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(71) Applicant: **Sammic, S.L.**
20720 Azkoitia Guipuzcoa (ES)

(72) Inventors:
- **Blazquez Blazquez, Carlos**
  20720 Azkoitia (ES)
- **Agirrezabal Oteiza, Gorka**
  20720 Azkoitia (ES)

(74) Representative: **Izquierdo Blanco, Maria Alicia**
Acopat ID
General Salazar, 10
48012 Bilbao (ES)

(54) MULTI-PROFILE REMOVABLE MIXER SUPPORT

(57) Removable multi-profile mixer support (1) comprised of a horizontal rod (2) that has a joint assembly (3) at one end that can be linked to the removable mixer arm, determining the theoretical axis at its center of the same, a wedge protrusion (5) transverse to the horizontal rod (2), a central support protrusion (6) of lower height, and at the other end a handle (7) transverse to the rod (2) that incorporates a small protrusion (7a) in the angle of attachment to the rod and having all the protrusions (5, 6, 7a) and the handle (7) an inclined face that forms an acute angle with the theoretical axis of the removable mixer arm.

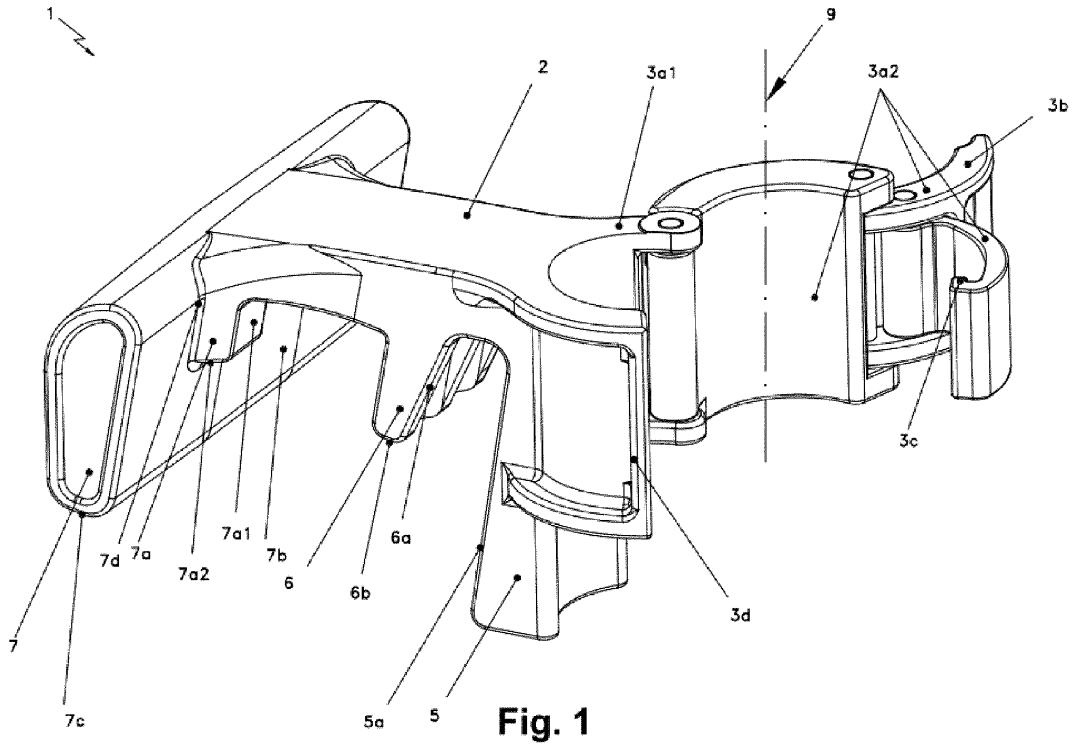

Fig. 1

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Description

Field of the invention

[0001] This invention relates to a multi-profile removable mixer support. More specifically, it refers to a removable multi-profile mixer support for general use in the field of professional kitchens structured on the basis of a horizontal rod that will serve as a connection between the joint assembly and the handle.

[0002] The supports are generally used in professional kitchens to hold numerous tools, such as, for example, to hold mixer arms, emulsifiers, or mincers to pots, pans, built-in pans or electric heating machines, in which said tools are large and heavy compared to those used in the domestic environment and, as they are in a professional kitchen environment, they must be used for long periods of time. For example, for the preparation of a cream in a volume of up to 100 liters, more than 2 hours of work are estimated for the kitchen operator holding the mixer by hand. For this reason, having a versatile and ergonomic multi-profile mixer support that can be adapted to a multiplicity of contours and sizes of these professional kitchen containers and allowing the fastening and support of this element on the pots or pans and the rapid extraction of the mixer arm is very relevant and allows injuries such as tendonitis and/or sprains in operators to be avoided.

Prior state of the art

[0003] In the current state of the art, supports are known that only adapt to a single type of profile of pot, pan, built-in casserole or electric heating machine, this being a clear disadvantage, since there are a multiplicity of geometries and sizes of industrial containers, around 40 different profiles, involving an enormous cost and amount of time, the selection of the appropriate fastening element, all of which would require the purchase of individual supports for each type of existing profile. The support of this invention provides a solution to this situation due to its adaptability to the number of existing profiles. On the other hand, there are supports that use screw systems to attach the arm of the mixer to the support, this being an aspect that is not recommended since the extraction of the arm from the mixer is difficult, increasing the times in the kitchen, since additional tools must be used, and this makes cleaning the different elements difficult, which is a crucial aspect in the food sector. These systems are at a clear disadvantage with respect to this invention, as the invention incorporates an ergonomic and versatile joint assembly by means of which the arm of the mixer is attached, facilitating its extraction and cleaning without the use of additional tools and by means of an opening system that is easy and fast to close.

Explanation of the invention and advantages

[0004] Compared to the state of the art described above, this invention has as its object a removable multi-profile mixer support comprised of a horizontal rod that has at one end a joint assembly that can be linked to the removable mixer arm, placing the theoretical axis thereof at its center, a wedge protrusion transverse to the horizontal stem, a central support protrusion of a lesser height, and at the other end a handle transverse to the stem incorporating a small protrusion at the angle of attachment to the stem and all the protrusions and the handle having an inclined face that forms an acute angle with the theoretical axis of the removable arm of the mixer.

[0005] First, in order to specify the concepts used in this invention, it should be indicated that, when reference is made to the theoretical axis of the removable arm of the mixer, reference is being made to the imaginary line representing the position and orientation in space of the removable arm of the mixer inserted in the ring of the joint assembly.

[0006] Because the wedge protrusion transverse to the horizontal stem has an inclined face, the theoretical axis of the removable arm of the mixer is always oriented to the center of the pot, pan, built-in casserole or electric heating machine in which the multi-profile removable mixer support is being incorporated, which allows the resulting mixture between the various ingredients introduced in these containers to be as homogeneous and optimal as possible as well as a greater effectiveness of the mixer. Furthermore, because the central support protrusion is lower in height than the wedge protrusion, the support is capable of being housed in the different profiles of the containers, providing versatility to this support. In addition, the handle transverse to the stem can be used both so that the user grasps the support with the mixer attached by means of the joint assembly and supporting its weight on the protrusions of the support, or so that the support with the incorporated mixer can be supported, without user action, on the container for a momentary break therefrom; and avoiding in both cases the muscular fatigue that usually appears when this type of professional kitchen tools is held for a long period of time. In addition, thanks to the fact that the angle formed by one of the faces of all protrusions and the handle with the theoretical axis of the removable arm of the mixer is an acute angle, they can be inserted into the cavities originating from the different protrusions and handle, container profiles of different heights and widths with a correct adaptability thereto, without causing gaps in the support fastening that would lead to an unstable use of the kitchen tool. This would not be possible if the face of all the protrusions and the face of the handle were parallel to the theoretical axis of the removable arm of the mixer. In this case, only a single type of profile with a given geometry and width could be inserted.

[0007] Another advantageous characteristic of this invention is that the wedge protrusion is higher than the height of the handle. This allows the insertion of the wedge protrusion in pots or pans embedded in the hob at a sufficient depth to avoid the unwanted exit of the

support, as well as for the handle to also serve as a support point in different profiles of these containers, increasing the versatility of the support and saving costs due to the fact that it is not necessary to have supports of a specific configuration for each profile or container contour.

[0008] Another advantageous aspect of this invention is that the central support protrusion is of a height greater than the height of the small auxiliary protrusion of the handle. In this manner, even more versatility is achieved, as there can be support on the inclined face of the small protrusion and/or its auxiliary support face of the handle for the stepped profiles or contours that some containers may have. This allows the removable multi-profile mixer support to be applicable to 90% of pots, pans, built-in casseroles or electric heating machines of the type used in professional kitchens

[0009] Lastly, another additional advantage of the removable multi-profile mixer support is that the joint assembly attached to the removable mixer arm consists of a ring with a fixed sector and three articulated sectors, one of which contains an unlocking tab capable of housing the closing rib in the locking groove. In this manner, this invention contains a joint assembly that allows the locking/closing and unlocking/opening of the tool holder (mixer), allowing it to be rapidly extracted, saving assembly time and facilitating the cleaning of the different elements, this being an essential aspect in the food preparation sector.

Drawings and references

[0010] In order to better understand the nature of the invention, an arrangement is presented in the attached drawings that is merely illustrative and not limiting.

Figure 1 depicts a perspective view of the removable multi-profile mixer support (1) without the removable mixer arm (4) and therefore with the joint assembly (3) open, in which it is observed that the articulated sectors (3a2) are released from the fixed sector (3a1) of the ring (3a), since the unlocking tab (3b) is in the unlocking/opening position and the closing rib (3c) is not housed in the unlocking groove (3d). The theoretical axis (9) of the removable arm is observed from the dotted line in the center of the ring (3a).

Figure 2 depicts a perspective view of the removable multi-profile mixer support (1) without the removable mixer arm (4) but with its theoretical axis (9) and therefore the joint assembly in an intermediate locking/closing position, in which the articulated sectors (3a2) released from the fixed sector (3a1) of the ring (3a) are observed, since the unlocking tab (3b) is in the unlocking/opening position and the closing rib (3c) in a position close to being lodged in the unlocking groove (3d).

Figure 3 depicts a perspective view of the removable multi-profile mixer support (1) without the removable mixer arm (4) but with its theoretical axis (9) and with the joint assembly (3) in the complete locking/closing position, in which the overlapping articulated sectors (3a and 3b) are observed, since the unlocking tab (3b) is overlapped on the other articulated sector (3a2) and the closing rib (3c) is housed in the unlocking groove (3d).

Figures 4 to 11 depict the use of the removable multi-profile mixer support (1) in different geometries and profiles of containers (8) that are common in professional kitchens.

Figure 4 depicts a longitudinal section view of the fastening of the removable mixer arm (4), with the joint assembly (3) in the locking/closing position and incorporating the mixer arm (4), and oriented towards the center of the container by the inclination of the wedge protrusion (5), attached to the removable multi-profile mixer support (1) that rests on; the handle (7) with its auxiliary support face (7c) and the inclined face (6a) of the central support protrusion (6) in the contour of the container profile (8).

Figure 5 depicts a longitudinal section view of the fastening of the removable mixer arm (4), with the joint assembly (3), in the locking/closing position and incorporating the mixer arm (4), and oriented towards the center of the container by the inclination of the wedge protrusion (5), attached to the removable multi-profile mixer support (1) that rests on; the inclined face (5a) of the wedge protrusion (5) in the contour of the container profile (8).

Figure 6 depicts a longitudinal section view of the fastening of the removable mixer arm (4), with the joint assembly (3), in the locking/closing position and incorporating the mixer arm (4), and oriented towards the center of the container by the inclination of the wedge protrusion (5), attached to the removable multi-profile mixer support (1) that rests on; the central support protrusion (6), the inclined face (7a1) of the small protrusion (7a) of the handle (7) in the contour of the container profile (8).

Figure 7 depicts a longitudinal section view of the fastening of the removable mixer arm (4), with the joint assembly (3), in the locking/closing position and incorporating the mixer arm (4), and oriented towards the center of the container by the inclination of the wedge protrusion (5), attached to the removable multi-profile mixer support (1) that rests on; the inclined face (7a1) and the auxiliary support face (7a2) of the small protrusion (7a) and the inclined face (7b) of the handle (7) in the contour of the container profile (8).

Figure 8 depicts a longitudinal section view of the fastening of the removable mixer arm (4), with the joint assembly (3) in the locking/closing position and incorporating the mixer arm (4), and oriented towards the center of the container by the inclination of the wedge protrusion (5), attached to the removable multi-profile mixer support (1) that rests on; the inclined face (5a) of the wedge protrusion (5) and the auxiliary support face (7c) of the handle (7) in the contour of the container profile (8).

Figure 9 depicts a longitudinal section view of the fastening of the removable mixer arm (4), with the joint assembly (3), in the locking/closing position and incorporating the mixer arm (4), and oriented towards the center of the container by the inclination of the wedge protrusion (5), attached to the removable multi-profile mixer support (1) that rests on; the central support protrusion (6), the inclined face (7a1) of the small protrusion (7a) of the handle (7) in the contour of the container profile (8).

Figure 10 depicts a longitudinal section view of the fastening of the removable mixer arm (4), with the joint assembly (3), in the locking/closing position and incorporating the mixer arm (4), and oriented towards the center of the container by the inclination of the wedge protrusion (5), attached to the removable multi-profile mixer support (1) that rests on; the auxiliary support face (7c) of the handle (7), the inclined face (6a) of the central support protrusion (6) and the inclined face (5a) of the wedge protrusion (5) in the contour of the profile of container (8).

Figure 11 depicts a longitudinal section view of the fastening of the removable mixer arm (4), with the joint assembly (3), in the locking/closing position and incorporating the mixer arm (4), and oriented towards the center of the container by the inclination of the wedge protrusion (5), attached to the removable multi-profile mixer support (1) that rests on; the auxiliary support face (7a2) of the small protrusion (7a) of the handle (7), the auxiliary support face (6b) of the central support protrusion (6) and the inclined face (5a) of the wedge protrusion (5) in the contour of the container profile (8).

[0011] The following references are indicated in these figures:

1.-Removable multi-profile mixer support
2.-Horizontal rod
3.-Linking set

- 3a.-Ring
  - 3a1.-Fixed sector
  - 3a2.-Articulated sectors
- 3b.- Unlocking tab
- 3c.-Closure rib
- 3d.-Locking groove

4.-Removable mixer arm
5.-Wedge protrusion
5a.-Inclined face
6.-Central support protrusion

- 6a.- Inclined face
- 6b.- Auxiliary support face

7.-Handle

- 7a.- Small protuberance
  - 7a1.- Inclined face
  - 7a2.- Auxiliary support face
- 7b.- Inclined face
- 7c.- Auxiliary support face
- 7d.- Angle of connection to the stem

8.-Container profile
9.- Theoretical axis of the removable arm of the mixer (4)

Presentation of a preferred embodiment

[0012] Concerning the drawings and references listed above, a preferred mode of execution of the object of the invention is illustrated in the attached drawings, referring to a removable multi-profile mixer support (1) made up of a horizontal rod (2) that has a joint assembly (3) at one end that can be linked to the removable mixer arm (4) determining in its center its theoretical axis (9), a wedge-shaped protrusion (5) transverse to the horizontal stem (1), a central support protrusion (6) of lower height, and at the other end a handle (7) transverse to the stem (2) that incorporates a small protrusion (7a) at the angle of attachment to the stem (7d) and having all the protrusions (5, 6, 7a) and the handle (7) an inclined face that forms an acute angle with the theoretical axis (9) of the removable arm of the mixer (4).

[0013] As can be seen in figure 1, figure 2 and figure 3, the removable arm of the mixer (4) will be oriented to the center of the pot, pan, built-in casserole or electric heating machine, optimizing the use of the mixer when it is incorporated in the joint assembly (3). This advantageous orientation characteristic is possible because the wedge protrusion (5) transverse to the horizontal stem (2) has an inclined face (5a) that determines the angle of action of the removable arm of the mixer (4) when the support is inserted into the container.

[0014] As can be seen in figures 4 to 9, and especially in figures 10 and 11, the removable multi-profile mixer support (1) has the characteristic of versatility that is in such high demand in the professional kitchen field, since

the removable multi-profile mixer support (1) can be housed in the different profiles of the containers (8), thanks to the fact that the central support protrusion (6) is lower in height than the wedge protrusion (5). In addition, it is observed that the handle (7) transverse to the horizontal rod (2) has several advantageous functions, one of which is that it avoids the muscular fatigue for the user that usually appears when holding this type of professional kitchen tools over a long period of time, since the removable multi-profile mixer support (1) with the removable mixer arm (4) can be supported (figure 10) without user action on the container profile (8) for his or her momentary rest. The handle (7) will generally be used for the user to grasp the removable multi-profile mixer support (1) and support it on the removable multi-profile mixer support as can be seen in figures 5, 7 and 11. Moreover, and as can be seen in figures 4 to 11 with the protrusions (5, 6 and 7a) and handle (7), the use of the removable multi-profile mixer support (1) is allowed in numerous different contours and profiles of the container (8) and applicable to different widths of profiles without generating backlash in the attachment of the removable multi-profile mixer support (1) due to the versatility generated by the inclined faces of the protrusions (5, 6 and 7a) and handle (7). This is due to the fact that it is an acute angle, due to the angle (range between 0º and 30º) formed by the face (5a, 6a and 7a1) of all protrusions (5, 6 and 7a) and the handle (7) with the theoretical axis (9) of the removable mixer arm (4).

[0015] For example, in Figure 4 it is observed that by supporting the removable multi-profile mixer support (1) on the container profile (8) with the auxiliary support face (7c) of the handle (7), there can be an application of the auxiliary multi-profile mixer support (1) to a container profile (8) that would be embedded in a worktop.

[0016] Another example of versatility is the one depicted in figure 6, in which it is observed that; the central support protuberance (6) and the inclined face (7a1) of the small protuberance (7a) of the handle (7) are in contact with the entire contour of a type of stepped container profile (8), achieving the application of the auxiliary multi-profile mixer support (1) to multiple container profile geometries (8).

[0017] As can be seen in Figure 10, another additional advantage of this invention is that, because the wedge protrusion (5) is higher than the height of the handle (7), there can be an insertion of the wedge protrusion (5) in profiles of containers (8) belonging to pots or pans embedded in the hob at a depth sufficient to prevent the unwanted exit of the removable multi-profile mixer support (1). And, as can be seen in figure 10, the container profile (8) is inserted between the inclined face (5a) of the wedge protrusion (5) and the inclined face (6a) of the central support protrusion (6), which form an acute angle, allowing the insertion of a multiplicity of container profiles (8) with contours of different width and height. This would not be possible if the faces (5a, 6a and 7a1) of all the protrusions (5, 6, 7a) and the face (7b) of the handle (7) were parallel to the theoretical axis (9) of the removable arm of the mixer (4). In this case, only a single type of container profile (8) with a certain geometry could be introduced. In addition, another additional advantageous aspect is that the handle (7) also serves as a support point, through its auxiliary support face (7c), in different profiles of these containers (8), increasing the versatility and stability of the removable multi-profile mixer support (1) and saving costs because it is not necessary to have several removable multi-profile mixer supports (1) of specific configuration for the different profiles of the containers (8).

[0018] Another advantage of the removable multi-profile mixer support (1) of this invention can be seen in figure 11, which shows the support on the auxiliary support face (7a2) of the small protrusion (7a) of the handle (7) of those complex container profiles (8) that have stepped contours. In this manner, this invention is given greater versatility, allowing the removable multi-profile mixer support (1) to be applicable to 90% of pots, pans, built-in casseroles or electric heating machines used in professional kitchens.

[0019] Lastly, another additional advantage of the removable multi-profile mixer support (1) is that, as can be seen in Figures 1, 2 and 3, this invention contains a joint assembly (3) that allows locking/closing and unlocking/opening of the fastening of the removable mixer arm (4), or any other tool used in professional kitchens, allowing its fast removal, saving time in the incorporation of the removable mixer arm (4) and facilitating the cleaning of the different elements, this being an essential aspect in the food preparation sector. Due to the fact that the joint assembly (3) attached to the removable mixer arm (4) consists of a ring (3a) with a fixed sector (3a1) and three articulated sectors (3a2), one of them containing an unlocking flange (3b) capable of accommodating the closing rib (3c) in the locking groove (3d).

[0020] Variations in materials, shape, size and arrangement of the component elements, described in a non-limiting manner, do not alter the essence of this invention, this being sufficient for it to be reproduced by an expert.

Claims

1. Removable multi-profile mixer support (1) **characterized in that** it is comprised of a horizontal rod (2) that has a joint assembly (3) at one end that can be linked to the removable mixer arm (4), determining the theoretical axis at its center of the same (9), a wedge protrusion (5) transverse to the horizontal stem (1), a central support projection (6) of lower height, and at the other end a handle (7) transverse to the stem (2) that incorporates a small protrusion (7a) in the angle of attachment to the stem (7d) and having all the protrusions (5, 6, 7a) and the handle (7) an inclined face that forms an acute angle with

the theoretical axis (9) of the removable mixer arm (4).

2. Removable multi-profile mixer support (1), according to claim 1, **characterized in that** the wedge protrusion (5) is higher than the height of the handle (7).

3. Removable multi-profile mixer support, according to the previous claims, **characterized in that** the central support protrusion (6) is higher than the height of the small auxiliary protrusion (7a) of the handle (7).

4. Removable multi-profile mixer support (1), according to claim 1, **characterized in that** the joint assembly (3) attached to the removable mixer arm (4) consists of a ring (3a) with a fixed sector (3a1) and three articulated sectors (3a2), one of them containing an unlocking tab (3b) capable of housing the closing rib (3c) in the locking groove (3d).

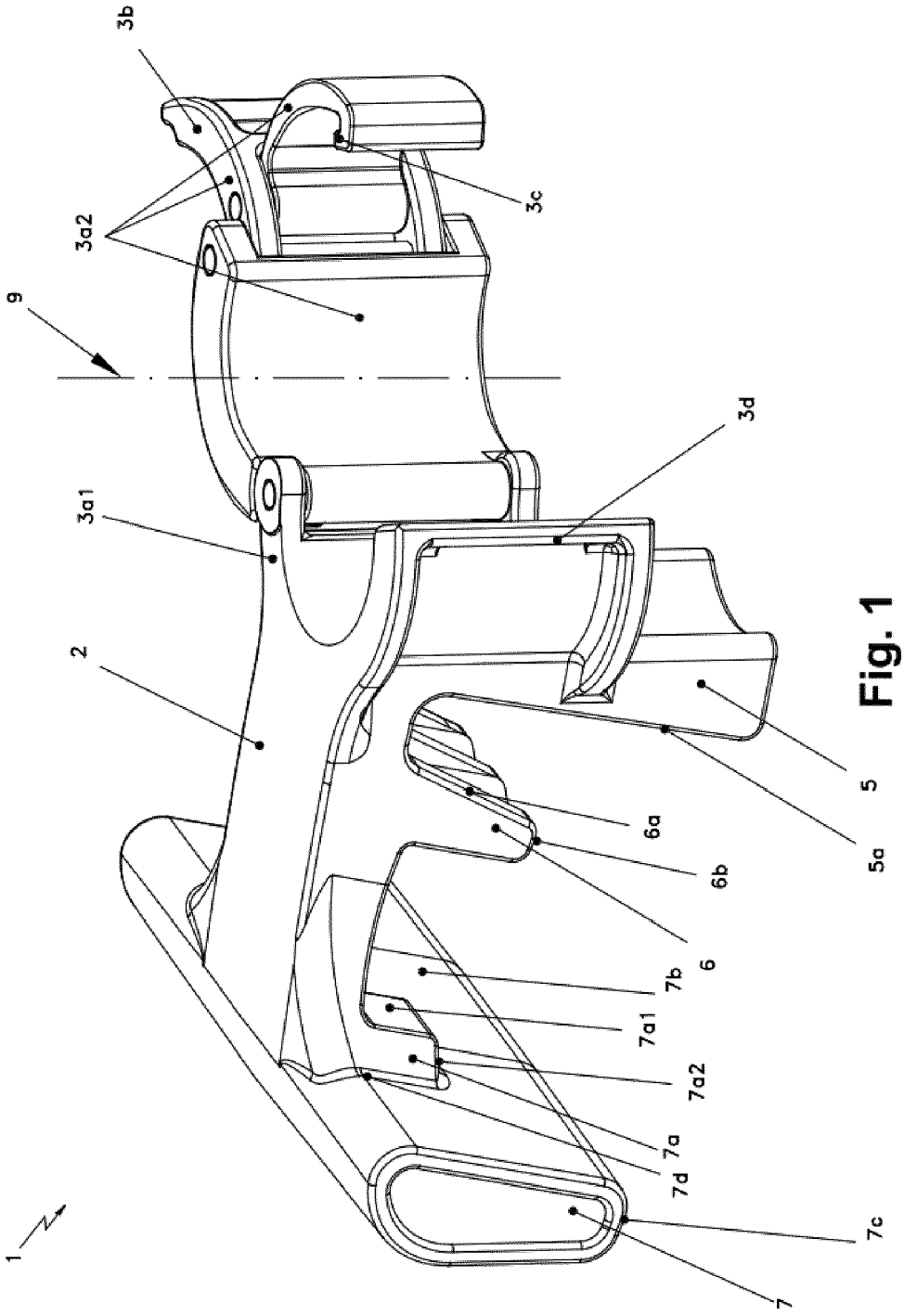

Fig. 1

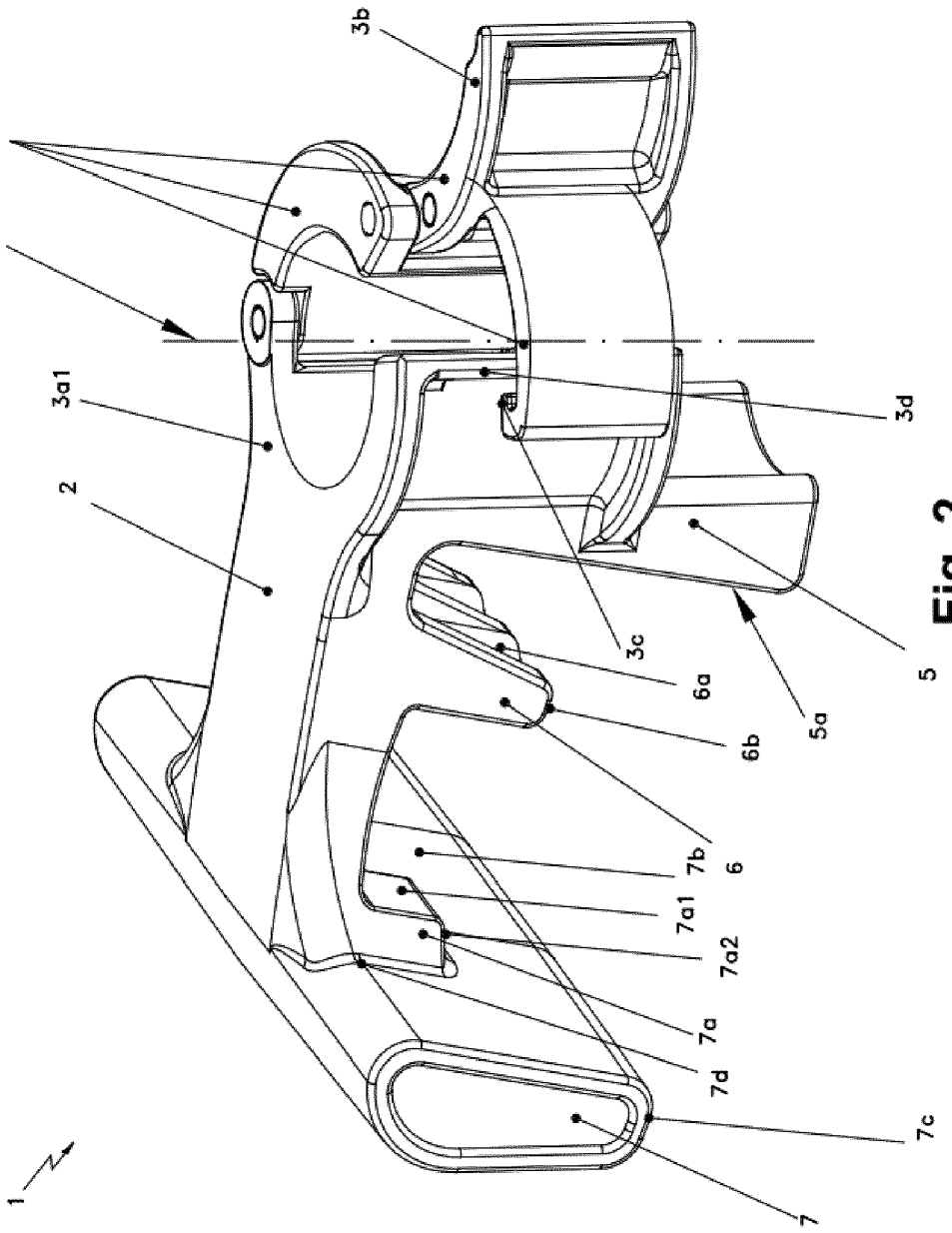

Fig. 2

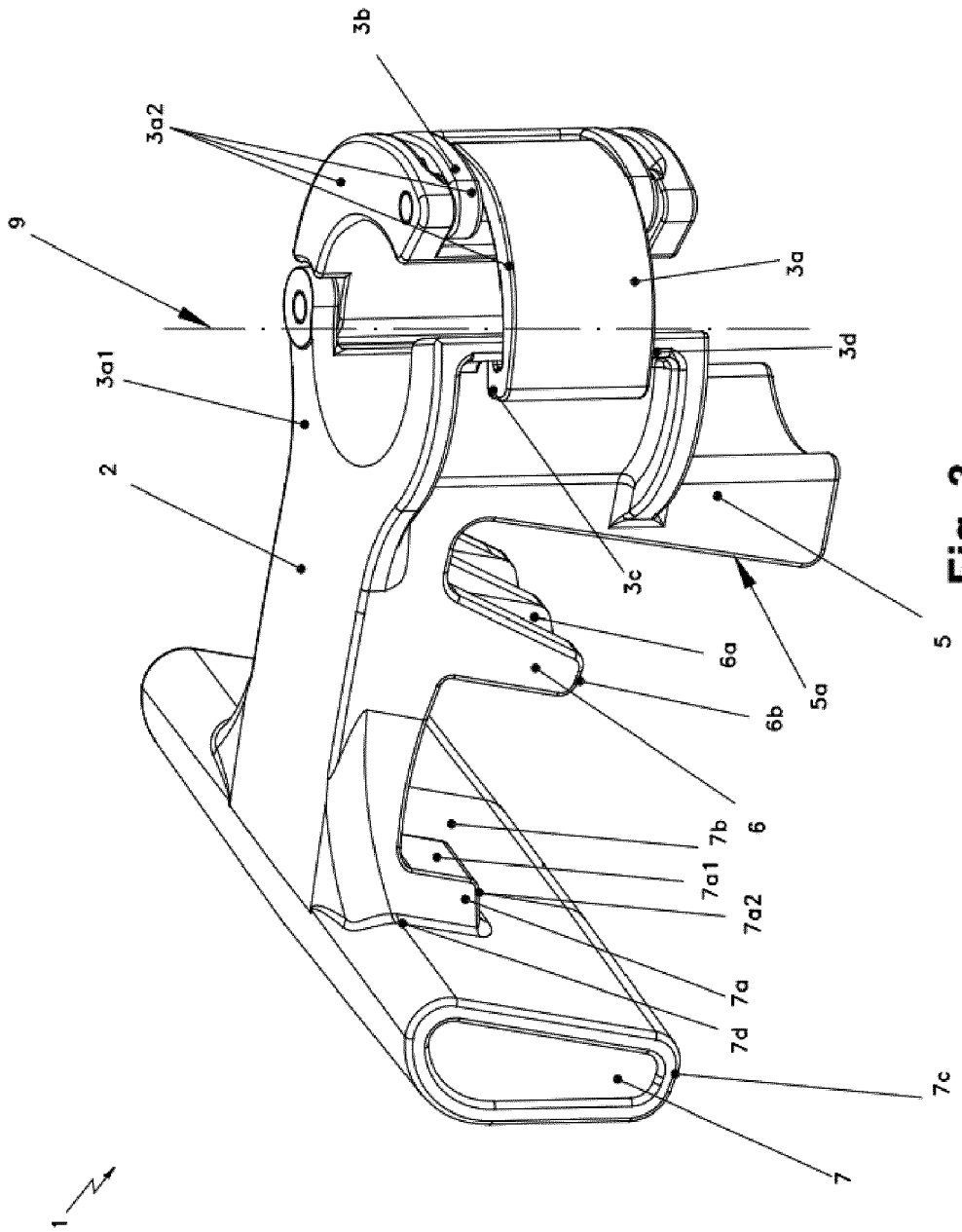

Fig. 3

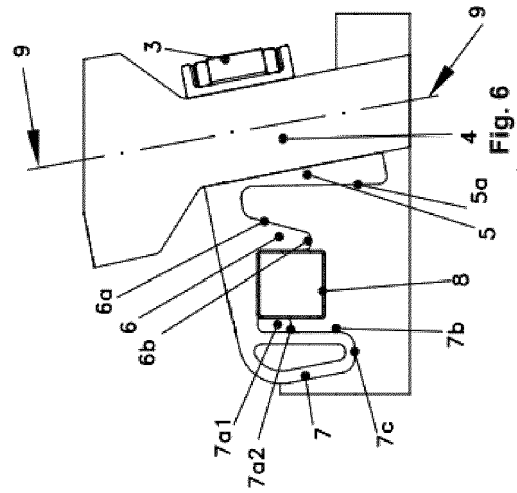

Fig. 6

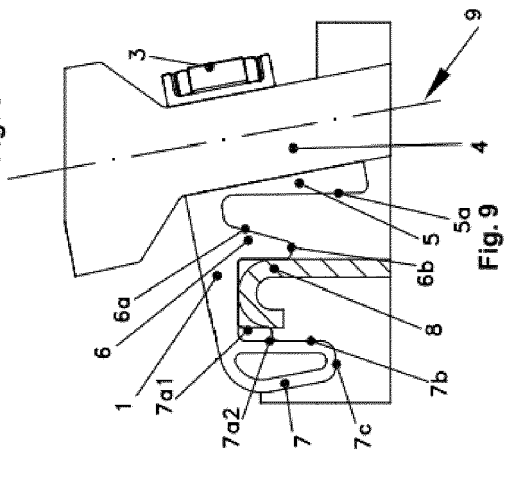

Fig. 9

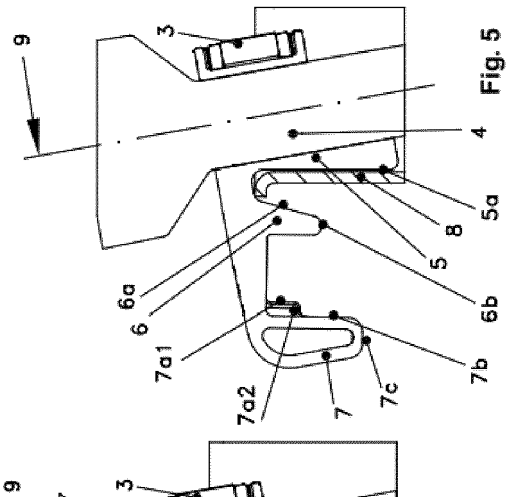

Fig. 5

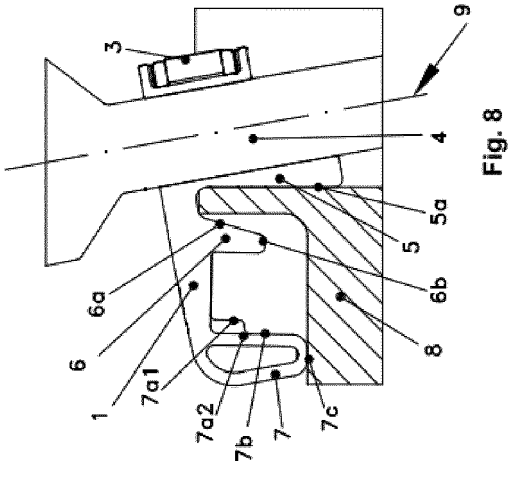

Fig. 8

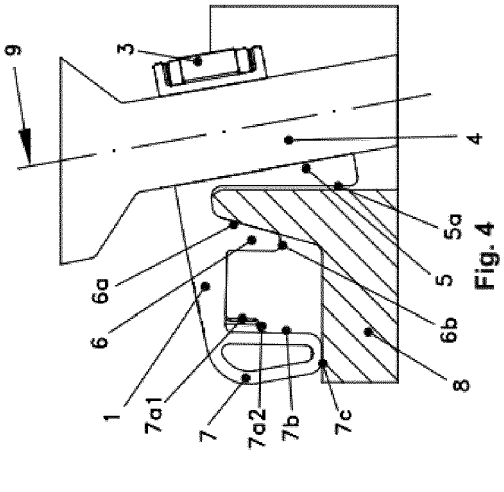

Fig. 4

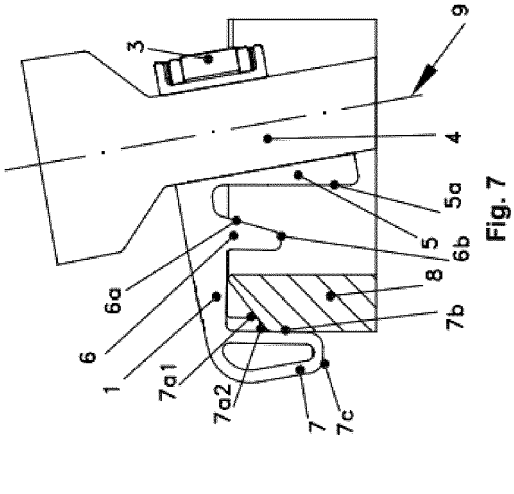

Fig. 7

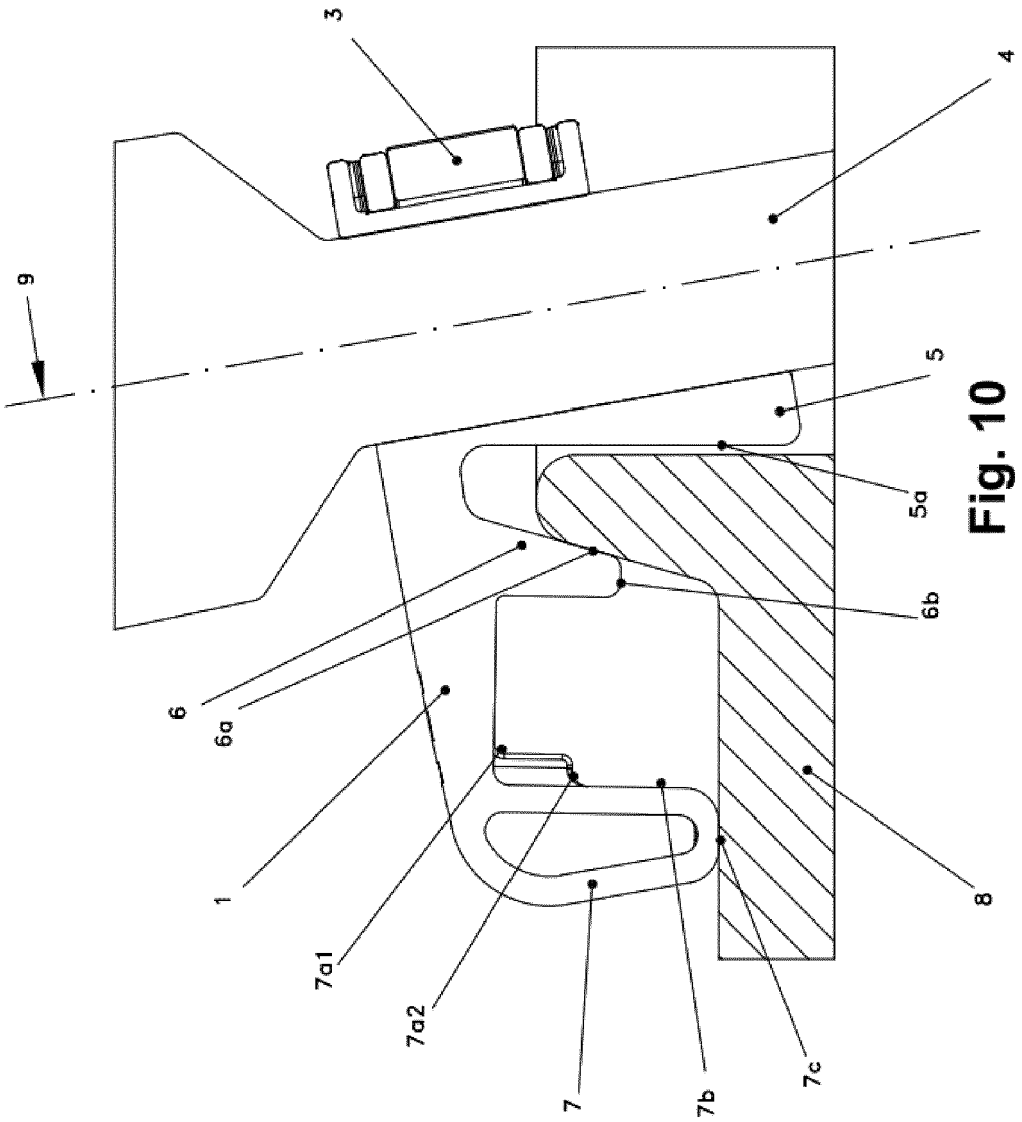

Fig. 10

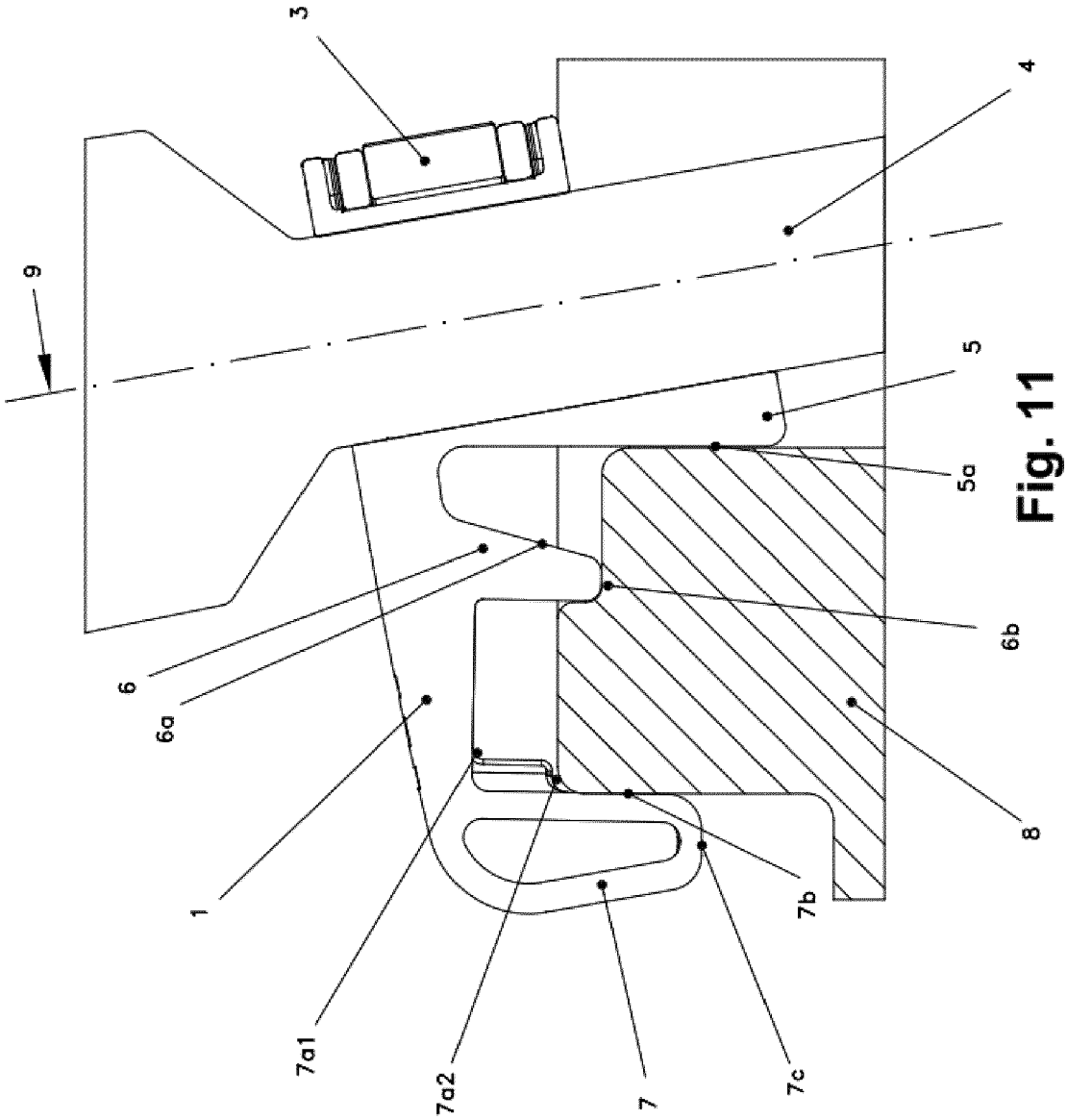

Fig. 11

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EUROPEAN SEARCH REPORT

Application Number
EP 21 21 0356

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 15 57 024 A1 (BIETHINGER JOSEF) 25 September 1969 (1969-09-25) * figures *	1-4	INV. B01F35/41
A	US 1 703 099 A (CRADDOCK FREDERICK L) 26 February 1929 (1929-02-26) * figures *	1-4	
A	JP S58 202027 A (SATAKE CHEM EQUIP MFG) 25 November 1983 (1983-11-25) * figures *	1-4	
A	US 9 138 103 B1 (CADOS DIMITRI [US]) 22 September 2015 (2015-09-22) * figures *	1-4	
			TECHNICAL FIELDS SEARCHED (IPC) B01F A47J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	4 May 2022	Real Cabrera, Rafael

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