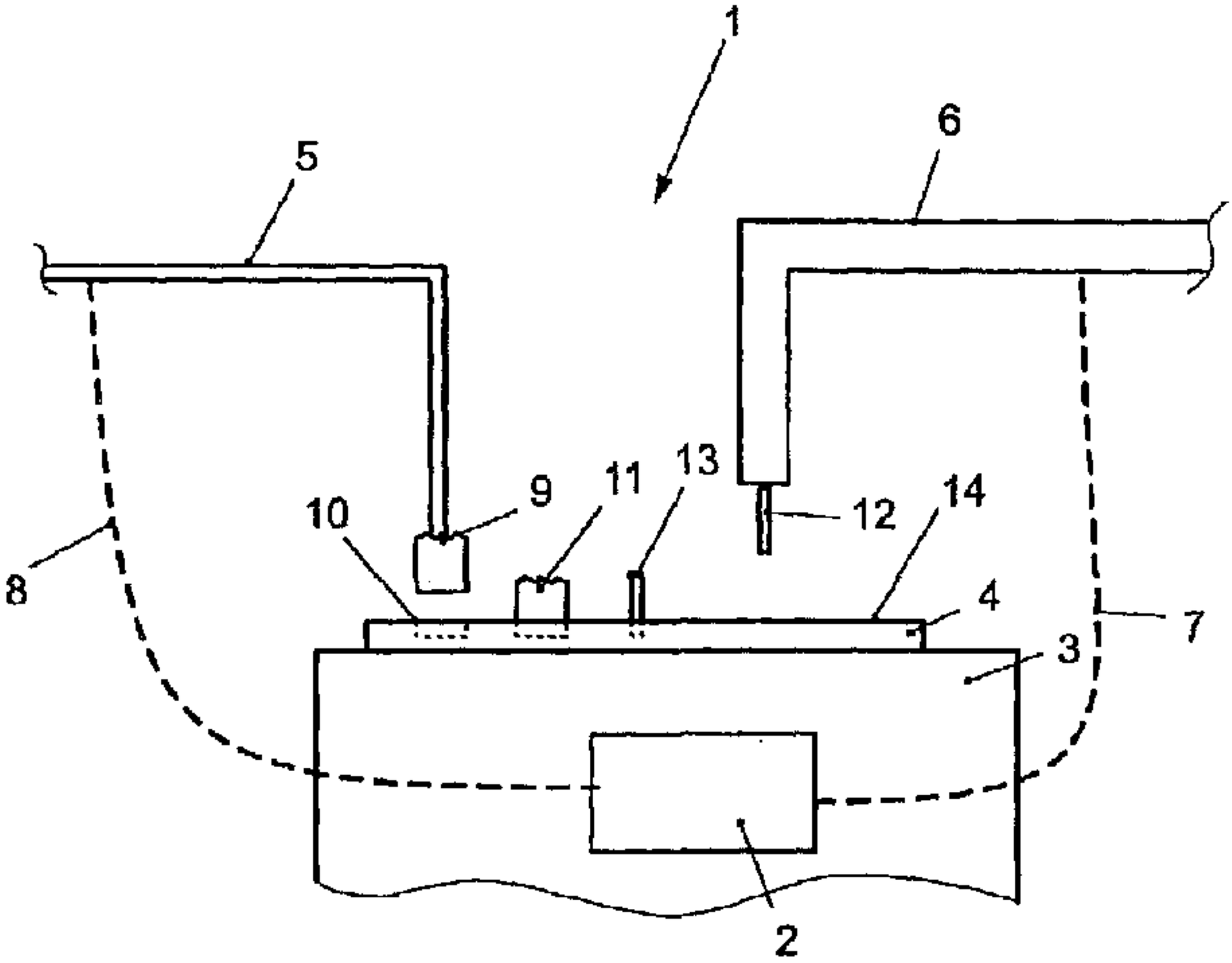


Fig. 8


1
5
6
8
9
10
11
13
12
14
4
7
3
2