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(54) **SUPPORT AND METHOD FOR SETTING PRECIOUS STONES**

(57) Described is a support (1) for the setting of diamonds (D), comprising a base (10) and a diamond disc (20).

The base (10) comprises a front face (11) equipped with a plurality of prongs (12), extending away from the front face (11) and designed to hold a diamond (D) at a girdle portion of said diamond (D).

The diamond disc (20) fixed to the front face (11) of the base (10) is configured for receiving and supporting a rear portion of said diamond (D). Moreover, the diamond disc (20) comprises receiving portions (21) angularly positioned around a central zone of the diamond disc (20) and at least partly shaped to match said prongs (12) in such a way as to form a stable coupling of the diamond disc (20) to said base (10).

Fig.1A

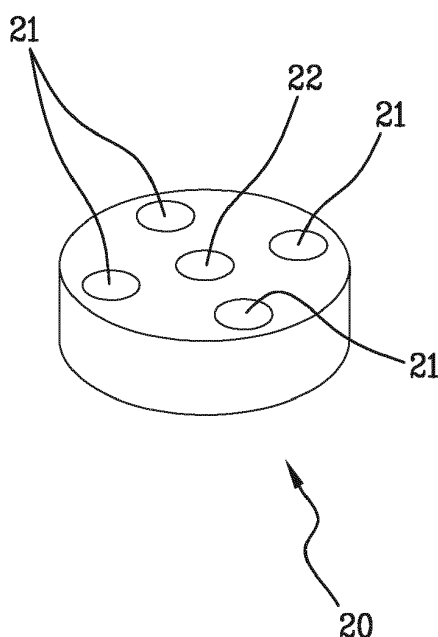
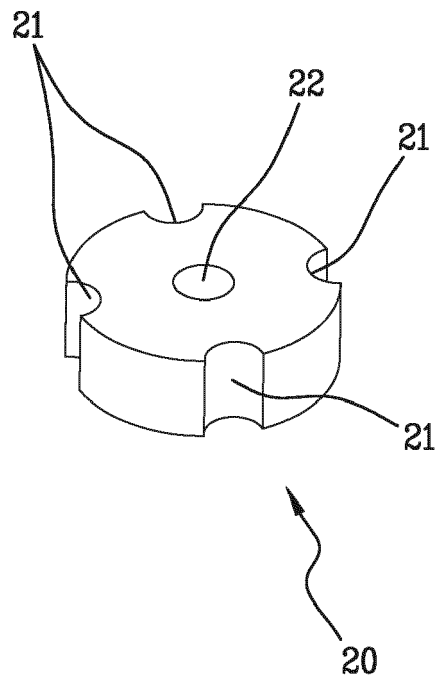


Fig.1B



Description

[0001] This invention relates to the sector of processing metals and precious stones.

[0002] More specifically, the invention relates to a support and a method for setting precious stones, such as, for example, diamonds.

[0003] Especially in the sector of processing precious metals and precious stones, it is extremely important to be able to guarantee products which are aesthetically pleasing and which enhance as much as possible the raw material used.

[0004] In effect, considering the setting of precious stones, and in particular diamonds, the need is immediately evident of making supports which enhance the precious value as much as possible.

[0005] The supports of known type and the methods usually applied comprise the use of diamond discs interposed between the diamond and the base of the support, where the term "base" means the portion of jewellery (earring, necklace, bracelet, pendent) designed for the setting, typically integrated in the piece of jewellery. Moreover, as is known, the diamond disc is soldered to the base.

[0006] These discs, typically made of metal and preferably gold, are suitably processed, especially by diamond milling cutters, with the aim of making the surface of the disc "diamond-like".

[0007] In other words, grooves with a shape and size such as to imitate the polyhedral surface of diamonds are made on the surface of the disc. Moreover, the surface of the disc is made reflective, in this way, the surface of the disc adopts an aspect visually similar to that of a diamond. The use of these diamonds discs has two main aims: to improve the brightness of the diamond and make it appear larger, acting like an extension.

[0008] Typically, these diamond discs are then inserted in the base of the support according to the various types of settings.

[0009] For example, according to a crescent setting, the diamond disc and diamond are inserted in a recess present in the base. Using this system of setting the diamond is less enhanced since only the "table" and the crown of the latter are visible.

[0010] According to another type of setting, in particular the prong setting, the diamond is more enhanced since, in addition to the "table" and crown, at least a portion of the dome of the diamond pad is visible.

[0011] Moreover, the diamond disc, as it is not recessed inside the base but resting on it, further improves the appearance of the diamond, apparently also increasing its longitudinal dimension, since the lateral surface of the diamond disc is visible.

[0012] However, by using the diamond disc in this type of setting, there are production problems and drawbacks which limit the appearance of the end product.

[0013] Firstly, the diamond disc is sized to be inserted on a base supporting surface which is limited by the pres-

ence of the prongs. In other words, the diamond disc must have a diameter such that it can be housed "in the middle" of the prongs.

[0014] The size of the diamond disc is therefore greatly limited. Moreover, the prongs extend vertically away from the front face of the base and retain the diamond. Moreover, as is known, they are soldered directly on the front face of the base or on the lateral surface of the base. In the first case, the disadvantage is obviously greater.

[0015] In addition, the prior art methods comprise soldering the disc at the base of the support following the mirror polishing machining since mirror polishing of the disc behind the fixing is very complicated.

[0016] Since the diamond disc is not mechanically constrained to the surface on which it is rested or to the prongs, the soldering process must be robust in such a way as to fix the diamond disc at the base in an irreversible and stable manner. However, during the soldering, the diamond disc loses part of the surface characteristics acquired, becoming opaque and partly losing the surface grooves. In effect, part of the soldering deposit settles on the surface of the diamond disc and in particular in the grooves.

[0017] In this context, the technical purpose which forms the basis of the invention is to provide a support and a method for setting diamonds documents which overcomes at least some of the above-mentioned drawbacks of the prior art.

[0018] In particular, the aim of the invention is to provide a support and a method for setting diamonds which is able to optimise the use of the diamond disc in such a way as to further enhance the diamond which will be housed on it.

[0019] A further aim of the invention is to provide a support and a method for setting diamonds which is able to optimise the step of fixing the diamond disc to the base, in such a way that the mirror polishing of the disc is not adversely affected.

[0020] The technical purpose indicated and the aims specified are substantially achieved by a support which comprises a base and a diamond disc.

[0021] The base has a front face equipped with a plurality of prongs, extending away from the front face, whose function is to retain the diamond at its girdle.

[0022] The diamond disc is fixed to the front face of the base and is configured to support the diamond.

[0023] Preferably, the diamond disc comprises receiving portions angularly positioned around a central zone of the diamond disc and at least partly shaped to match the prongs, in such a way as to form a stable coupling between the diamond disc and the base.

[0024] Advantageously, this shape makes it possible to form a larger diamond disc, since it is configured to adapt to the specific shape adopted by the prongs.

[0025] The invention also relates to a method for setting diamonds which comprises the steps of:

- preparing a base comprising a front face equipped

with a plurality of prongs;

- preparing a disc made of metal, preferably gold;
- milling and/or perforating the disc in such a way as to obtain a plurality of receiving portions on said disc, configured to encircle at least partly said prongs;
- machining the disc, preferably by means of a diamond cutter, in such a way as to give at least the front face of the disc a diamond structure;
- applying the diamond disc to the base by mutual engaging of the prongs with the receiving portions;
- stably fixing the diamond disc to the base, preferably by laser soldering. Advantageously, this method makes it possible to overcome the drawbacks of the prior art allowing the assembly of a support for the setting of diamonds which is able to improve the overall appearance of the item of jewellery comprising the diamond. In particular, an optimum sizing and a less invasive and less harmful soldering is allowed for its surface finish.

[0026] Further features and advantages of the invention are more apparent in the non-limiting description which follows of a preferred embodiment of a support and a method for setting diamonds.

[0027] The description is set out below with reference to the accompanying drawings which are provided solely for purposes of illustration without restricting the scope of the invention and in which:

- Figures 1A, 2A and 3A show a perspective view, respectively, of a diamond disc, a base and a support according to a preferred embodiment;
- Figures 1B, 2B and 3B show a perspective view, respectively, of a diamond disc, a base and a support according to an alternative embodiment.

[0028] With reference to the accompanying drawings, the numeral 1 denotes in its entirety a support for the setting of diamonds whilst the diamond, shown in transparency in the drawings, is labelled "D".

[0029] It should be noted that the support 1 according to the invention is particularly suitable for supporting a diamond "D", but without this meaning that it cannot also be used to set different stones.

[0030] In particular, the support mainly comprises two elements: a base 10 and a disc 20.

[0031] Preferably, the base 10 is a piece of jewellery, which may be, for example, a ring, an earring, a pendant, a bracelet or a necklace, prepared for the setting of the diamond "D".

[0032] The base 10 may be made in one piece with the item of jewellery or alternatively be a separate element, to be fixed to the item of jewellery. Structurally, the base 10 has a front face 11 equipped with a plurality of prongs 12 extending away from the front face 11.

[0033] According to a preferred embodiment, shown for example in Figure 2A, the prongs 12 extend from a perimeter strip, that is to say, a zone between the centre

and the edge of the front face 11 of the base 10.

[0034] According to other embodiments, as shown for example in Figure 2B, the prongs 12 are made at an edge portion of the front face 11.

5 **[0035]** Moreover, the prongs 12 may be positioned according to different geometries, depending on the characteristics of the precious stone which they must support.

[0036] For example, the prongs 12 may be arranged circumferentially and preferably equidistant at the front face 11 (that is to say, on its surface or at its edge).

10 **[0037]** Operatively, the function of the prongs 12 is to retain the diamond "D" acting on a relative girdle portion. For this purpose, preferably, horizontal grooves are made on the prongs 12, shaped to match (known in the jargon of the trade as "crack") for interfacing with a diamond girdle portion "D", in such a way as to allow a better coupling between prongs 12 and diamond "D".

15 **[0038]** The diamond disc 20 has a preferably circular shape. It is made of a metal material, preferably a precious metal, even more preferably a gold alloy. The term "diamond disc" means that the disc has been subjected to a machining performed by mirror polishing machines, in particular it has been the object of a machining performed by a diamond cutter.

20 **[0039]** Thanks to this specific machining, the diamond disc 20 has an improved reflectance, a plurality of grooves imitating those of a diamond and a colour such as to imitate the surface characteristics.

25 **[0040]** In other words, the diamond disc 20 reproduces the appearance of a diamond "D".

30 **[0041]** The disc 20 preferably has a central hole 22, which is shaped in such a way as to receive at least one portion of the rear dome of the diamond "D", preferably only the rear apex of the diamond "D" is inserted inside it.

35 **[0042]** Moreover, the diamond disc 20 has receiving portions 21 shaped to engage the prongs 12 in such a way as to constrain the diamond disc 20 to the base 10.

[0043] The receiving portions 21 are made in such a way as to allow a coupling between the diamond disc 20 and the base 10 engaging the prongs 12 of the latter, so these receiving portions are made as a function of the shape of the prongs 12 present on the base 10.

40 **[0044]** In particular, according to a preferred embodiment shown in Figures 1A and 3A, the receiving portions 21 are made in the form of through holes and are made in a perimeter strip of the diamond disc 20 or, in other words, at a zone between the centre and the edge of the diamond disc 20. According to this embodiment, the receiving portions 21 are made in such a way as to fit the prongs 12, as shown in the drawings.

50 **[0045]** According to another embodiment, shown in Figures 1B, 2B and 3B, the receiving portions 21 are made in the form of concave recesses, preferably with an curved cross section, made on the edge of the diamond disc 20. According to this embodiment, the receiving portions 21 partly enclose a portion of the prongs 12.

55 **[0046]** According to a further embodiment, the diamond disc 20 has both the previous embodiments of the

receiving portions 21. The disc 20 therefore has at least one receiving portion 21 in the form of a through hole and at least one receiving portion 21 in the form of a concave recess.

[0047] The diamond disc 20 also has a shape matching a supporting surface defined by the front face 11 and by the prongs 12 of the base 10, in such a way as to guarantee and optimise the adhesion between the two.

[0048] Advantageously, thanks to the presence of the receiving portions 21 the diamond disc 20 may have a surface greater than that of the prior art diamond discs since it is not limited by the structure defined by the prongs 12 on the front face 11.

[0049] For this reason, having a greater surface of the diamond disc 20, the appearance of the diamond "D" is improved, since the diamond "D" appears larger. In particular, this visual effect can be seen even more through a top view of the support 1, where the diamond disc 20 will appear to be a natural extension of the diamond, once the latter is set.

[0050] Moreover, since the diamond disc 20 is coupled to the base by means of the prongs 12, which greatly limits the movement, the fixing step may be performed in a less invasive manner.

[0051] For example, according to a preferred embodiment, the diamond disc 20 is fixed to the base 10 by soldering. The purpose of this soldering is to irreversibly fix the diamond disc 20 to the base 10, preventing the movement of the diamond disc 20 along the prongs 12. The soldering is performed preferably by means of a laser soldering unit and the disc 20 is soldered to the base 10 close to a peripheral zone of the latter. This soldering is not invasive since it need not constrain the entire surface of the diamond disc 20 to the front face 11 of the base 10, but only its receiving portions 21 to the prongs 12, preserving the mirror polishing performed by the diamond cutter on the diamond disc 20.

[0052] For this reason, the diamond disc 20 will maintain the surface characteristics obtained with the mirror polishing.

[0053] This advantage, together with the greater surface of the diamond disc 20, translates as an improvement in the appearance of the piece of jewellery on which the diamond "D" is mounted. In effect, the surface features obtained by mirror polishing together with a larger surface are such that the diamond disc 20 increases the brightness of the diamond "D".

[0054] The invention achieves the preset aims overcoming the drawbacks of the prior art and providing a support for the setting of diamonds which is able to optimise the use of the diamond disc 20 in such a way as to further enhance the diamond "D" which will be housed on it.

[0055] The invention also relates to a method for setting diamonds, in particular in a support 1 having one or more of the technical features described above. In particular, a base 10 is prepared, where the term "base" means the portion of jewellery prepared for the setting.

[0056] The base 10 comprises a front face 11 equipped with a plurality of prongs 12, which extend away from the front face 11 and are configured to retain a diamond "D" at a relative girdle portion.

[0057] A disc is also prepared, preferably made of metal material, for example gold.

[0058] There is therefore a step of drilling and/or milling the disc in such a way as to obtain on it a plurality of receiving portions 21.

[0059] The receiving portions 21 can be made in the form of through holes, therefore made in a portion of the disc between the centre and the edge or they can be made in the form of concave recesses, therefore made directly on the edge of the disc. According to a further embodiment not illustrated in the drawings, the receiving portions 21 are made on the disc in both the embodiments of through holes and grooves.

[0060] Preferably, the step of perforating the disc to obtain the receiving portions 21 also comprises a step of perforating the disc to obtain a central hole 22 shaped in such a way as to receive a dome of the diamond, preferably shaped in such a way as to receive only an apex of the diamond.

[0061] A step is performed of machining the disc, preferably using a diamond cutter, in such a way as to make the diamond disc, obtaining a diamond disc 20. During this step, surface grooves are made with a shape and size such as to imitate the polyhedral surface of the diamonds. Moreover, the surface of the disc is machined to improve its reflective properties.

[0062] The diamond disc 20 is applied to the base 10 by reciprocal engagement of the prongs 12 with the receiving portions 21. Subsequently, the diamond disc 20 is moved along the prongs 12 towards the supporting surface of the surface portion 11 of the base 10. Thanks to the shape of the receiving portions 21 (which are shaped to match an outer profile of the prongs 12), the diamond disc 21 can translate along the prongs 12 which act as a guide for the movement of the diamond disc 20.

[0063] Once the diamond disc 20 rests on the base 10, it is fixed to the base 10. The fixing step is preferably performed by soldering, and still more preferably by laser soldering.

[0064] More specifically, the soldering step is performed by soldering the diamond disc 20 to the base 10 in a peripheral portion of the latter.

[0065] Lastly, according to a preferred embodiment, the method comprises a further step of machining a portion of the prongs 12 in such a way as to make horizontal grooves shaped for a unique coupling with a girdle portion of the diamond.

[0066] Advantageously, the method described above overcomes the drawbacks of the prior art allowing the assembly of a support for the setting of diamonds which is able to improve the overall appearance of the item of jewellery comprising the diamond.

[0067] In particular, this aim is achieved by using a diamond disc having receiving portions which allow an

optimum sizing and a soldering at the base which is less invasive and not harmful for its surface finish.

Claims

1. A support (1) for setting diamonds (D), comprising

- a base (10) comprising a front face (11) equipped with a plurality of prongs (12), extending away from said front face (11) and designed to hold a diamond (D) at a girdle portion of said diamond (D);
- a diamond disc (20) designed to be fixed to said front face (11) of the base (10) and configured for receiving and supporting a rear portion of said diamond (D);

characterised in that said diamond disc (20) comprises receiving portions (21) angularly positioned around a central zone of the diamond disc (20) in such a way as to form a stable coupling of the diamond disc (20) to the base (10).

2. The support (1) according to claim 1, wherein said receiving portions (21) are made in the form of through holes and made in a perimeter strip of said diamond disc (20).

3. The support (1) according to claim 1, wherein said receiving portions (21) are made in the form of concave recesses made on a perimeter edge of said diamond disc (20).

4. The support (1) according to any one of the preceding claims, wherein said diamond disc (10) has a front diamond face and a rear face designed to be positioned in abutment against said front face (11) of the base (10).

5. The support (1) according to claim 4, wherein said rear face of the diamond disc (20) is irreversibly fixed to the front face of the base (10), preferably by soldering.

6. The support (1) according to any one of the preceding claims, wherein said diamond disc (20) has a central hole (22), defined in a central zone of said diamond disc (20), said central hole (22) being shaped in such a way as to receive a rear dome of said diamond (D), said diamond disc (20) being preferably shaped in such a way as to receive a rear apex of said diamond (D).

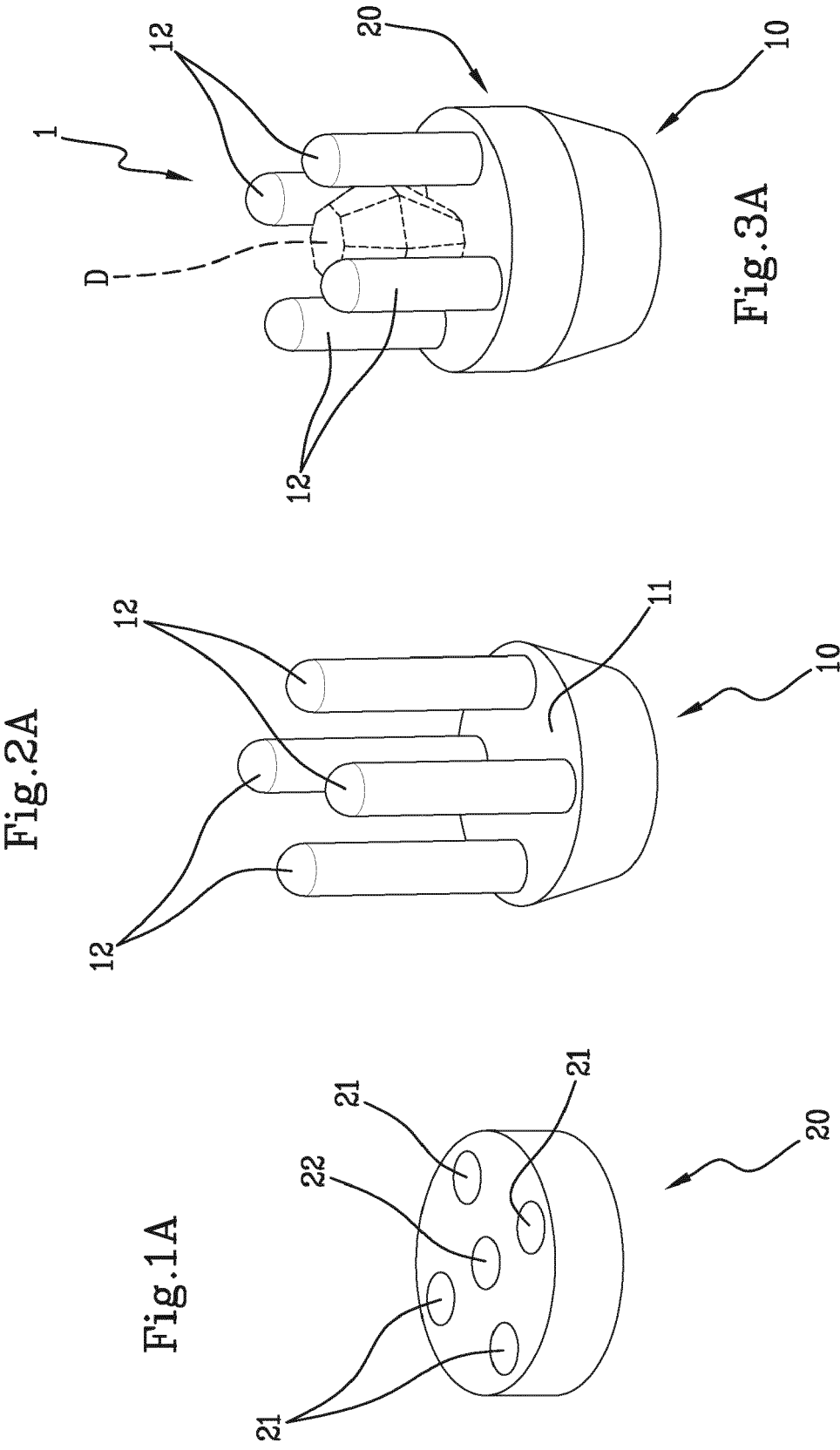
7. The support (1) according to any one of the preceding claims, wherein said diamond disc (20) is made of metal material, preferably a precious metal, even more preferably a gold alloy.

8. A method for making a support (1) according to any one of the preceding claims, comprising the steps of:

- preparing a base (10) comprising a front face (11) equipped with a plurality of prongs (12) extending away from said front face (11) and designed to hold a diamond (D) at a girdle portion of said diamond (D);
- preparing a disc made of metal material, preferably a precious metal, even more preferably a gold alloy;
- milling and/or perforating the disc in such a way as to obtain, on said disc, a plurality of receiving portions (21) configured to encircle at least partly said prongs (12);
- machining the disc preferably by means of a diamond cutter, in such a way as to give at least said front face of the disc a diamond structure (20);
- applying the diamond disc (20) to the base (10) by reciprocal engagement of the prongs (12) with said receiving portions (21);
- stably fixing the diamond disc (20) to the base (10), preferably by soldering.

9. The method according to claim 8, wherein the step of perforating the disc also comprises a step of perforating a central zone of said disc in order to obtain a central hole (22) shaped in such a way as to receive a rear dome of said diamond (D), preferably shaped in such a way as to receive a rear apex of said diamond (D).

10. The method according to any one of the preceding claims, wherein said soldering step is performed by laser soldering.



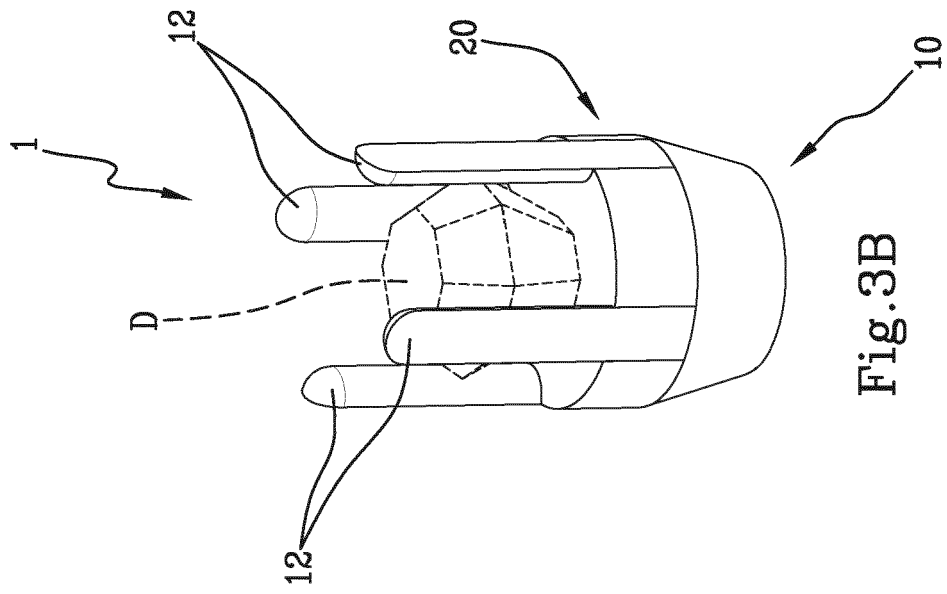


Fig. 3B

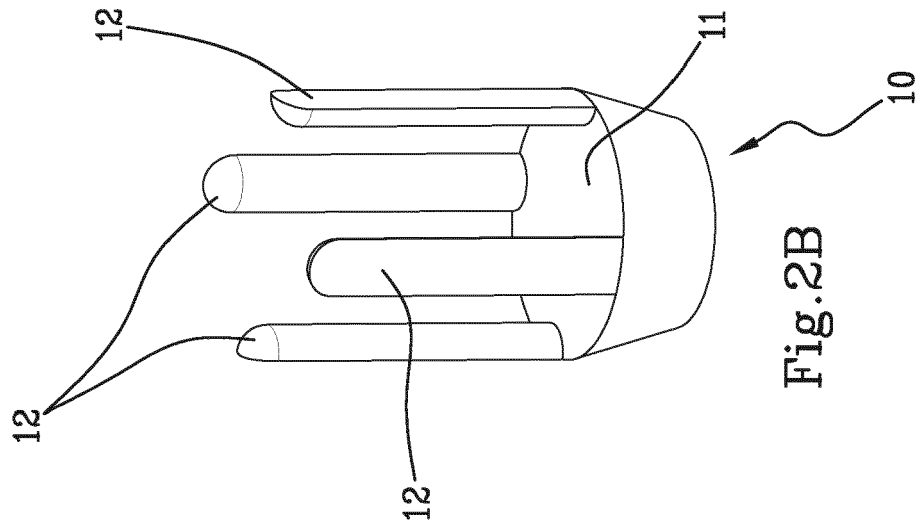


Fig. 2B

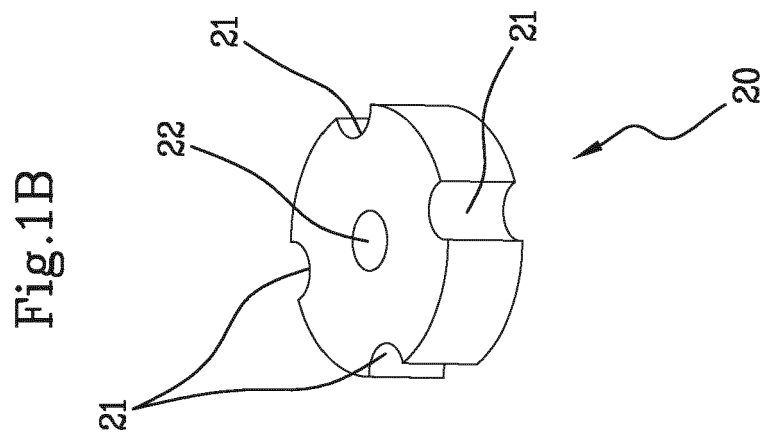


Fig. 1B



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Application Number
EP 20 18 6694

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EPO FORM 1503 03.82 (P04C01)

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			A44C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 October 2020	Examiner van Voorst, Frank
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
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