(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 3 216 921 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
24.10.2018 Bulletin 2018/43

(21) Application number: **17158983.1**

(22) Date of filing: **02.03.2017**

(51) Int Cl.:
E01F 13/02 *(2006.01)* ***E01F 9/692*** *(2016.01)*

(54) **A TRAFFIC BOLLARD**

EIN VERKEHRSPOLLER

UN BOLLARD DE TRAFFIC

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **11.03.2016 DK 201670142**

(43) Date of publication of application:
13.09.2017 Bulletin 2017/37

(73) Proprietor: **Letbæk Plast A/S**
6862 Tistrup (DK)

(72) Inventor: **HOLM, Martin Nygaard**
6800 Varde (DK)

(74) Representative: **Zacco Denmark A/S**
Arne Jacobsens Allé 15
2300 Copenhagen S (DK)

(56) References cited:
EP-A1- 0 355 440
GB-A- 2 296 521
US-A1- 2002 073 912
US-B1- 6 182 600

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 3 216 921 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a traffic bollard, more particularly to an unattached lightweight traffic bollard, a cylinder part of which can be mounted in a base part from the upper side thereof.

Background of the invention

[0002] Many different types of traffic bollards are known in the art. Some are heavy, sturdy and permanently arranged, for instance along roads, around parking lots or on traffic islands in the middle of the roads. Others are light, more fragile and used temporarily, for instance in relation to roadworks, barricades around concert venues and the like.

[0003] Many such light and fragile traffic bollards basically consists of a vertical cylinder mounted in a base, which is simply placed onto the underlying surface without being attached thereto, with one or more pieces of reflective tape arranged around the cylinder.

[0004] One advantage of using such lightweight traffic bollards is that they can be placed easily and quickly, where they are to be used, and collected again, in some cases even from the bed of a slowly moving truck or van. A disadvantage, on the other hand, is that they are easily toppled or overturned due to their low weight. In order to overcome this problem, such lightweight traffic bollards are typically arranged so that the base is mounted around the cylinder from the top thereof as, for example, in US6128600B. This means that, when needed, one or more additional bases can be mounted around the same cylinder for increasing the weight and stability of the traffic bollard. In this case, the additional base(s) simply rest(s) on top of the first and lowermost base.

[0005] This solution is simple and flexible but also entails some disadvantages. Firstly, it means that each of the bases must be lifted up to a level above the top of the cylinder before it can be mounted around it, which can become physically hard if there are many traffic bollards, potentially with even more bases, to be mounted. Secondly, the repeated sliding of the base(s) along the cylinder when mounting (and dismounting) them inevitably leads to damaging of the reflective tapes arranged around the cylinder.

[0006] GB 2296521 A, GB 875635 A, EP 0355440 A1, GB 2198770 A and DE 102007029101 A1 all disclose traffic bollards, in which an upright part can be releasably mounted onto a base part from the top side thereof.

Brief description of the invention

[0007] It is an object of the present invention to provide a traffic bollard, which overcomes the above-mentioned disadvantages related to traffic bollards known in the art.

[0008] The present invention relates to an unattached traffic bollard comprising an elongated upright part and a base part arranged to be placed onto the underlying surface, wherein the upright part is arranged to be releasably mounted onto the base part from the top side thereof, wherein the upright part is arranged to be mounted onto the base part by entering a bottom end of the upright part into an opening in the base part prior to rotating the upright part relative to the base part in order to lock the upright part and the base part to each other, wherein the opening in the base part comprises a through-going hole continuing all the way through the base part in a direction, which, when the traffic bollard is in use, is substantially vertical, and wherein the upright part and the base part are arranged so that one or more additional base parts can be mounted around the upright part without being attached thereto by arranging them with their through-going holes around the top end of the upright part and sliding them downward the upright part until they rest on the base part, to which the upright part is locked.

[0009] Arranging the traffic bollard so that the upright part can be mounted to and dismounted from the base part from the top side thereof means that the base does not need to be lifted from the ground in order to assemble the traffic bollard and that damaging of any reflective tapes or the like on the upright part is avoided or at least significantly reduced, because the base part does not need to slide along the upright part during the assembly of the traffic bollard as is the case in systems known in the art.

[0010] Furthermore, this solution provides a simple and reliable way of obtaining a locked configuration of the traffic bollard, and configuring the traffic bollard in this way ensures that several base parts can be mounted around the same upright part to increase the weight and stability of the traffic bollard as in systems known in the art.

[0011] Thus, the present invention differs from the disclosures of GB 875635 A, EP 0355440 A1, GB 2198770 A and DE 102007029101 A1, inter alia, in that several base parts can be mounted around the same upright part.

[0012] In an embodiment of the invention, the upright part and the base part are arranged so that the upright part can also be mounted to the base part from the bottom side thereof.

[0013] When appropriately arranged, this technical feature means that traffic bollards according to the present invention can be made compatible with existing traffic bollard systems known in the art and vice versa.

[0014] In an embodiment of the invention, at least the bottom end of the upright part is formed as a circular cylinder provided with two or more locking flanges protruding from the bottom end thereof in directions pointing at least partly away from the longitudinal axis of the upright part, i.e. sideward out from the upright part when the traffic bollard is in use, and the opening within the base part comprises a substantially circular through-going hole with a plurality of likewise through-going notches arranged along the edge thereof, corresponding to the upright part with its locking flanges in such a way that the

bottom end of the upright part with the locking flanges can be entered through the circular hole with the notches and rotated relatively to the base part to an orientation, in which it cannot be pulled back out of the base part again.

[0015] This is a simple and reliable way of configuring a traffic bollard system, which comprises all the above-mentioned technical features and, thus, enjoys the different advantages related thereto.

[0016] In an embodiment of the invention, at least the bottom end of the upright part is formed as an elliptical cylinder provided with a locking slit into the elliptical cylinder in one or both of its sides with the smallest radius of curvature and near the bottom end thereof, and the opening within the base part comprises a through-going hole with one or more locking flanges protruding into the through-going hole in one or two opposing sides thereof in such a way that the bottom end of the upright part can be entered into the hole and rotated relatively to the base part to an orientation, in which the locking flanges of the base part enters the locking slits of the upright part so that it cannot be pulled back out of the base part again.

[0017] This is another simple and reliable way of configuring a traffic bollard system, which comprises all the above-mentioned technical features and, thus, enjoys the different advantages related thereto.

[0018] In an embodiment of the invention, the upright part is provided with one or more reflective markers, for instance in the form of one or more reflective pieces of tape arranged around the upright part.

[0019] Using reflective tape arranged around the upper part is a simple, flexible and reliable way of obtaining the desired reflective properties of the traffic bollard. Different legislations and different uses of the traffic bollard may require different reflective properties.

[0020] In an embodiment of the invention, the upright part is provided with one or more pairs of opposed through-going openings for letting a barrier ribbon or the like pass through the upright part.

[0021] In many cases, the traffic bollard makes part of a barrier to the public, which can be easily implemented by arranging a barrier ribbon or the like between and through a plurality of traffic bollards.

[0022] In an embodiment of the invention, the base part is provided with one or more handles arranged so that the base part can easily be lifted up from the ground.

[0023] Making it easier to handle the base part reduces the physical wear on the people working with large numbers of such traffic bollards.

[0024] In an embodiment of the invention, an internal part of the base part is produced, for instance by casting or extrusion, in a honeycomb structure.

[0025] Using a honeycomb structure enables for obtaining a physically strong configuration without increasing the weight of the base part unnecessarily.

The drawings

[0026] In the following a few exemplary embodiments of the invention are described in further detail with reference to the figures, of which

Figs. 1a-1b	illustrate a traffic bollard known in the art in a disassembled and an assembled configuration, respectively,
Fig. 2	illustrates the assembling process for the traffic bollard shown in Figs. 1a-1b,
Figs. 3a-3c	illustrate three steps of assembling a traffic bollard according to a first embodiment of the invention as seen obliquely from above,
Figs. 4a-4c	illustrate the same three steps of assembling the traffic bollard according to the first embodiment of the invention as seen from below,
Figs. 5a-5c	illustrate three steps of assembling a traffic bollard according to a second embodiment of the invention as seen obliquely from above, and
Figs. 6a-6b	illustrate the last two of these three steps of assembling the traffic bollard according to the second embodiment of the invention as seen from below.

Detailed description of the invention

[0027] Figs. 1a and 1b illustrate a traffic bollard 1 known in the art in a disassembled and an assembled configuration, respectively. The main parts of the traffic bollard 1 are an upright part 2 in the form of a hollow plastic cylinder and a base part 3, which is produced, for instance by casting or extrusion, from a plastic material. The upright part 2 is provided with one or more reflective markers 7 in the form of reflective pieces of tape arranged around the upright part 2. Furthermore, the upright part 2 is provided near its top end and near its bottom end with a number of pairs of openings 8 for barrier ribbons or the like to pass through the upright part 2.

[0028] Fig. 2 illustrates the assembling process for the traffic bollard 1 shown in Figs. 1a and 1b. The base part 3 is provided with a vertically oriented through-going hole with a diameter slightly larger than the outer diameter of the upright part 2, and the bottom end of the upright part 2 is provided with a circular outward-protruding flange, which is not able to pass through the through-going hole in the base part 3.

[0029] The assembly takes place by lifting the base part 3 from the ground, placing it with the through-going hole around the top end of the upright part 2 and sliding

the base part 3 downward around the upright part 2 until the base part 3 is back on the ground. The flange at the bottom end of the upright part 2 makes sure that the upright part 2 is kept in place within the base part 3. A recess (not shown) in the downward-facing surface of the base part 3 makes room for the flange so that the base part 3 can rest stable on the ground.

[0030] Figs. 3a-3c illustrate three steps of assembling a traffic bollard 101 according to a first embodiment of the invention as seen obliquely from above. In this embodiment, at least the bottom end of the upright part 102 is formed as a circular cylinder provided with two or more locking flanges 105 protruding from the bottom end thereof. These locking flanges 105 point in directions at least partly away from the longitudinal axis of the upright part 102, i.e. sideward out from the upright part 102 when the traffic bollard 101 is in use. Furthermore, the upright part 102 can be provided with one or more pairs of openings 108 for barrier ribbons and the like, and with one or more reflective markers (not shown).

[0031] The base part 103 with four handles 109 comprises a substantially circular through-going hole 104 with a plurality of likewise through-going notches 106 arranged along the edge thereof. The positions of these notches 106 correspond to the positions of the locking flanges 105 on the upright part 102.

[0032] Beginning from the disassembled configuration illustrated in Fig. 3a, the first step of assembling the upright part 102 and the base part 103 consists in entering the bottom end of the upright part 102 with the locking flanges 105 through the circular hole 104 with the notches 105 as illustrated in Fig. 3b. The second step consists in rotating the upright part 102 relatively to the base part 103 to an orientation, in which it cannot be pulled back out of the base part 103 again as illustrated in Fig. 3b.

[0033] Figs. 4a-4c illustrate the same three steps of assembling the traffic bollard 101 according to the first embodiment of the invention as seen from below, i.e. from the bottom side of the base part 103. In Fig. 4a, the upright part 102 has not yet been entered through the circular hole 104 with the notches 105. In Fig. 4b, the bottom end of the upright part 102 with the locking flanges 105 is placed within the circular hole 104 with the locking flanges 105 placed within the notches 106. Finally, in Fig. 4c, the upright part 102 has been rotated relatively to the base part 103 so that the locking flanges 105 are no longer aligned with the notches 106. In this position, the upright part 102 cannot any longer be pulled back out of the base part 103 again, until it has been rotated to bring the locking flanges 105 back into alignment with the notches 106.

[0034] Figs. 4a-4c further illustrates how the internal part of the base part 103 can be produced, for instance by casting or extrusion, in a honeycomb structure 110 in order to obtain a very strong and still not too heavy construction of the base part 103.

[0035] Figs. 5a-5c illustrate three steps of assembling a traffic bollard 201 according to a second embodiment of the invention as seen obliquely from above. In this embodiment, at least the bottom end of the upright part 202 is formed as an elliptical cylinder provided with a locking slit 205 into the elliptical cylinder in both of its sides with the smallest radius of curvature and near the bottom end thereof. Furthermore, the upright part 202 can be provided with one or more pairs of openings 208 for barrier ribbons and the like, and with one or more reflective markers (not shown).

[0036] The base part 203 with four handles 209 comprises a through-going hole 204 with locking flanges 206 protruding into the through-going hole 204 in two opposing sides thereof.

[0037] Beginning from the disassembled configuration illustrated in Fig. 5a, the first step of assembling the upright part 202 and the base part 203 consists in entering the bottom end of the upright part 202 through the circular hole 204 as illustrated in Fig. 5b. The second step consists in rotating the upright part 202 relatively to the base part 203 to an orientation, in which it cannot be pulled back out of the base part 203 again, because the locking flanges 206 of the base part 203 engage with the locking slits 205 of the upright part 202 as illustrated in Fig. 3b.

[0038] Figs. 6a and 6b illustrate the last two of these three steps of assembling the traffic bollard 201 according to the second embodiment of the invention as seen from below, i.e. from the bottom side of the base part 203. In Fig. 6a, the bottom end of the upright part 202 is placed within the circular hole 204 in a direction, in which it does not engage with the locking flanges 206 of the base part 203. In Fig. 6b, the upright part 202 has been rotated relatively to the base part 203 so that the locking flanges 206 of the base part 203 engage with the locking slits 205 of the upright part 202. In this position, the upright part 202 cannot any longer be pulled back out of the base part 203 again, until it has been rotated to bring the locking slits 205 out of the engagement with the locking flanges 206.

[0039] Figs. 6a and 6b further illustrates how the internal part of the base part 203 can be produced, for instance by casting or extrusion, in a honeycomb structure 210 in order to obtain a very strong and still not too heavy construction of the base part 203.

List of reference numbers

[0040]

1. Traffic bollard
2. Upright part of traffic bollard
3. Base part of traffic bollard
7. Reflective marker
8. Opening for barrier ribbon

101. Traffic bollard
102. Upright part of traffic bollard
103. Base part of traffic bollard
104. Through-going hole in base part

105. Locking flange
106. Through-going notches in base part
108. Opening for barrier ribbon
109. Handle
110. Honeycomb structure

201. Traffic bollard
202. Upright part of traffic bollard
203. Base part of traffic bollard
204. Through-going hole in base part
205. Locking slit
206. Locking flange
208. Opening for barrier ribbon
209. Handle
210. Honeycomb structure

Claims

1. An unattached traffic bollard (1; 101; 201) comprising an elongated upright part (2; 102; 202) and a base part (3; 103; 203) arranged to be placed onto the underlying surface,
wherein the upright part (2; 102; 202) is arranged to be releasably mounted onto the base part (3; 103; 203) from the top side thereof,
wherein the upright part (2; 102; 202) is arranged to be mounted onto the base part (3; 103; 203) by entering a bottom end of the upright part (2; 102; 202) into an opening in the base part (3; 103; 203) prior to rotating the upright part (2; 102; 202) relative to the base part (3; 103; 203) in order to lock the upright part (2; 102; 202) and the base part (3; 103; 203) to each other,
wherein the opening in the base part (3; 103; 203) comprises a through-going hole (104; 204) continuing all the way through the base part (3; 103; 203) in a direction, which, when the traffic bollard (1; 101; 201) is in use, is substantially vertical,
characterized in that
the upright part (2; 102; 202) and the base part (3; 103; 203) are arranged so that one or more additional base parts (3; 103; 203) can be mounted around the upright part (2; 102; 202) without being attached thereto by arranging them with their through-going holes around the top end of the upright part (2; 102; 202) and sliding them downward the upright part (2; 102; 202) until they rest on the base part (3; 103; 203), to which the upright part (2; 102; 202) is locked.

2. The traffic bollard (1; 101; 201) according to claim 1, wherein the upright part (2; 102; 202) and the base part (3; 103; 203) are arranged so that the upright part (2; 102; 202) can also be mounted to the base part (3; 103; 203) from the bottom side thereof.

3. The traffic bollard (101) according to claim 1 or 2, wherein at least the bottom end of the upright part (102) is formed as a circular cylinder provided with two or more locking flanges (105) protruding from the bottom end thereof in directions pointing at least partly away from the longitudinal axis of the upright part (102), i.e. sideward out from the upright part (102) when the traffic bollard (101) is in use, and
wherein the opening within the base part (103) comprises a substantially circular through-going hole (104) with a plurality of likewise through-going notches (106) arranged along the edge thereof, corresponding to the upright part (102) with its locking flanges (105) in such a way that the bottom end of the upright part (102) with the locking flanges can be entered through the circular hole (104) with the notches (106) and rotated relatively to the base part (103) to an orientation, in which it cannot be pulled back out of the base part again.

4. The traffic bollard (201) according to claim 1 or 2, wherein at least the bottom end of the upright part (202) is formed as an elliptical cylinder provided with a locking slit (205) into the elliptical cylinder in one or both of its sides with the smallest radius of curvature and near the bottom end thereof, and
wherein the opening within the base part (203) comprises a through-going hole (204) with one or more locking flanges (206) protruding into the through-going hole (204) in one or two opposing sides thereof in such a way that the bottom end of the upright part (202) can be entered into the hole (204) and rotated relatively to the base part (203) to an orientation, in which the locking flanges (206) of the base part (203) enters the locking slits (205) of the upright part (202) so that it cannot be pulled back out of the base part (203) again.

5. The traffic bollard (1; 101; 201) according to any of the preceding claims,
wherein the upright part (2; 102; 202) is provided with one or more reflective markers (7), for instance in the form of one or more reflective pieces of tape arranged around the upright part (2; 102; 202).

6. The traffic bollard (1; 101; 201) according to any of the preceding claims,
wherein the upright part (2; 102; 202) is provided with one or more pairs of opposed through-going openings (8; 108; 208) for letting a barrier ribbon or the like pass through the upright part (2; 102; 202).

7. The traffic bollard (1; 101; 201) according to any of the preceding claims,
wherein the base part (3; 103; 203) is provided with one or more handles (109; 209) arranged so that the base part can easily be lifted up from the ground.

8. The traffic bollard (1; 101; 201) according to any of the preceding claims, wherein an internal part of the

base part (3; 103; 203) is produced, for instance by casting or extrusion, in a honeycomb structure (110; 210).

Patentansprüche

1. Unbefestigter Verkehrspoller (1; 101; 201), umfassend einen langgestreckten aufrechten Teil (2; 102; 202) und einen Basisteil (3; 103; 203), der so angeordnet ist, dass er auf der darunter liegenden Oberfläche platziert werden kann,
wobei der aufrechte Teil (2; 102; 202) so angeordnet ist, dass er lösbar auf dem Basisteil (3; 103; 203) ausgehend von der Oberseite davon montiert werden kann,
wobei der aufrechte Teil (2; 102; 202) so angeordnet ist, dass er auf dem Basisteil (3; 103; 203) montiert werden kann durch Einführen eines unteren Endes des aufrechten Teils (2; 102; 202) in eine Öffnung in dem Basisteil (3; 103; 203) vordem Drehen des aufrechten Teils (2; 102; 202) in Bezug zu dem Basisteil (3; 103; 203) zum Verriegeln des aufrechten Teils (2; 102; 202) und des Basisteils (3; 103; 203) miteinander,
wobei die Öffnung in dem Basisteil (3; 103; 203) ein Durchgangsloch (104; 204) umfasst, das sich den ganzen Weg durch den Basisteil (3; 103; 203) in einer Richtung fortsetzt, die, wenn der Verkehrspoller (1; 101; 201) in Gebrauch ist, im Wesentlichen vertikal ist,
dadurch gekennzeichnet, dass
der aufrechte Teil (2; 102; 202) und der Basisteil (3; 103; 203) so gestaltet sind, dass ein oder mehrere zusätzliche Basisteile (3; 103; 203) um den aufrechten Teil (2; 102; 202) herum montiert werden können, ohne daran befestigt zu werden, indem sie mit ihren Durchgangslöchern um das obere Ende des aufrechten Teils (2; 102; 202) herum angeordnet werden und an dem aufrechten Teil (2; 102; 202) hinuntergeschoben werden, bis sie auf dem Basisteil (3; 103; 203) ruhen, an dem der aufrechte Teil (2; 102; 202) verriegelt ist.

2. Verkehrspoller (1; 101; 201) nach Anspruch 1, wobei der aufrechte Teil (2; 102; 202) und der Basisteil (3; 103; 203) so angeordnet sind, dass der aufrechte Teil (2; 102; 202) auch an dem Basisteil (3; 103; 203) von der Unterseite aus montiert werden kann.

3. Verkehrspoller (101) nach Anspruch 1 oder 2, wobei wenigstens das untere Ende des aufrechten Teils (102) als Kreiszylinder ausgebildet ist, der mit zwei oder mehr Verriegelungsflanschen (105) versehen ist, die von dem unteren Ende davon in Richtungen vorstehen, die wenigstens teilweise weg von der Längsachse des aufrechten Teils (102), d. h. seitwärts von dem aufrechten Teil (102) nach außen, zeigen, wenn der Verkehrspoller (101) in Gebrauch ist, und
wobei die Öffnung innerhalb des Basisteils (103) ein im Wesentlichen kreisförmiges Durchgangsloch (104) mit mehreren gleichfalls durchgehenden Aussparungen (106), die entlang des Rands davon angeordnet sind, entsprechend dem aufrechten Teil (102) mit seinen Verriegelungsflanschen (105) derart umfasst, dass das untere Ende des aufrechten Teils (102) mit den Verriegelungsflanschen durch das kreisförmige Loch (104) mit den Aussparungen (106) eingeführt und in Bezug zu dem Basisteil (103) in eine Ausrichtung gedreht werden kann, in der es nicht wieder aus dem Basisteil herausgezogen werden kann.

4. Verkehrspoller (201) nach Anspruch 1 oder 2, wobei wenigstens das untere Ende des aufrechten Teils (202) als elliptischer Zylinder ausgebildet ist, der mit einem Verriegelungsschlitz (205) in den elliptischen Zylinder hinein in einer oder beiden seiner Seiten mit dem kleinsten Krümmungsradius und nahe dem unteren Ende davon bereitgestellt ist, und
wobei die Öffnung innerhalb des Basisteils (203) ein Durchgangsloch (204) mit einem oder mehreren Verriegelungsflanschen (206) umfasst, die in das Durchgangsloch (204) in einer oder zwei entgegengesetzten Seiten davon derart vorstehen, dass das untere Ende des aufrechten Teils (202) in das Loch (204) eingeführt und in Bezug zu dem Basisteil (203) in eine Ausrichtung gedreht werden kann, in der die Verriegelungsflansche (206) des Basisteils (203) in die Verriegelungsschlitze (205) des aufrechten Teils (202) so eintreten, dass dieser nicht wieder aus dem Basisteil (203) herausgezogen werden kann.

5. Verkehrspoller (1; 101; 201) nach einem der vorstehenden Ansprüche, wobei der aufrechte Teil (2; 102; 202) mit einer oder mehreren reflektierenden Markierungen (7) versehen ist, beispielsweise in Form eines oder mehrerer reflektierender Bandstücke, die um den aufrechten Teil (2; 102; 202) herum angeordnet sind.

6. Verkehrspoller (1; 101; 201) nach einem der vorstehenden Ansprüche, wobei der aufrechte Teil (2; 102; 202) mit einem oder mehreren Paaren von entgegengesetzten Durchgangsöffnungen (8; 108; 208) versehen ist, um ein Sperrband oder dergleichen durch den aufrechten Teil (2; 102; 202) hindurchtreten zu lassen.

7. Verkehrspoller (1; 101; 201) nach einem der vorstehenden Ansprüche, wobei der Basisteil (3; 103; 203) mit einem oder mehreren Griffen (109; 209) versehen ist, die so angeordnet sind, dass der Basisteil leicht vom Boden angehoben werden kann.

8. Verkehrspoller (1; 101; 201) nach einem der vorstehenden Ansprüche, wobei ein innerer Teil des Basisteils (3; 103; 203), beispielsweise durch Gießen oder Extrusion, in einer Wabenstruktur (110; 210) hergestellt ist.

Revendications

1. Bollard de trafic non fixé (1 ; 101 ; 201) comprenant une partie verticale allongée (2 ; 102 ; 202) et une partie de base (3 ; 103 ; 203) agencée pour être placée sur la surface sous-jacente,
la partie verticale (2 ; 102 ; 202) étant agencée pour être montée de manière amovible sur la partie de base (3 ; 103 ; 203) depuis le côté supérieur de celle-ci,
la partie verticale (2 ; 102 ; 202) étant agencée pour être montée sur la partie de base (3 ; 103 ; 203) en faisant pénétrer une extrémité inférieure de la partie verticale (2 ; 102 ; 202) dans une ouverture dans la partie de base (3 ; 103 ; 203) avant de faire tourner la partie verticale (2 ; 102 ; 202) par rapport à la partie de base (3 ; 103 ; 203) pour verrouiller la partie verticale (2 ; 102 ; 202) et la partie de base (3 ; 103 ; 203) l'une par rapport à l'autre,
l'ouverture dans la partie de base (3 ; 103 ; 203) comprenant un trou traversant (104 ; 204) se poursuivant totalement à travers la partie de base (3 ; 103 ; 203) dans une direction, qui, lorsque le bollard de traffic (1 ; 101 ; 201) est en cours d'utilisation, est sensiblement verticale,
caractérisé en ce que
la partie verticale (2 ; 102 ; 202) et la partie de base (3 ; 103 ; 203) sont agencées de sorte qu'une ou plusieurs parties de base supplémentaires (3 ; 103 ; 203) puissent être montées autour de la partie verticale (2 ; 102 ; 202) sans être fixées à celle-ci en les disposant avec leurs trous traversants autour de l'extrémité supérieure de la partie verticale (2 ; 102 ; 202) et en les faisant glisser vers le bas sur la partie verticale (2 ; 102 ; 202) jusqu'à ce qu'elles reposent sur la partie de base (3 ; 103 ; 203), sur laquelle la partie verticale (2 ; 102 ; 202) est verrouillée.

2. Bollard de trafic (1 ; 101 ; 201) selon la revendication 1, dans lequel la partie verticale (2 ; 102 ; 202) et la partie de base (3 ; 103 ; 203) sont agencées de sorte que la partie verticale (2 ; 102 ; 202) puisse également être montée sur la partie de base (3 ; 103 ; 203) depuis le côté inférieur de celle-ci.

3. Bollard de trafic (101) selon la revendication 1 ou 2, dans lequel au moins l'extrémité inférieure de la partie verticale (102) est formée comme un cylindre circulaire pourvu de deux brides de verrouillage (105) ou plus faisant saillie depuis l'extrémité inférieure de celui-ci dans des directions orientées au moins en partie en direction opposée de l'axe longitudinal de la partie verticale (102), c'est-à-dire en direction du côté depuis la partie verticale (102) lorsque le bollard de trafic (101) est en cours d'utilisation et
dans lequel l'ouverture dans la partie de base (103) comprend un trou traversant essentiellement circulaire (104) avec une pluralité d'encoches similairement traversantes (106) disposées le long du bord de celui-ci, correspondant à la partie verticale (102) avec ses brides de verrouillage (105) de telle sorte que l'extrémité inférieure de la partie verticale (102) avec les brides de verrouillage puisse être insérée à travers le trou circulaire (104) avec les encoches (106) et mise en rotation par rapport à la partie de base (103) vers une orientation, dans laquelle elle ne peut pas être tirée de nouveau hors de la partie de base.

4. Bollard de trafic (201) selon la revendication 1 ou 2, dans lequel au moins l'extrémité inférieure de la partie verticale (202) est formée comme un cylindre elliptique pourvu d'une fente de verrouillage (205) dans le cylindre elliptique dans l'un ou les deux de ses côtés présentant le plus petit rayon de courbure et près de l'extrémité inférieure de celui-ci et
dans lequel l'ouverture dans la partie de base (203) comprend un trou traversant (204) avec une ou plusieurs brides de verrouillage (206) faisant saillie dans le trou traversant (204) dans un ou deux côtés opposés de celle-ci, de sorte que l'extrémité inférieure de la partie verticale (202) puisse être entrée dans le trou (204) et mise en rotation par rapport à la partie de base (203) vers une orientation, les brides de verrouillage (206) de la partie de base (203) pénétrant dans les fentes de verrouillage (205) de la partie verticale (202) de sorte qu'elle ne puisse pas être tirée de nouveau hors de la partie de base (203).

5. Bollard de trafic (1 ; 101 ; 201) selon l'une quelconque des revendications précédentes, dans lequel la partie verticale (2 ; 102 ; 202) est pourvue d'un ou plusieurs indicateurs réflecteurs (7), par exemple sous la forme d'une ou plusieurs pièces réfléchissantes de bande disposées autour de la partie verticale (2 ; 102 ; 202).

6. Bollard de trafic (1 ; 101 ; 201) selon l'une quelconque des revendications précédentes, dans lequel la partie verticale (2 ; 102 ; 202) est pourvue d'une ou plusieurs paires d'ouvertures traversantes opposées (8 ; 108 ; 208) pour laisser passer un ruban barrière ou analogue à travers la partie verticale (2 ; 102 ; 202).

7. Bollard de trafic (1 ; 101 ; 201) selon l'une quelconque des revendications précédentes, dans lequel la partie de base (3 ; 103 ; 203) est pourvue d'une ou

plusieurs poignées (109 ; 209) agencées de sorte que la partie de base puisse facilement être soulevée du sol.

8. Bollard de trafic (1 ; 101 ; 201) selon l'une quelconque des revendications précédentes, dans lequel une partie interne de la partie de base (3 ; 103 ; 203) est produite, par exemple par moulage ou extrusion, en une structure en nid d'abeilles (110 ; 210).

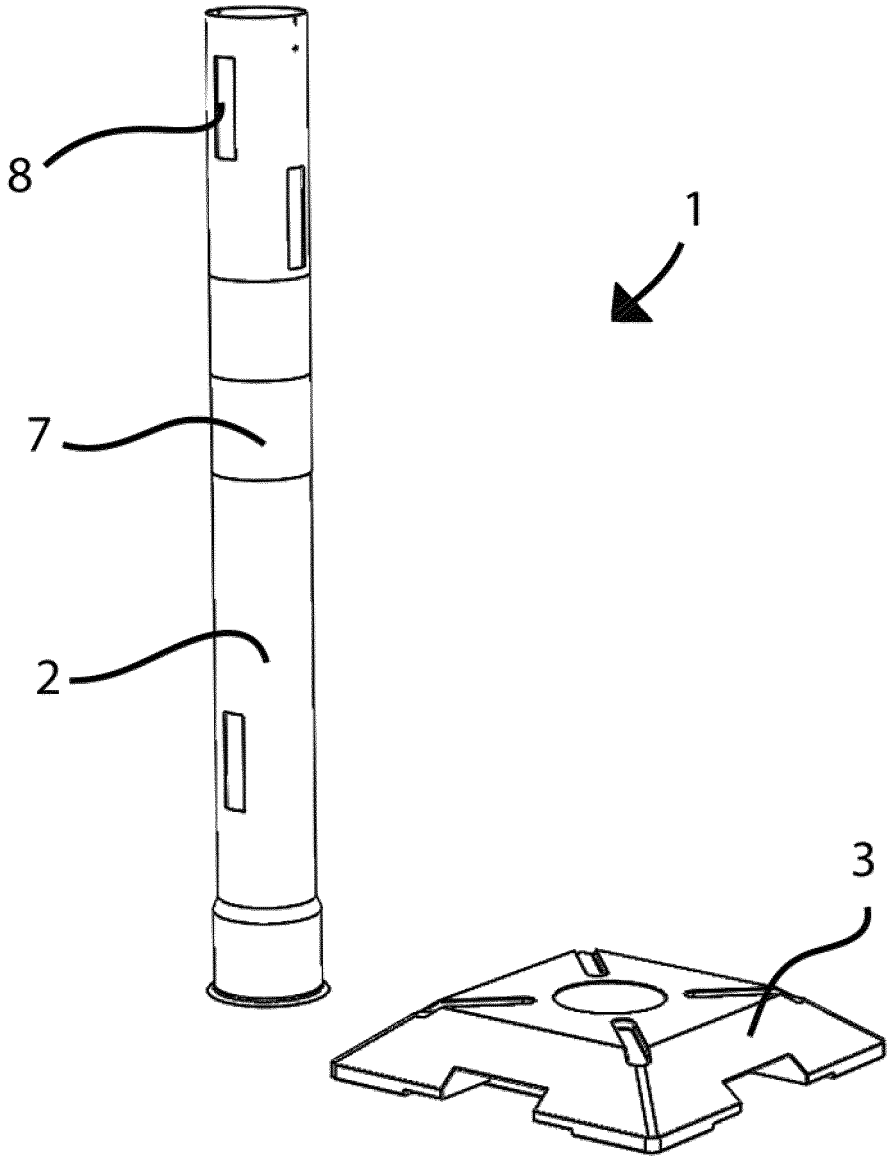


Fig. 1a

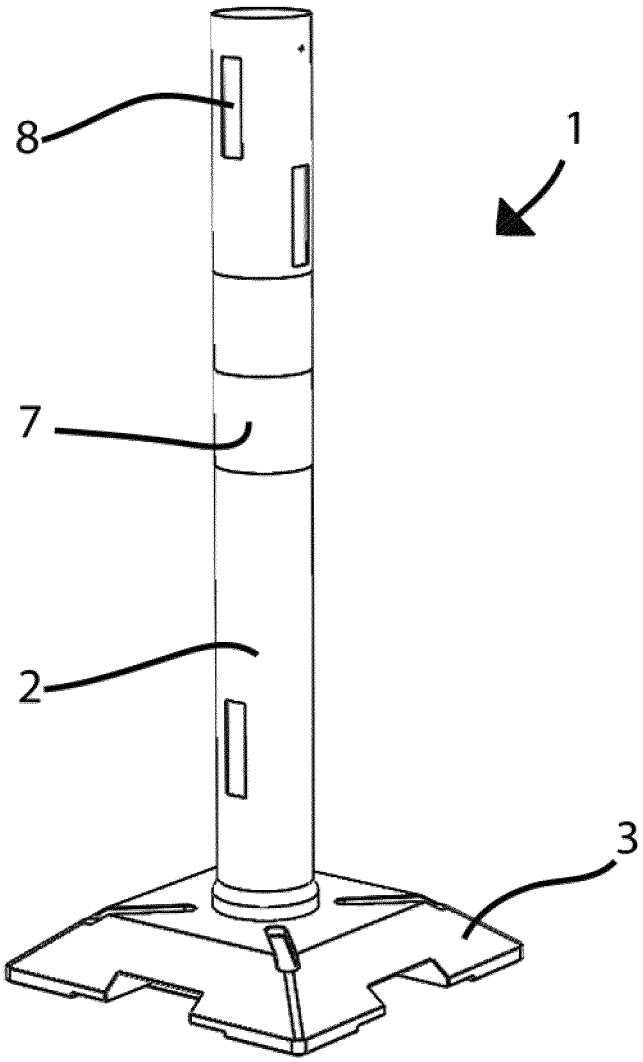


Fig. 1b

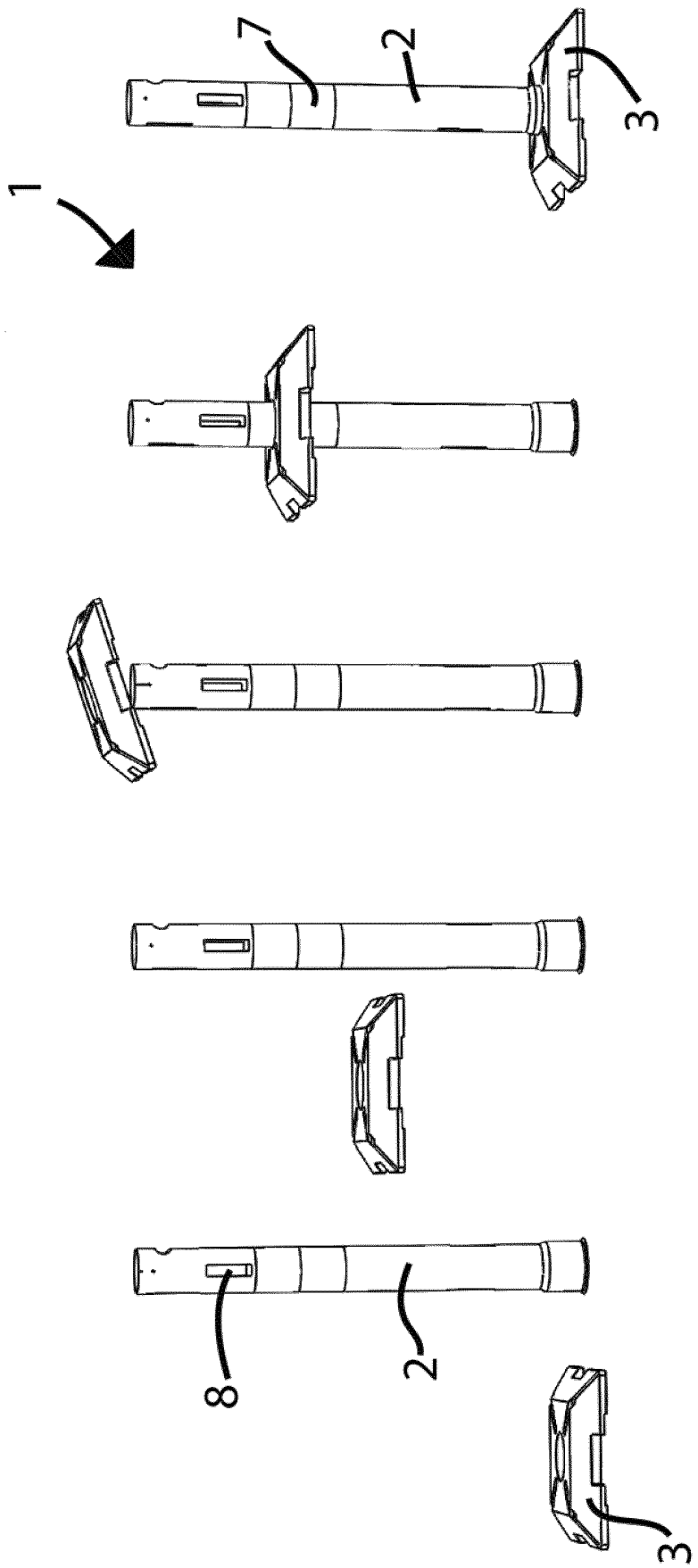


Fig. 2

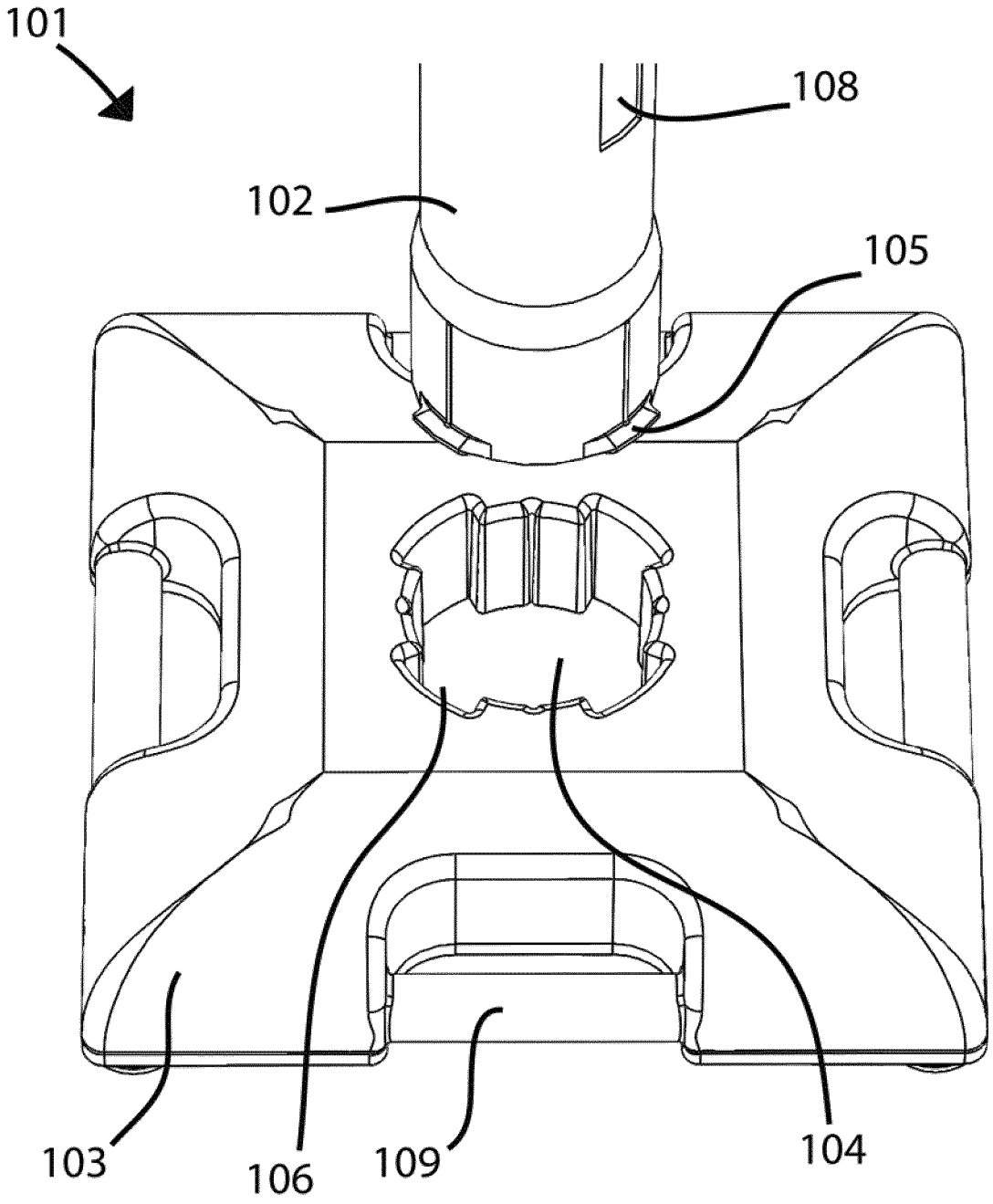


Fig. 3a

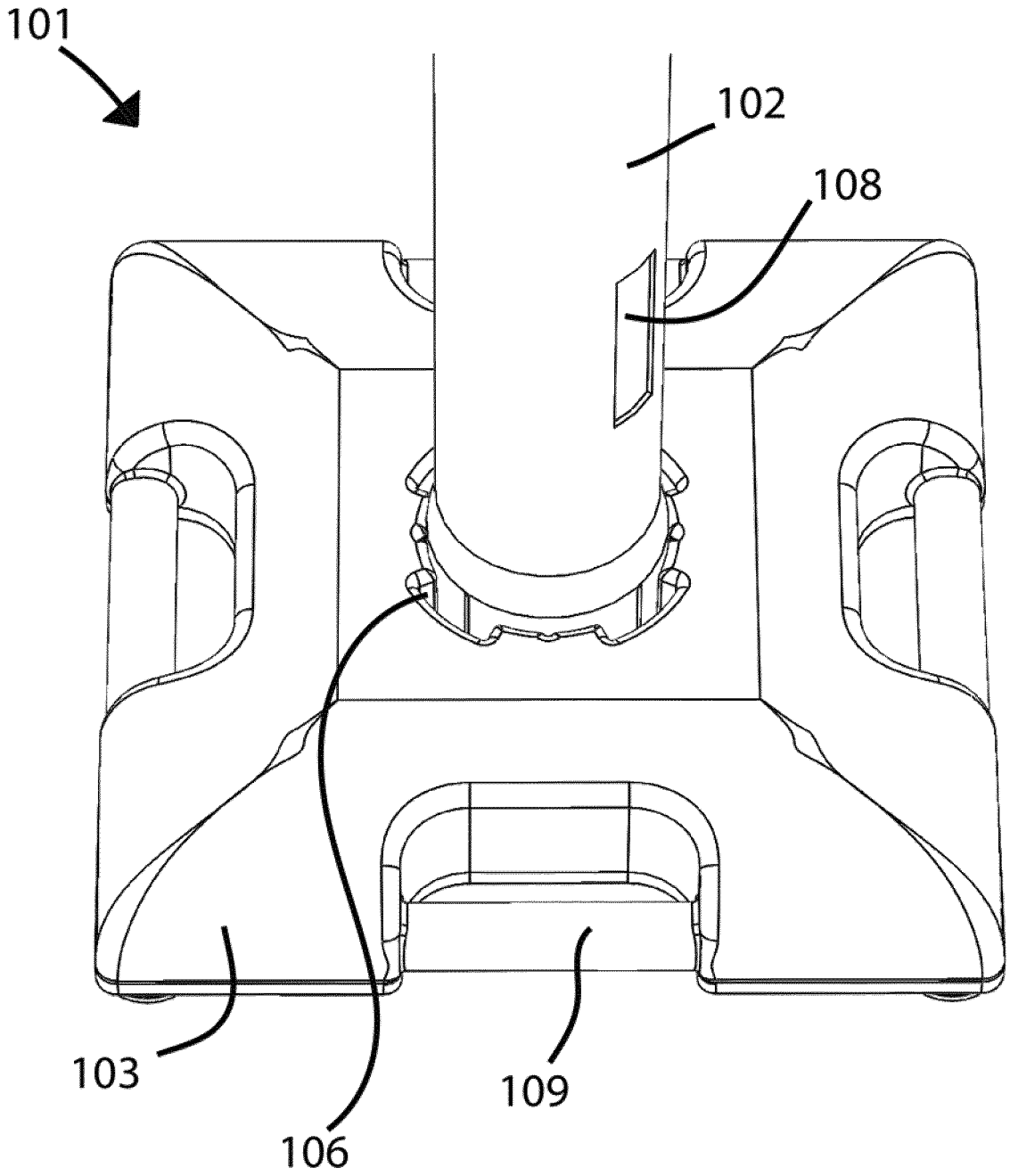


Fig. 3b

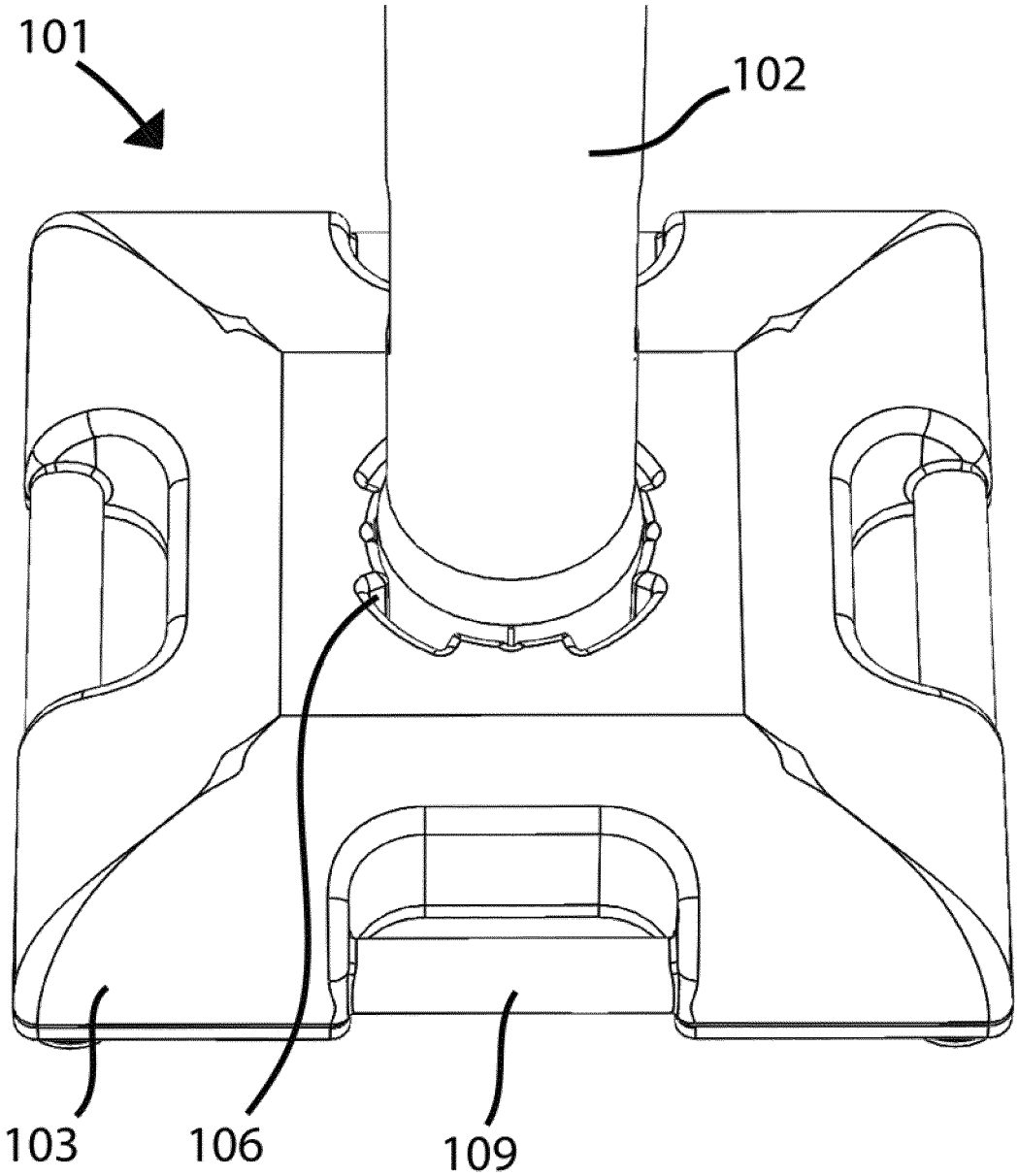


Fig. 3c

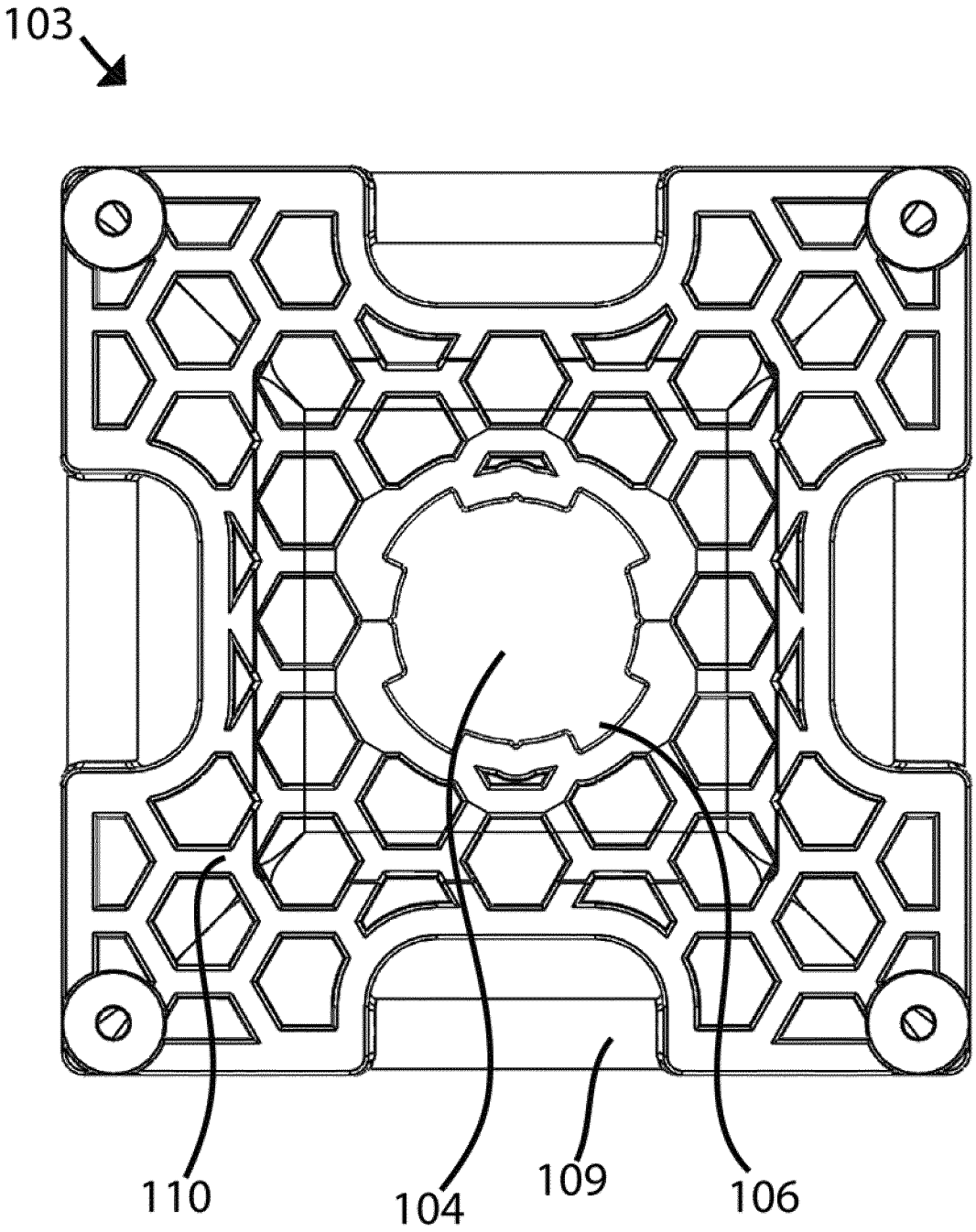


Fig. 4a

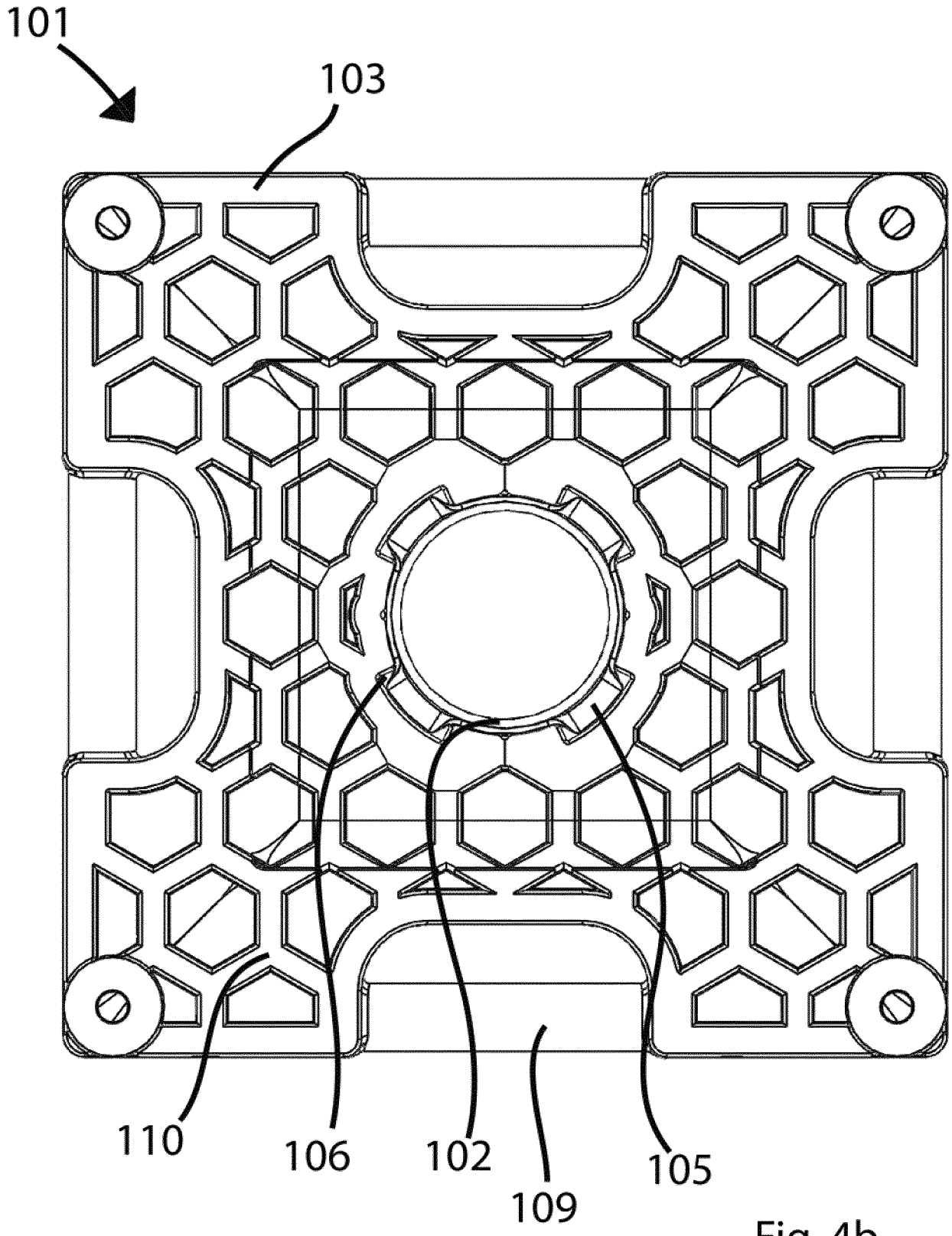


Fig. 4b

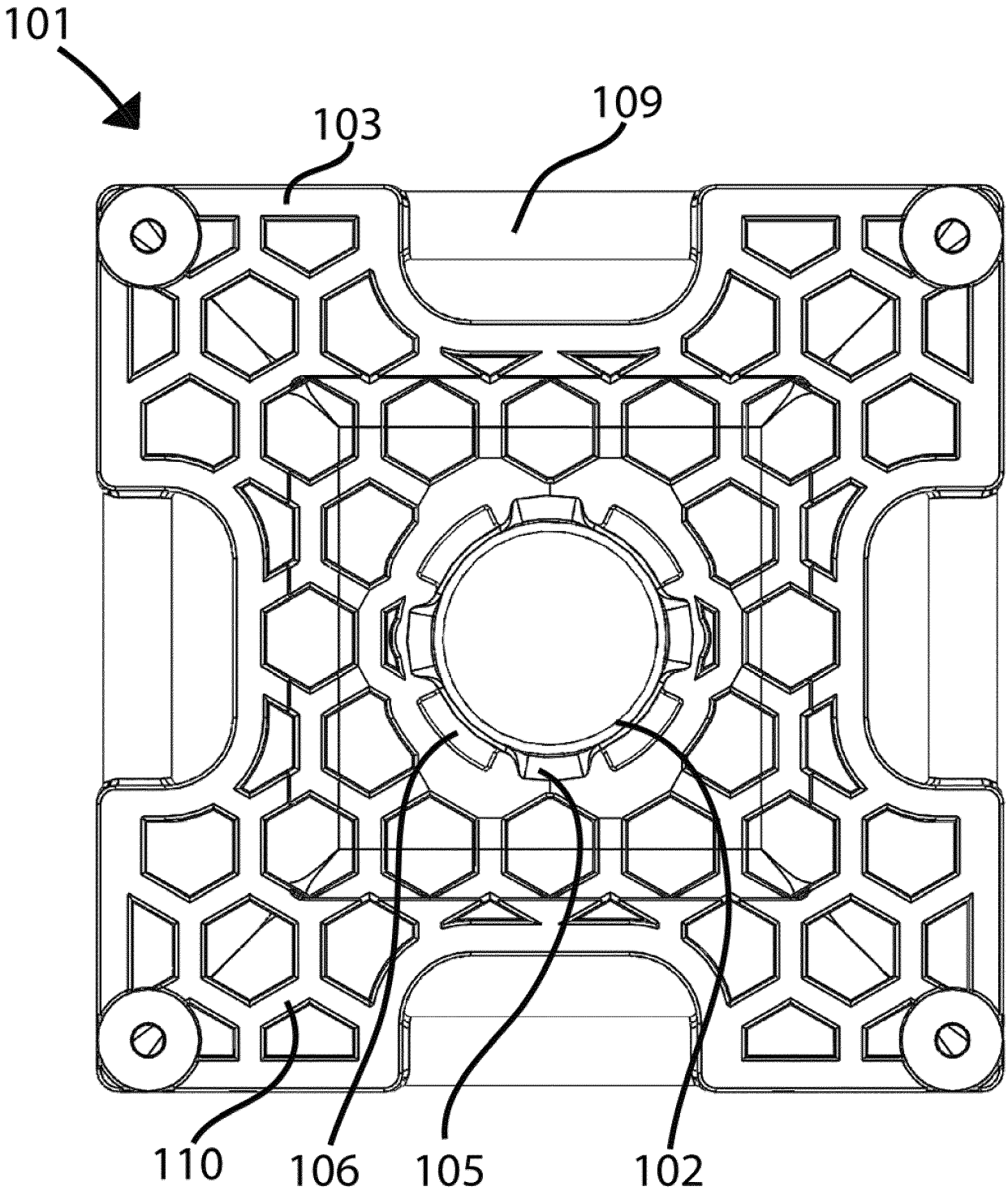


Fig. 4c

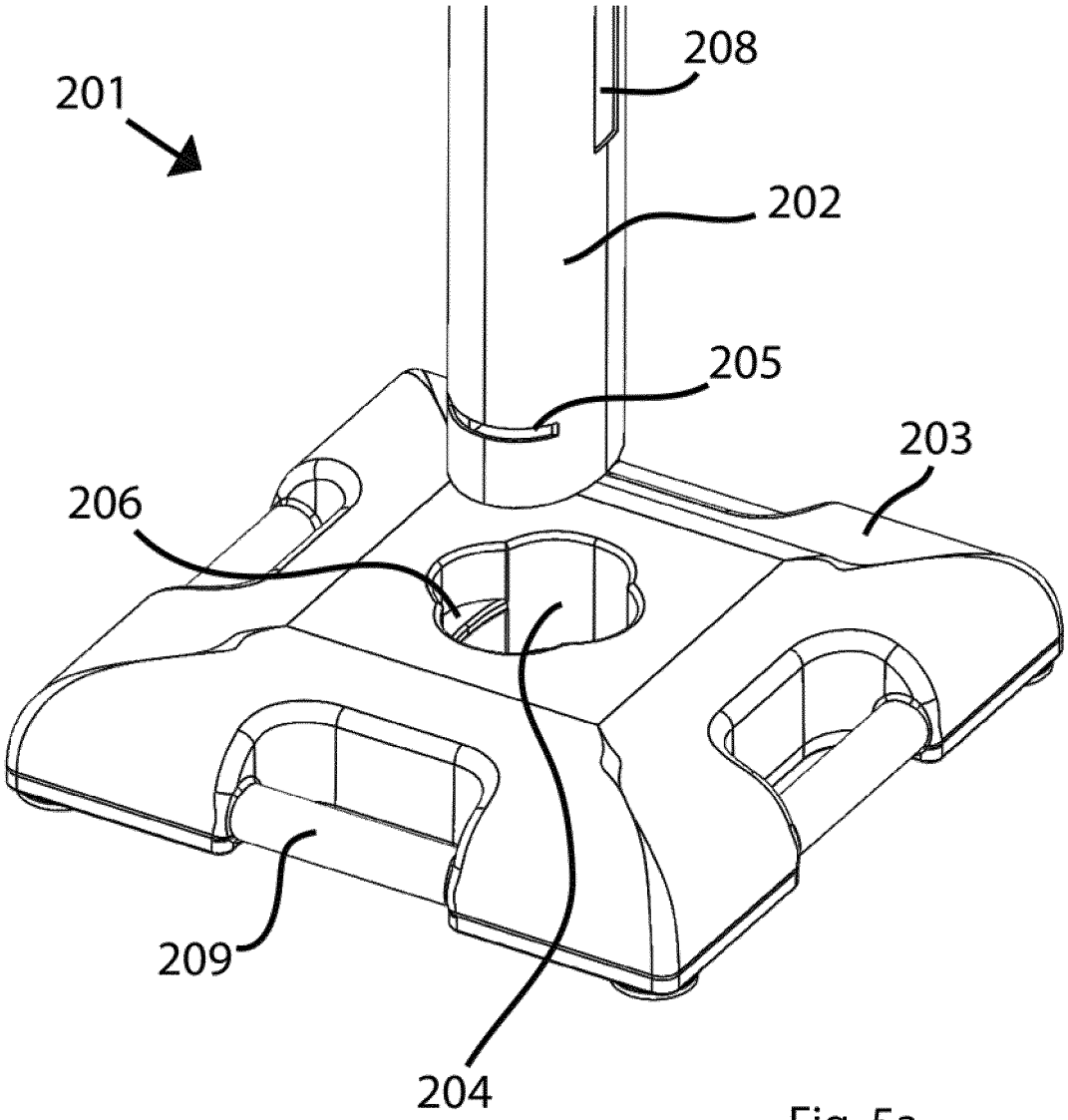


Fig. 5a

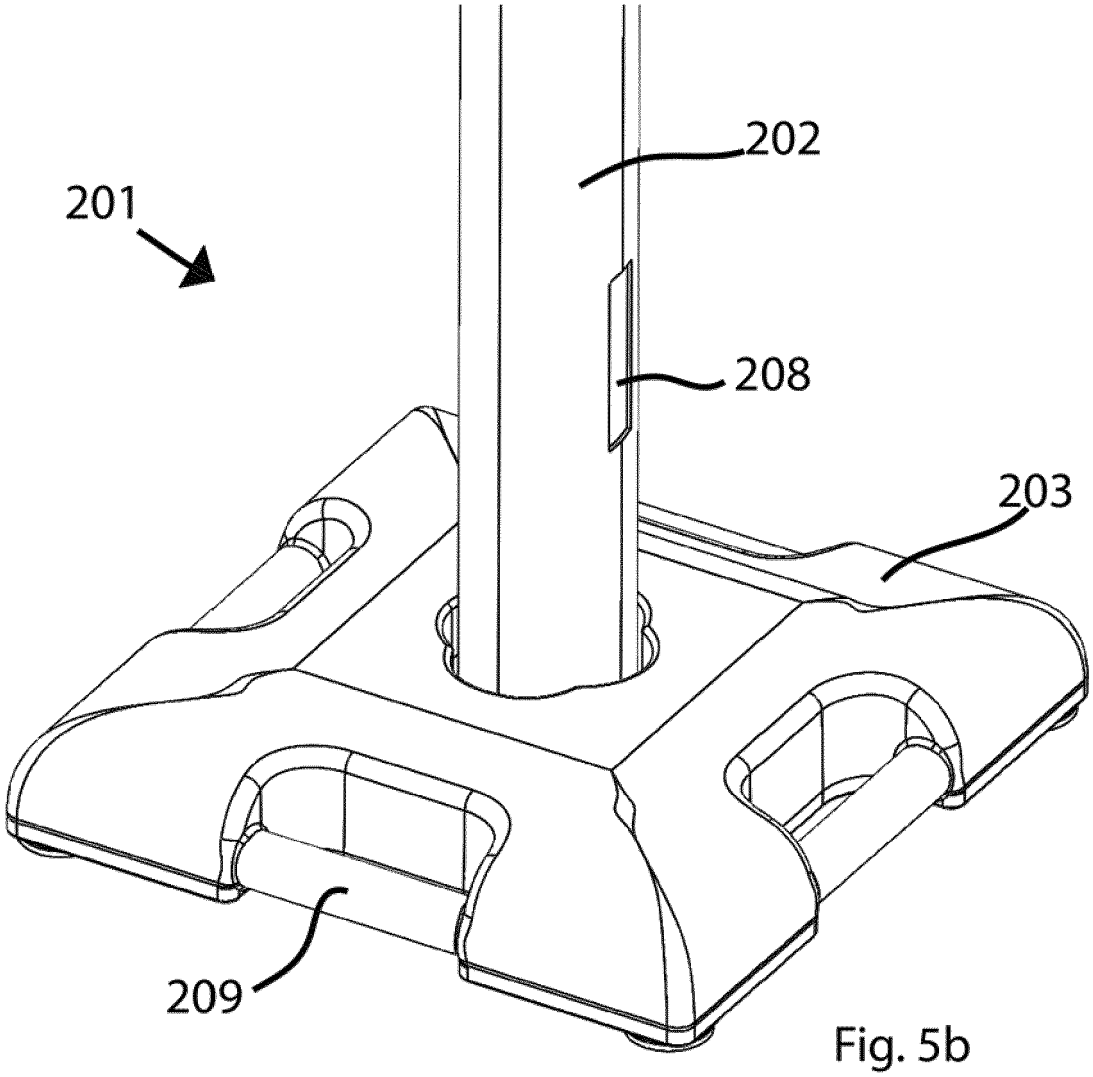


Fig. 5b

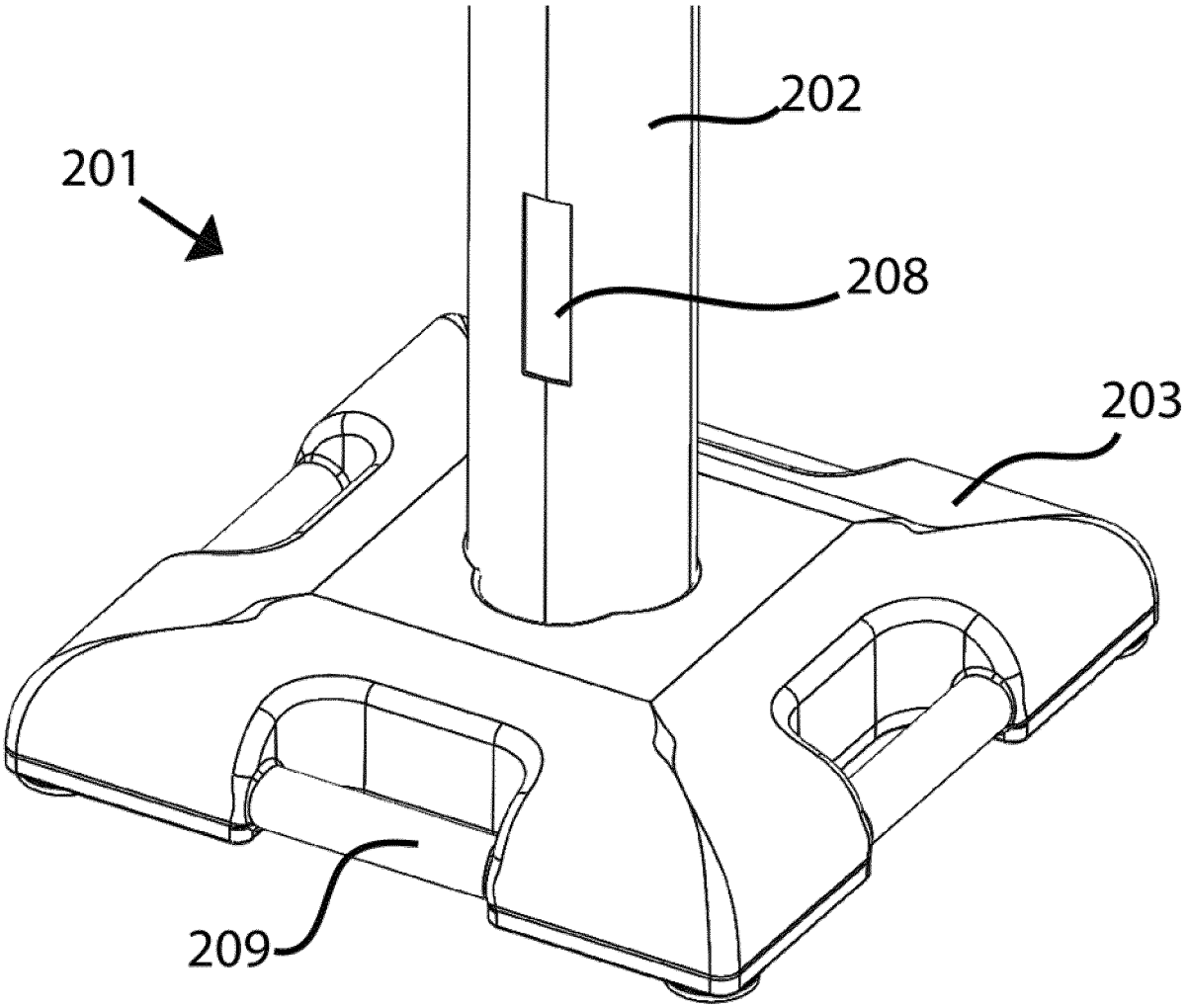


Fig. 5c

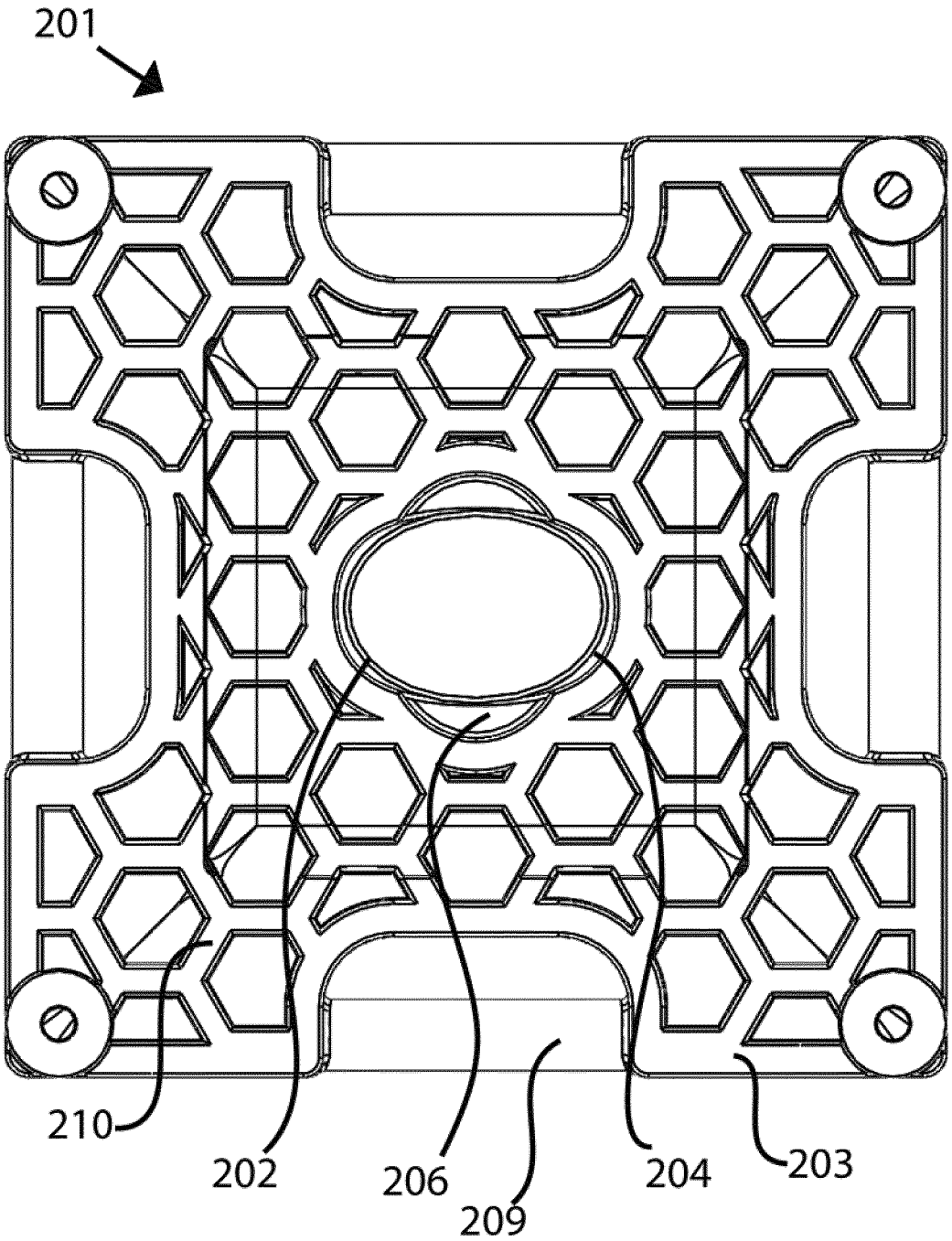


Fig. 6a

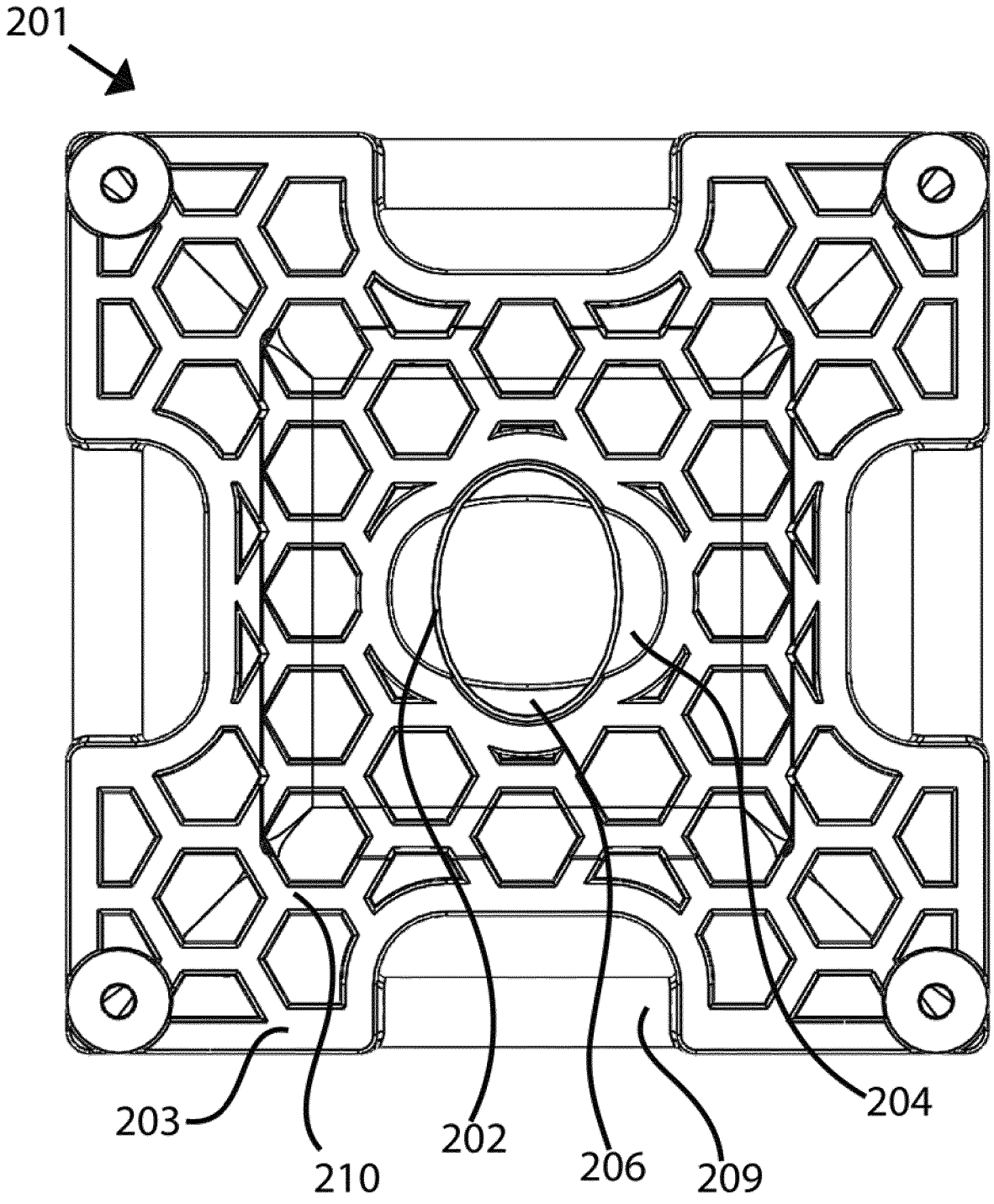


Fig. 6b

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 6128600 B **[0004]**
- GB 2296521 A **[0006]**
- GB 875635 A **[0006] [0011]**
- EP 0355440 A1 **[0006] [0011]**
- GB 2198770 A **[0006] [0011]**
- DE 102007029101 A1 **[0006] [0011]**