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(54) A chaser comprising universal connection means

(57) The invention provides a chaser (1) comprising a universal chaser connection means (2) adapted to enable connection of the chaser with a plurality of different power units (P). Each power unit (P) has a different power unit connection flange (30) and fixing members (31). The chaser connection means (2) comprises a receiver (3) for receiving the power unit flange (30), a collar (4) for engagement of the receiver (3) and flange (30), and a bracket (5) for fixing to the chaser and the power unit fixing members.

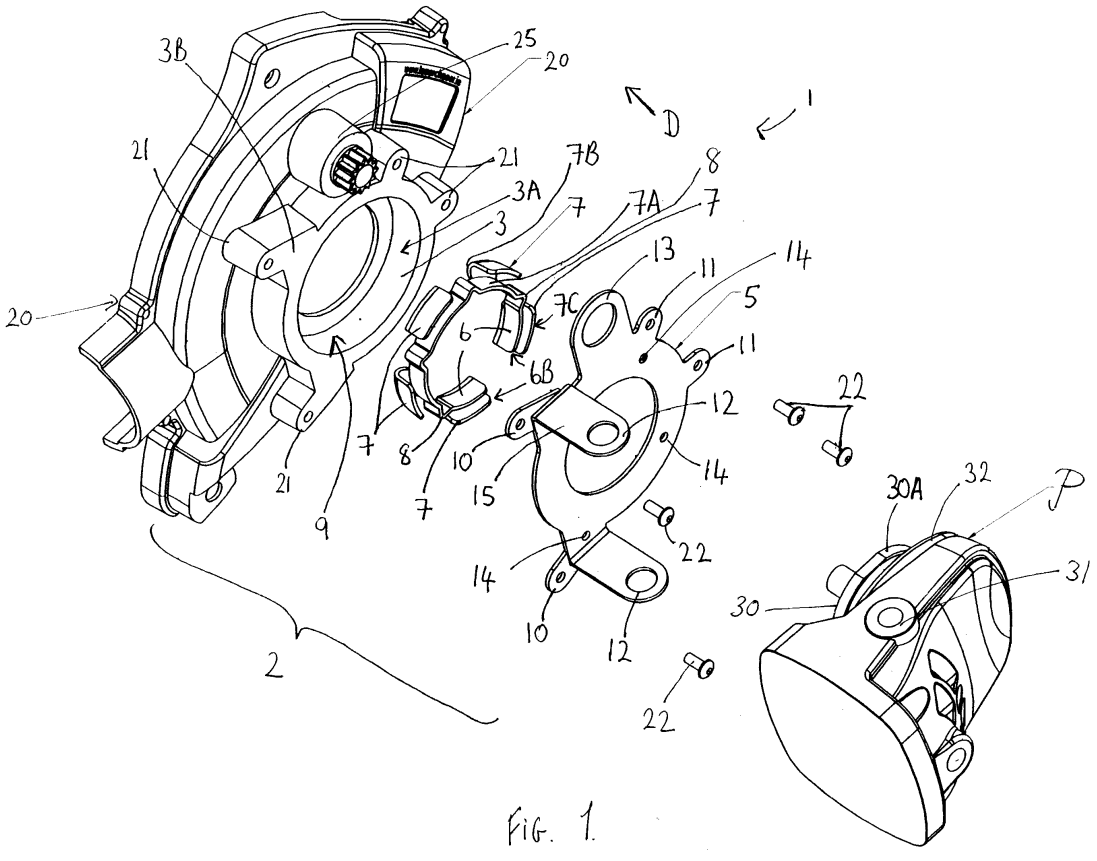

Fig. 1

EP 1 920 886 A1

Description

Field of the Invention

[0001] The present invention relates to a chaser having a universal connection means to enable connection of the chaser with power units having different connection features.

Background

[0002] Various types of chasers are known which are normally adapted for connection to a particular manufacturer type of power unit, the chasers being provided by a manufacturer of both chasers and power units. Each power unit has a particular connection arrangement. As a result the user choice of chaser is normally limited to one suitable for connection to their preferred power unit. Conversely if the user wishes to use a particular type of chaser, they must also choose a power unit suitable for use with that chaser.

[0003] There are therefore a number of problems with conventional chasers that need to be addressed.

Summary

[0004] These needs and others are addressed by a chaser in accordance with the teachings of the invention which comprises a universal connection means adapted to enable connection of the chaser with a plurality of different power units, each power unit having a different power unit connection flange and fixing members, wherein the chaser connection means comprises a receiver for receiving the power unit flange, a collar for engagement of the receiver and flange, and a bracket for fixing to the chaser and the power unit fixing members.

[0005] The invention therefore provides a chaser comprising a universal connection means in accordance with claim 1. Advantageous embodiments are provided in the dependent claims thereto.

Brief Description Of The Drawings

[0006] The present invention will now be described with reference to the accompanying drawings in which:

Figure 1 is an exploded perspective view of a chaser according to the invention;

Figure 2 is a cross-sectional view from the side of a chaser according to the invention connected to a power unit flange;

Figs. 3(a), 3(b), 3(c) and 3(d) are detailed views of a bracket of a chaser according to the invention;

Fig. 4 is an enlarged view of the collar of Fig. 1; and

Fig. 5 is an exploded perspective view of a chaser according to another embodiment of the invention.

Detailed Description Of The Drawings

[0007] The invention will now be described with reference to some exemplary embodiments thereof which are provided to assist in an understanding of the teaching of the invention but not intended to limit the scope of the invention in any way except as may be deemed necessary in the light of the appended claims.

[0008] Referring to the drawings, a chaser 1, 50 according to the teaching of the invention comprises a universal chaser connection means 2, 52 adapted to enable connection of the chaser with a plurality of different power units P. The power units are of the type provided by different manufacturers which generally have various arrangements at the connection portion thereof. The connection portion of a power unit P typically comprises a connection flange 30 having an outer connection or mating surface 30A extending outwardly from a proximal face 32 of the unit, and some arrangement of fixing members 31. The form of these connection features varies from manufacturer to manufacturer, for example, connection flanges 30 may have different diameters.

[0009] In the case of a chaser 1, 50 in accordance with the teaching of the invention the universal chaser connection means comprises a receiver 3, 53 for receiving the power unit flange 30, a collar 4, 54 for engagement with the receiver and power unit flange, and a bracket 5 for fixing to both the chaser and power unit fixing member. The collar 4, 54 comprises a variable circumference collar. The collar may be movable and resilient or deformable. The collar may comprise engagement members which are resilient or deformable. Two example collars are described in further detail below.

[0010] Referring initially in particular to Figs. 1 to 4, the chaser 1 according to a first embodiment of the invention is described in further detail. In this case, the chaser 1 comprises a receiver 3 having a substantially annular form and having presentation surface 3A that tapers inwardly from an opening 9 in a flange proximal face 3B in the direction of the head 20 of the chaser.

[0011] The collar 4 may be formed of a flexible material and is arranged for engagement between and with both the receiver 3 and power unit flange 30. The collar 4 comprises an inner engagement member 6 for engagement with the power unit flange and an outer engagement member 7 for engagement with the receiver. The inner engagement member provides a mating surface 6A which is provided in a generally c-shaped form, and in use is adjacent to the outer surface 30A of the flange of the power unit P. The mating surface 6A does not define a closed ring in that jaws 6B are provided which enable a modification of the dimensions of circumference defined by the mating surface 6A. By moving the jaws towards one another the circumference retracts whereas by moving them apart, the circumference expands. In

this way the mating surface can be seated against a plurality of differently dimensioned power unit flanges 30. When mated with the appropriate power unit flange, the mating surface 6A is in intimate contact with the outer surface 30A of the power unit flange. In this exemplary arrangement of Figures 1 to 4, the collar 4 is essentially a deformable collar made from a flexible or deformable material such as rubber or some other material having similar properties. By providing the collar in such a material, the shape of the collar may be changed by the application of pressure for coupling and engagement with the receiver and power unit flange. The deformable nature of the collar allows a changing of the circumference defined by the mating surface 6A such that it may be expanded or retracted depending on the dimensions of the component to which it is coupled.

[0012] In this embodiment, the collar 4 comprises a plurality of flexible members 7 which extend outwardly from the inner engagement member 6 of the collar to define the outer engagement member or outer mating surface. The flexible members 7 of the outer engagement member are arranged circumferentially spaced apart on the collar. The flexible members are provided so as to be moveable or deformable against the chaser receiver 3. Each of the flexible members includes an inner surface 7A that is integrally formed with the inner engagement member 6, a flex region 7B that extends outwardly from the inner surface substantially in an arc, and an outer surface 7C that is, in an undeformed state substantially parallel with the inner surface 7A. In use, a presentation of the collar to the receiver 3 causes the outer engagement member to move and flex inwardly towards the inner surface 7A thereof through contact with the presentation surface 3A of the receiver.

[0013] The collar may further include a number of strengthening ribs 8, located spaced apart at intervals on the inner engagement member 6.

[0014] As mentioned above, the inner engagement member 6 is moveable and in this case deformable against the power unit flange 30. In this way the outer and inner circumferences defined by the collar can be changed as required to meet the requirements of the mating power unit flange and chaser receiver.

[0015] In use, the power unit flange 30 is inserted into the receiver 3 with the collar 4 located therebetween. The inner engagement member envelops and is mated against the outer surface 30A of the flange. As noted above the receiver 3 tapers inwardly from the opening 9, and as the flange 30 and collar 4 are moved forward into the receiver in the direction D the collar 4 engages positively with the appropriate portion of the tapered wall of the receiver 3 through a flexing of the flexible members and also with the power unit flange 30 through a closing of the jaws of the inner engagement member. In this way the collar is deformable in two dimensions, the first dimension provided by a closing of the jaws and the second by the flexing of the flexible members, each being substantially 90 degrees out of phase with the other. The outer engagement member 7 of the collar is resilient to the receiver and effectively moves or deforms inwardly as the flange and collar are moved further into engagement with the tapered surface of the receiver to provide a secure engagement between the collar and receiver face. At the same time the inner engagement member 6 of the collar engages with the power unit flange 30. The collar 4 is resilient so that the C-shaped form closes into engagement with the flange under the application of pressure on engagement between the receiver and the outer engagement member of the collar.

[0016] The collar 4 is designed and arranged so that the jaws 6B do not come into contact with each other in use. This is as a result of the dimensions of the collar chosen, the properties of resilience of material of the collar, and the arrangement of the inner and outer engagement members.

[0017] The provision of a tapered receiver 3 in combination with the deformable collar 4 allows for connection with power unit flanges of different diameter.

[0018] The use of the collar provides for a snug inter-engagement between the power unit and the chaser. Once this inter-engagement is achieved the two need to be maintained in position relative to one another. This is achieved by use of a bracket 5.

[0019] The bracket 5 in this case has a generally disc shaped form for interfacing with between the chaser and power unit so that in use a first back presentation surface 18 thereof abuts the proximal face 3B of the chaser, and a second front presentation surface 17 abuts the proximal face 32 of the power unit. An inner side edge 19A of generally circular form defines an opening 16 for receiving the flange 30 of the power unit. Fixing members 10, 11, 12 and 13 protrude outwardly at the outer side edge 19B of the bracket.

[0020] In this case, the bracket 5 comprises support arms 15 which extend substantially at right angles to the front presentation surface 17 and located at the outer side edge 19B thereof. The support arms are provided located opposite to each other near the top and bottom of the bracket, and are so arranged to embrace the connection portions 31 of the power unit therebetween. The support arms 15 are desirably resilient and moveable or deformable to facilitate connection to the power unit as required.

[0021] The bracket 5 comprises a first set of chaser fixing members 10, 11 and 13 for fixing the bracket to corresponding fixing members provided on the chaser, and a second set of power unit fixing members 12 arranged for connection to corresponding fixing members of a particular power unit.

[0022] In this illustrated embodiment, the bracket chaser fixing members comprise apertures 10, 11 and 13. In use, the apertures 10 and 11 are aligned to corresponding apertures 21 provided on the chaser and fixing pins, in this case screws 22 are secured therethrough. The chaser, in this case, further comprises a handle member 25 which is received in the aperture 13 of the

bracket. The engagement of the handle member 25 in the aperture 13 provides for additional support and stability of the connection between the bracket and chaser, and furthermore advantageously facilitates dispersion of the load between the connected components.

[0023] In this case, the bracket power unit fixing members comprise apertures 12 provided on support arms 15 for connection to corresponding fixing members of the particular power unit. In use, the support arms 15 are passed over the connection portions at the top and bottom of the power unit so that the apertures 12 are aligned with corresponding one or more apertures 31 on the power unit, and a fixing pin or bolt is connected therethrough to secure the bracket to the power unit. As noted above the support arms 15 may be resilient to facilitate a snap fitting connection to the power unit.

[0024] The bracket 5 may comprise a single second set of power unit fixing members suitable for connection to one type of power unit. In which case, the user may be provided with a number of alternative brackets 5 to enable fixing to different types of power units. Alternatively a single bracket may comprise a plurality of sets of power unit fixing members.

[0025] The bracket 5, may be formed as a single element, of a suitable material for example, a metal or plastics material. Alternatively the connection portions may be connected to the main body of the bracket during manufacture.

[0026] Referring to Fig. 5 an alternative chaser connection means 50 in accordance with the teaching of the invention is shown. Many of the components and feature are similar to the components and features described with reference to Figs. 1 to 4 above, and as such the same reference numbers have been used for similar components. The description of these features has not been repeated.

[0027] In this case, the chaser connection means 50 comprises a collar 54 having a c-shaped or snap ring form defining a spacing or opening between first and second jaw portions 54A and 54B. The collar 54 is a variable circumference collar which is moveable such that the spacing between the jaws may be modified by exerting pressure on the collar to move the jaws relative to each other. A fixing pin 57 may be provided for insertion through corresponding apertures 58A and 58B near the ends of each jaw portion for securing therethrough to maintain the ends of the jaw portions 54A and 54B at a particular spacing thus defining the circumference of the collar. The collar 50 is useable in the same manner as the collar 4 for interengagement between a chaser receiver and a particular power unit flange. The collar is similar to that of the collar 4 in that the circumference defined by the engagement surfaces may be altered as required to fit onto differently dimensioned chaser components. The collar is different in the material from which it is formed is not a deformable material- it is typically formed from a metal material such as aluminium or the like- but it is moveable and that movement causes a change in the defined circumference of the collar.

[0028] In this case, the chaser 50 comprises a receiver 63 which similar to the receiver 3 comprises an opening 60 defining a substantially annular presentation surface 53A. The receiver comprises a proximal face 53B which is presented to a back presentation surface 18 of the bracket 5. The receiver 50 comprises a cutaway or opening 69 provided to enable access to the pin 57 which is used to connect the jaw portions 54A and 54B of the collar. The other features of the receiver portion of the chaser 50 are similar to those of the chaser 1 and the same reference numbers have been used in the drawings. Description of these features is not repeated here.

[0029] The collar 54 comprises an inner engagement surface 55 for engagement with the power unit flange 30 and an outer engagement member 56 for engagement with the presentation surface 63A of the receiver 63.

[0030] The inner engagement surface 55 provides a mating surface defining a generally c-shaped form, which in use is adjacent to an outer surface 30A of the flange of the power unit P. The mating surface does not define a closed ring in that jaws portions 54A and 54B are provided, the jaws are moveable to enable a modification of the dimensions of the circumference defined by the mating surface.

[0031] By moving the jaw portions 54A and 54B towards one another the circumference of the collar 54 and the inner and outer engagement surfaces 55 and 56 retract whereas by moving them apart, the circumferences expand.

[0032] In this way the inner engagement surface can be seated against a plurality of differently dimensioned power unit flanges 30. When mated with the appropriate power unit flange, the mating surface 55 is in intimate contact with the outer surface 30A of the power unit flange. In a similar manner the outer engagement surface is configured to mate with the presentation surface 53A of the receiver. When the components to be connected are moved into position the circumference of the outer engagement 56 is modified by a movement of the jaw portions 54A and 54B such that the circumference retracts.

[0033] The collar circumference may be modified by means of the pin 57 coupled to apertures 58A and 58B. The circumference may also be modified by contact with the receiver mating surface 53A.

[0034] The collar 50 is designed and arranged so that the jaws 54A and 54B are normally biased not to contact each other. This is as a result of the dimensions of the collar 50, the properties of the collar including resilience and flexibility of material of the collar, and the arrangement of the inner and outer engagement surfaces 55 and 56.

[0035] In use, the collar 50 is inserted into the receiver 63 between the power unit flange portion 32 and the receiver presentation surface 63A. The collar 50 is sized such that on movement of the three components into engagement the collar moves so that the circumference

of both the inner and outer engagement members 56 and 57 thereof changes. The collar 50 may be manufactured of any suitable material for example a metal or plastics material. In particular the collar may be of Aluminium.

[0036] A power unit P and bracket 5 are also shown in Fig. 5, these components are similar to the power unit P and bracket 5 of Figs. 1 to 4 and the same reference numbers have been used for the same features. The description of these features has not been repeated.

[0037] The remaining steps of connection of the bracket 5 to the chaser and power unit are as described above with reference to Figs. 1 to 4.

[0038] The chaser having universal connection means according to the teaching of the invention has the advantage that it allows for the chaser to be connected to different types of power unit. This has the advantage of providing the user with increased flexibility. By providing a collar having a variable circumference, it is possible to modify both the diameters of both the outer and inner engagement surfaces and members of the collar, so that the collar can be used to mate a plurality of different power units with a chaser.

[0039] Furthermore the bracket arrangement of the universal connection means of the invention is designed to provide a positive secure and stable connection between the connected components. The invention further has the advantage of reducing costs to the end user, by providing the user with the option of using the power unit of choice with the chaser.

[0040] The words comprises/comprising when used in this specification are to specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

Claims

1. A chaser comprising a universal chaser connection means to enable connection of the chaser with a plurality of different power units, each power unit having a different power unit connection flange and fixing members, wherein the chaser connection means comprises a receiver for receiving the power unit flange, a collar for engagement of the receiver and flange, and a bracket for fixing to the chaser and the power unit fixing members.

2. A chaser as claimed in any preceding claim wherein the collar is a variable circumference collar.

3. A chaser as claimed in any preceding claim wherein the collar is configured to be seated in the receiver between a power unit flange and receiver.

4. A chaser as claimed in any preceding claim wherein the receiver has a substantially annular form.

5. A chaser as claimed in any preceding claim wherein the receiver has a tapered form and wherein the receiver tapers inwardly to the chaser head.

6. A chaser as claimed in any preceding claim wherein the collar comprises an inner engagement member for engagement with a power unit flange and an outer engagement member for engagement with the receiver.

7. A chaser as claimed in claim 6 wherein the inner and outer engagement members define a generally c-shaped form.

8. A chaser as claimed in any preceding claim wherein the collar is moveable.

9. A chaser as claimed in claims 6 to 8 wherein the inner engagement member is moveable against a power unit connection flange and the outer engagement member is moveable against the receiver.

10. A chaser as claimed in any preceding claim wherein the collar is deformable.

11. A chaser as claimed in any preceding claim wherein the inner engagement member comprises a plurality of flexible members extending outwardly therefrom to define the outer engagement member and wherein the flexible members are circumferentially spaced apart.

12. A chaser as claimed in claims 11 wherein the flexible members are resilient to the chaser receiver and deform inwardly as the flange and collar are moved into engagement with the receiver to provide a secure engagement between the collar and receiver.

13. A chaser according to any preceding claim wherein the collar is movable in two dimensions.

14. A chaser as claimed in any preceding claim wherein the bracket comprises a first set of chaser fixing members for fixing the bracket to corresponding chaser fixing members, and one or more sets of second power unit fixing members, said or each set being arranged for fixing to fixing members of a particular type of power unit.

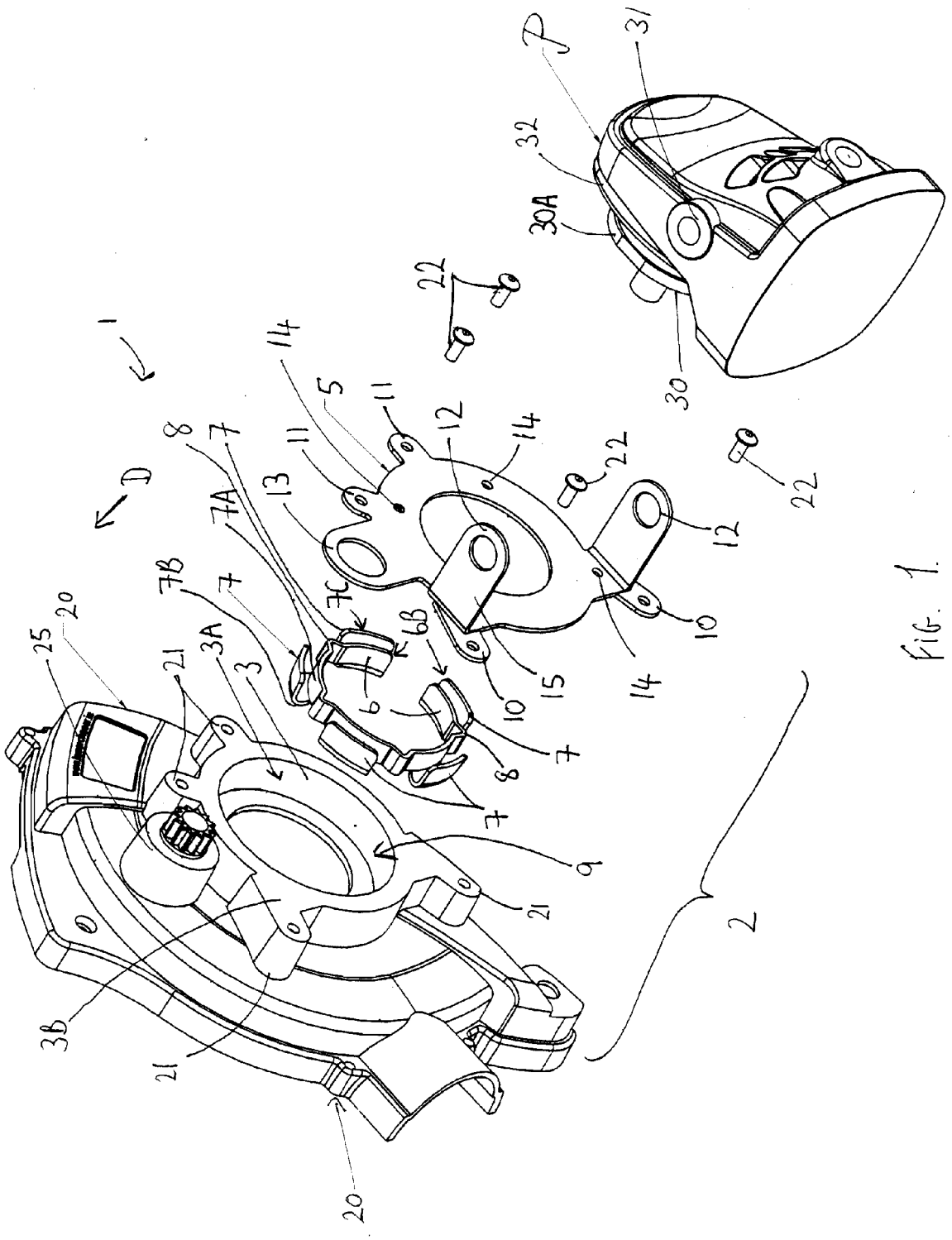
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FIG. 1.

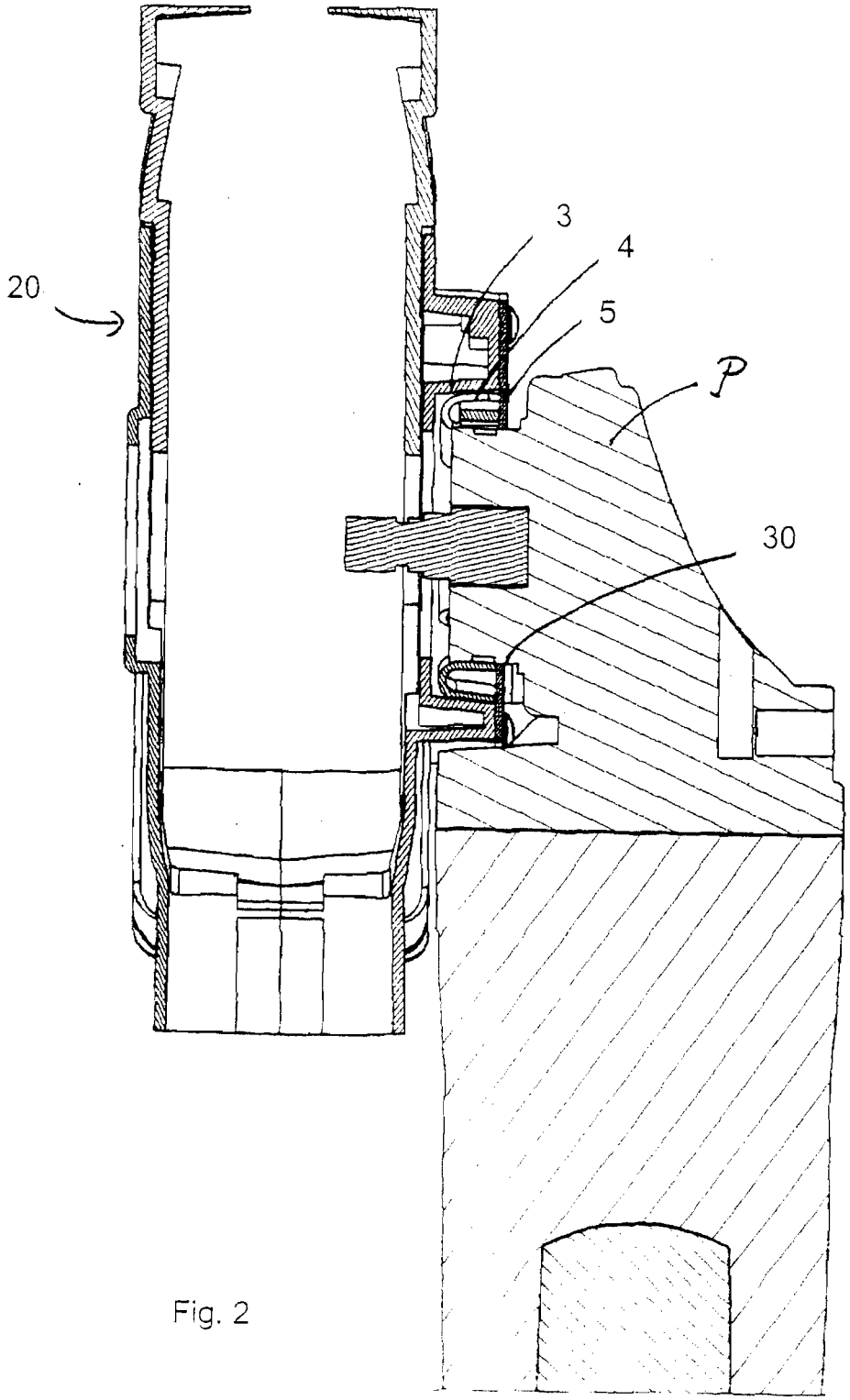

Fig. 2

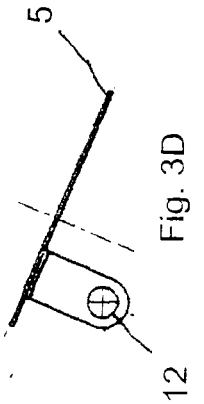

Fig. 3D

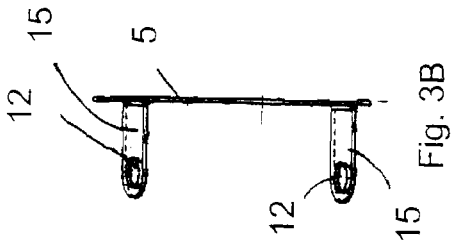

Fig. 3B

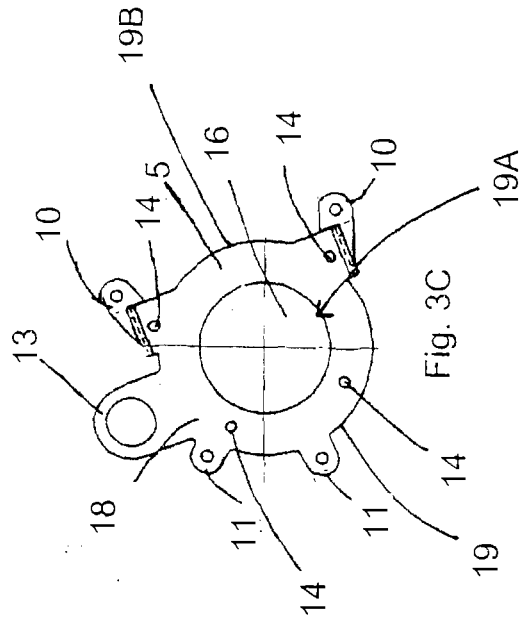

Fig. 3C

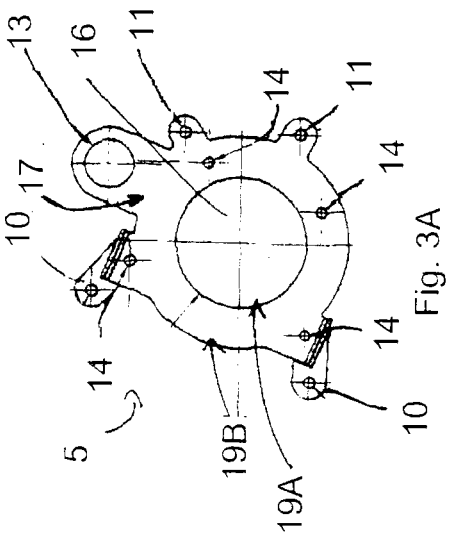

Fig. 3A

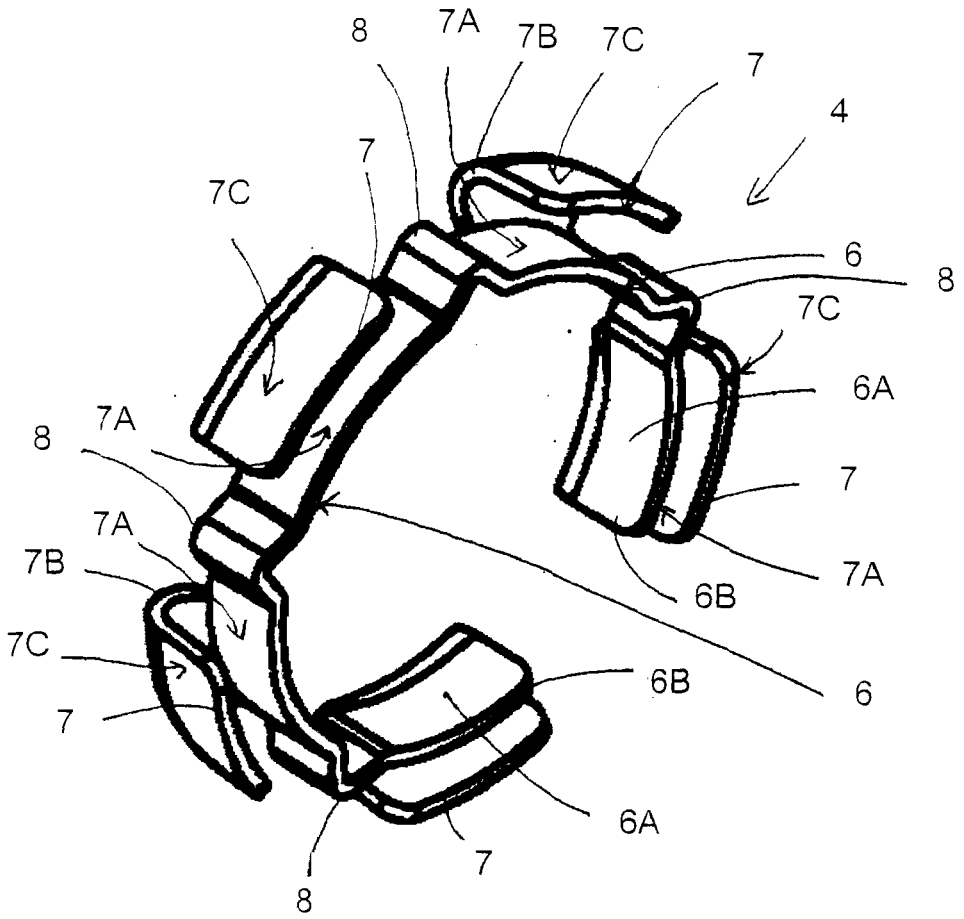

Fig. 4

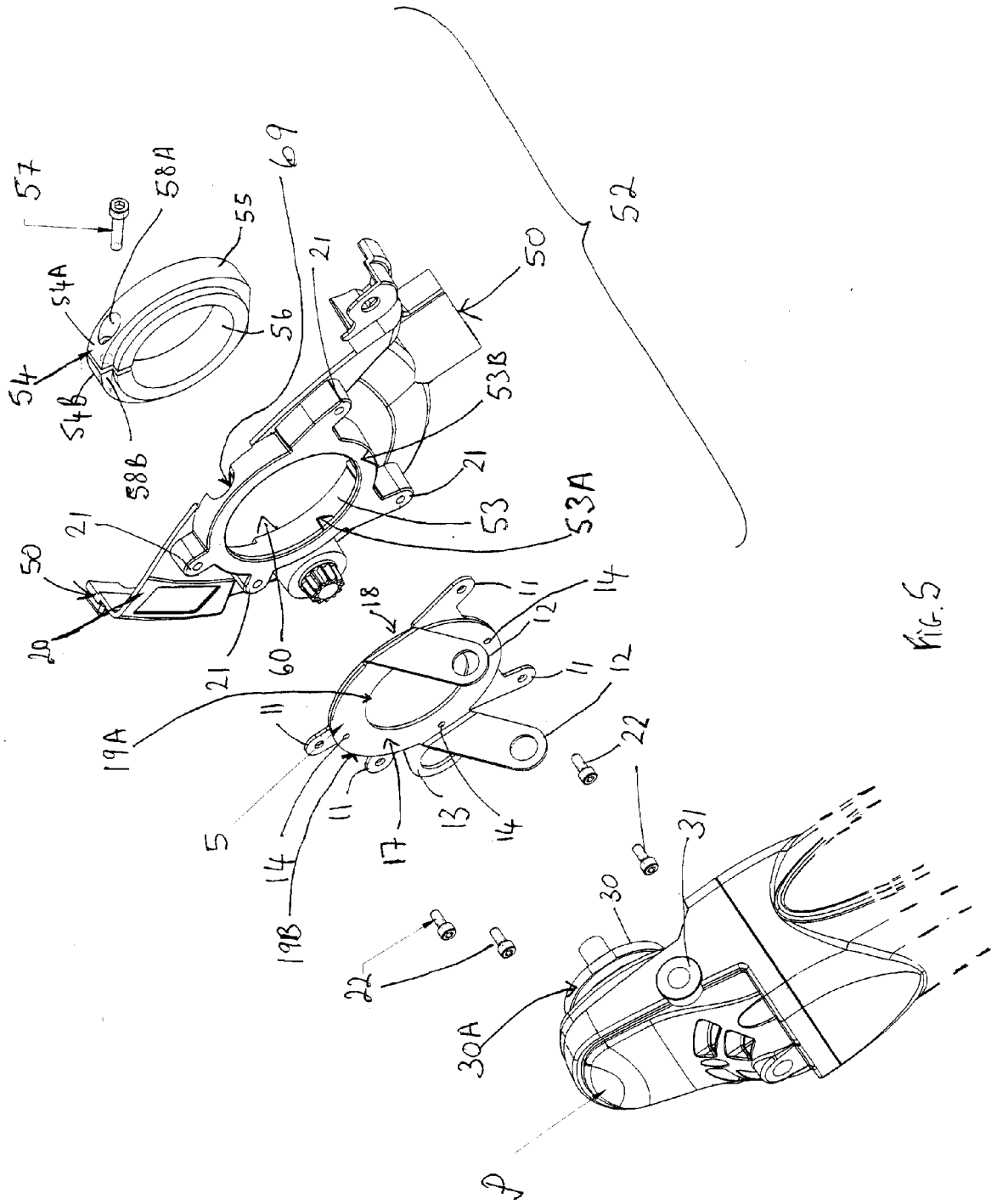
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Fig. 5

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 11 9119

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TECHNICAL FIELDS SEARCHED (IPC)

B25F
B24B
B27C
B23D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 December 2007	Matzdorf, Udo

CATEGORY OF CITED DOCUMENTS

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