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(54) **SUPPORT FOR AN AXIAL IMPULSE DEVICE FOR GASEOUS FLUIDS**

STÜTZE FÜR EINE AXIALIMPULSVORRICHTUNG FÜR GASFÖRMIGE FLUIDE

SUPPORT POUR DISPOSITIF A IMPULSION AXIALE DE FLUIDES GAZEUX

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Description

[0001] This invention relates to a support for an axial gaseous fluid impeller appliance, particularly a support allowing the housing of an axial impeller appliance to be inserted in a conduit of smaller diameter and fix it to a surface, whatever the length of the appliance housing.

[0002] Means are known for coupling the members of a conduit in which said axial impeller appliance may be applied, such as a fume extraction, forced ventilation, air conditioning, etc. installation, such coupling means normally being of the plug-in system or the flange and annular grooved clamp system.

[0003] On the other hand, these appliances have to be firmly attached to a surface and, at the same time, must be reliably connected to the smaller diameter conduits of the installation, which requires frustoconical diameter adaptor parts which are connected to the installation at one end and to the housing of the axial impeller appliance at the other end.

[0004] This arrangement requires the provision of means for anchoring the housing to a surface and means for ensuring the connection between said housing and the frustoconical adaptor parts and between the latter and the installation conduits.

[0005] To overcome this drawback, with a reduction of the number of special members, the solution was adopted of rigidly associating both frustoconical adapter parts with a rigid bridge, with the purpose of engaging the housing of the appliance between both adaptor parts and attaching them thereto by flange and annular grooved clamp arrangements, at the same time as the ensemble could be attached to a surface by means of said rigid bridge (see ES-A-2 020 637).

[0006] This solution has the drawback that an ensemble of frustoconical adaptor parts and a rigid bridge are needed for each length of axial impeller appliance, which represents having to stock a large number thereof. On the other hand, this solution does not facilitate the assembly of two or more appliances in series, making it necessary to double the number of parts used in the installation.

[0007] With a view to obviating these new drawbacks, the solution has been adopted of having independent support parts, which may be associated together by a simple member, notably reducing the storage problems.

[0008] In accordance with the foregoing solution, the support of the invention has been developed, which is formed by at least two independent support feet, each integrating one half of an annular grooved clamp and pivoting and fixation means for the other free half, which ensemble simultaneously retains respective juxtaposed flanges of a coupling member to the conduit and of a frustoconical adaptor part for coupling to the housing of the axial impeller, at the same time as said support feet are associated with each other by a resistant connecting plate which, being provided with automatic coupling means to the base of each foot, allows the axial impeller appliance to be attached to a surface.

[0009] One feature of the invention is that the support feet are provided at the base thereof with a recess for stable insertion of one end of the connecting plate, in which recess there are the automatic coupling means for the of the connecting plate. These means consist of pairs of teeth which, mounted to resilient tongues situated in said bases of the support feet, engage windows open in the ends of the connecting plates.

[0010] The invention contemplates that one of the end support feet be provided with a single recess, while the remaining end and intermediate support feet, for when two or more axial impeller appliances are to be mounted in series, are provided with two recesses facing in opposite directions.

[0011] A further feature of the invention is that the half annular grooved clamp of each support foot is provided with an opening at the lowermost point of the bottom thereof for the passage of a tab, provided with a window, and which extends radially from the flange of the coupling part to the conduit and engages a retaining tooth disposed on the support foot. This arrangement may be realized with two or more tabs and the corresponding openings and retaining teeth.

[0012] Yet a further feature of the invention is that the housing of the axial impeller appliance is provided with bayonet means for coupling thereof to the frustoconical adaptor parts, in such a way that the male members of the bayonet arrangement are regularly arranged on the outside of the mouths of the housing of the axial impeller appliance, while the female members are situated on the inside of the mouths of the frustoconical parts.

[0013] The invention also contemplates that the male members are formed by elongate circular section pins and the female members are formed by an axial inlet and a path narrowing in the perimetrical direction and terminating in a retaining seat, which is slightly larger than a semi-circle of the circular section.

[0014] Finally, it is contemplated that the free half of the annular grooved clamp is provided at one end with a T-shaped boss which mates with a double hook provided in one end of the support foot half of the clamp, at the same time as the former is provided at the other end thereof with a housing for a bolt which is screwed into a nut inserted in the end of the latter opposite the joint.

[0015] To facilitate an understanding of the foregoing ideas, there is described hereafter the object of the invention, with reference to the accompanying illustrative drawings, in which:

Figure 1 is an exploded perspective view of a support according to the invention, with the semi-clamps thereof open, and two parts for coupling to a not shown cylindrical conduit.

Figure 2 is an exploded perspective view of an ensemble of axial impeller appliance including the frustoconical adaptor parts, the support feet with the clamps thereof open, the connecting plate for said

support feet and the parts for coupling to the conduit, also not shown.

Figure 3 is a perspective view of the parts of Figure 2, after assembly and ready for stable attachment.

Figure 4 is a side elevation view of the stably attached ensemble of Figure 3, showing, on the one hand, a third frustoconical adaptor part for a second axial impeller appliance, not shown, mounted in series with that of Figure 3, and, on the other hand, the end of a conduit.

Figure 5 is a front elevation view of the ensemble of Figure 4 seen from the right hand side of the drawing.

Figure 6 is a perspective view of the female and male bayonet coupling members between the frustoconical adaptor part and the housing of the axial impeller appliance.

Figure 7 is an illustrative section view of how the male and female bayonet members are coupled together.

Figure 8 is a cross section view of a detail of the base of a support foot and of the tab of the conduit coupling part, in a position prior to engagement.

Figure 9 shows the members of the previous Figure in the engaged position.

Figure 10 is a detail of the engagement of the connecting plate with a support foot base.

[0016] The support according to the invention is applicable to the assembly of a axial gaseous fluid impeller appliance 1, of the type known as helical, helicentrifugal and the like, to be inserted in a conduit of smaller section which communicates a gaseous fluid take-up area with a receiving area therefor.

[0017] The axial impeller appliance 1, which does not form part of the invention, is conventionally attached to a conduit by inserting it between two lengths of the latter, as shown in Figures 2, 3 and 4, by means of frustoconical adaptors 2, which are also conventional and known as reducers that, in cooperation with coupling parts 3 thereof to the conduit 4, shown in Figure 4, are mounted in support feet 5 and 5A attached to a surface.

[0018] The frustoconical adaptors 2 are provided, on the one hand, at the smaller diameter opening thereof, with a flange 6 which abuts, on assembly, a flange 7 of the coupling parts 3, while, on the other hand, at the larger diameter opening thereof they are provided with coupling members of bayonet type to the axial impeller appliance 1. In the case shown in Figures 6 and 7, the male members of the bayonet coupling are formed by bosses 8 situated on the periphery of the mouths of the axial impeller appliance 1, while the female members are formed by slots 9 that are located on the mouth of the frustoconical adaptors 2 and are formed by an axial inlet 10 and a path 11 tapering in the perimetral direction to terminate in a retaining housing 12 for the corresponding boss 8.

[0019] The axial impeller appliance 1 is conventionally provided with an electric motor, an impeller 13 and a terminal box 14.

[0020] The support feet 5 and 5A, which are independent one of the other, as shown in Figures 1 and 2, each comprise a fixed half 15A of an annular grooved clamp 15 and pivoting and fixation means for the other free half 15B. This assembly determines a simultaneous retaining arrangement for the flanges 6 of the frustoconical adaptors 2 and 7 of the coupling parts 3 of adaptation to the axial impeller appliance 1, as shown in Figure 3.

[0021] These support feet 5 and 5A are formed by a base member 16-16A and a wall 17 in which there is formed the fixed half 15A of the annular grooved clamp 15.

[0022] Said support feet 5 and 5A are connected together, as may be seen in Figures 1, 3 and 4, by a resistant connecting plate 18, provided with automatic engagement means with the base 16 and 16A of each of the support feet 5 and 5A.

[0023] The said support feet 5 and 5A are provided at their bases 16 and 16A, respectively, with a double recess 19 and a single recess 19A in which there are to be found the automatic means for coupling to the connecting plate 18, consisting of snap-fit arrangements formed by teeth 20 mounted on resilient tongues 21 situated on said bases 16 and 16A and engaging in windows 22 open in the connecting plate 18.

[0024] The support foot 5A to be located at one end is provided with only one single recess 19A, while the support foot 5 to be located at the other end or inserted, as shown in Figure 4, is provided with a double opposed recess 19. In an extreme situation, with a view to cheapening the product, the single support feet 5A may be replaced by double support feet 5.

[0025] The fixed halves 15A of the annular grooved clamps 15 of each support foot 5 or 5A are provided, as shown in Figures 8 and 9, with an opening 23 at the lowermost point of the bottom 24 of the groove for the passage of a tab 25 having a window 26 and which extends radially from the edge of the flange 7 of the coupling part 3 to the conduit, said window 26 of the tab 25 mating, when assembling the ensemble, with a resilient retaining tooth 27 provided centrally in the wall 17 of the support feet 5 and 5A. There may be two or more openings 23 in the bottom 24 of the groove of the fixed half 15A and tabs 25, depending on the height of the wall 17 of the support feet 5 and 5A.

[0026] The free halves 15B of the annular grooved clamps 15 of each support foot 5 or 5A are provided, as shown in Figures 1 to 4 and in detail in Figure 5, with a T-shaped boss 28, at one end, which mates with a double hook 29 provided at one end of the fixed half 15A corresponding to the support foot 5 or 5A, at the same time as the free half 15B is provided at the other end thereof with a housing 30 for a bolt 31 which is threaded in a nut 32 inserted in a housing 33 of the other end of the corresponding fixed half 15A.

[0027] The connecting plate 18 is formed by a simple metal sheet, which, further to the snap-fit windows 22, is provided with holes 34 for attachment thereof to a surface.

[0028] In Figure 4 there is to be seen the retainer 35 ensuring the coupling of the housing of the axial impeller appliance 1 and the frustoconical adaptor parts 2 effected by the bayonet means formed by the bosses 8 and slots 9.

Claims

1. A support for a axial gaseous fluid impeller appliance (1), particularly a support for inserting one of such appliances, which may be of known types such as helical, helicocentrifugal and the like, in a smaller diameter conduit, in which there are conventionally used for connecting the various members of the installation, plug-in or annular grooved clamp systems which retain pairs of juxtaposed flanges of the members to be connected and, to accommodate the differences of diameter therebetween, frustoconical adaptor members between which there is mounted the housing of the axial impeller appliance, said adaptor members being fixedly attached to one another by a support bridge allowing the ensemble to be mounted to a surface, **characterized in that** it is formed by at least two independent support feet (5, 5A) each having one half of an annular grooved clamp (15A) and pivoting and fixation means for the other free half (15B) which assembly simultaneously retains respective juxtaposed flanges of a coupling part (3) to the conduit and a frustoconical adaptor part (2) for coupling to the housing of the axial impeller appliance (1), at the same time as said support feet are associated with each other by means of a resistant connecting plate (18) which, provided with automatic means for coupling to the base of each of the feet, allows the axial impeller appliance to be attached to a surface.

2. The support of claim 1, **characterized in that** the support feet are provided at the base (16) thereof with a recess (19) for stable insertion of one end of the connecting plate (18), in which the automatic coupling means for the connecting plate are to be found.

3. The support of claim 2, **characterized in that** the automatic coupling means between the bases (16) of the support feet (5, 5A) and the ends of the connecting plate (18) consist of snap-fit arrangements.

4. The support of claim 3, **characterized in that** the snap-fit arrangements of each base of the support feet consist of pairs of teeth (20), which, mounted on resilient tongues (21) situated in said bases (16), engage windows (22) open in the ends of the connecting plates.

5. The support of claim 2, charactered in that one of the end support feet is provided with a single recess (19A), while the remaining end and intermediate support feet for when two or more axial impeller appliances are to be assembled in series, are provided with two oppositely facing recesses (19).

6. The support of claim 1, **characterized in that** the half annular grooved clamp (15A) of each support foot is provided with an opening (23) at the lowermost point of the bottom (24) thereof for the passage of a tab (25) which, having an open window (26), extends radially from the flange of the conduit coupling part (3).

7. The support of claim 6, **characterized in that** the support feet are provided with a resilient retaining tooth (27) mating with the opening of the half grooved clamp and with the window of the radial tab of the conduit coupling part.

8. The support of claim 1, **characterized in that** the housing of the axial impeller is provided with bayonet means (8, 9) for coupling thereof to the frustoconical adaptor parts.

9. The support of claim 8, **characterized in that** the male members (8) of the bayonet arrangement are regularly disposed on the outside of the mouths of the axial impeller housing, while the female members (9) are situated on the inside of the mouths of the frustoconical parts.

10. The support of claim 9, **characterized in that** the male members are formed by elongate circular section pins (8) and the female members are formed by an axial inlet (9) and a path tapering in the perimetral direction and terminating in a retaining housing, which is slightly greater that a semi-circle of the section.

11. The support of claim 8, **characterized in that** the bayonet coupling between the axial impeller housing and the frustoconical adaptor parts is ensured by a radial retainer (35).

12. The support of claim 1, **characterized in that** the free half of the annular grooved clamp is provided with a T-shaped boss 28 at one end which mates with a double hook 29 provided at one end of the support foot half clamp, at the same time as the former is provided at the other end with a housing (30) for a bolt (31) which is threaded into a nut (32) inserted in the end of the latter opposite to the joint.

Patentansprüche

1. Träger für eine axiale Flügelradeinrichtung (1) für gasartiges Fluid, insbesondere Träger zum Einsetzen einer solchen Einrichtung, welche von bekannten Arten, wie etwa einer schraubenförmigen, helicozentrifugalen oder ähnlichen Art sein kann, in eine Leitung mit kleinerem Durchmesser, wobei herkömmlicherweise zum Verbinden der verschiedenen Elemente der Apparatur Steck- oder ringförmige Rillenklemmsysteme, welche Paare aus nebeneinander angeordneten Flanschen der zu verbindenden Elemente halten, und, um den Durchmesserunterschieden dazwischen Rechnung zu tragen, kegelstumpfartige Adaptorelemente, zwischen welchen das Gehäuse der axialen Flügelradeinrichtung montiert ist, wobei die Adaptorelemente mittels einer Stützbrücke, welche eine Befestigung der Anordnung an einer Oberfläche ermöglicht, fest aneinander befestigt sind, verwendet werden,
   dadurch gekennzeichnet, dass er aus mindestens zwei unabhängigen Stützfüßen (5, 5A), von denen jeder eine Hälfte einer ringförmigen Rillenklemme (15A) und Schwenk- und Befestigungsmittel für die andere freie Hälfte (15B) aufweist, gebildet ist, wobei der Aufbau gleichzeitig jeweilige, nebeneinander angeordnete Flansche eines Kopplungsteils (3) zu der Leitung und eines kegelstumpfförmigen Adaptorteils (2) zum Ankoppeln an das Gehäuse der axialen Flügelradreinrichiung (1) zur gleichen Zeit als die Stützfüße miteinander mittels einer beständigen oder festen Verbindungsplatte (18), welche, unter Bereitstellung von automatischen Mitteln zum Ankoppeln an die Basis jedes der Füße, das Befestigen der axialen Flügelradeinrichtung an einer Oberfläche ermöglicht, in Verbindung stehen, hält.

2. Träger nach Anspruch 1, **dadurch gekennzeichnet, dass** die Stützfüße an deren Basis (16) mit einer Aussparung (19) zum stabilen Einführen eines Endes der Verbindungsplatte (18), an welcher die automatischen Kopplungsmittel für die Verbindungsplatte zu finden sind, versehen sind.

3. Träger nach Anspruch 2, **dadurch gekennzeichnet, dass** die automatischen Kopplungsmittel zwischen den Basen (16) der Stützfüße (5, 5A) und die Enden der Verbindungsplatte (18) aus Schnapppassanordnungen bestehen.

4. Träger nach Anspruch 3, **dadurch gekennzeichnet, dass** die Schnapppassanordnungen jeder Basis der Stützfüße aus Zahnpaaren (20) bestehen, welche, an in den Basen (16) angeordneten elastischen Zungen (21) befestigt, mit an den Enden der Verbindungsplatten offenen Fenstern (22) in Eingriff treten.

5. Träger nach Anspruch 2, **dadurch gekennzeichnet, dass** einer der Endstützfüße mit einer einzigen Aussparung (19A) versehen ist, während die verbleibenden End- und Zwischenstützfüsse für den Fall, in dem zwei oder mehrere axiale Flügelradeinrichtungen in Serie zu montieren sind, mit zwei, in entgegengesetzte Richtungen weisenden Aussparungen (19) versehen sind.

6. Träger nach Anspruch 1, **dadurch gekennzeichnet, dass** die halbringförmige Rillenklemme (15A) jedes Stützfußes mit einer Öffnung (23) an dem untersten Punkt dessen Unterteils (24) für den Durchgang eines Anhängsels (25), weiches, ein offenes Fenster (26) aufweisend, sich radial von dem Flansch des Leitungskopplungsteils her (3) erstreckt, versehen ist.

7. Träger nach Anspruch 6, **dadurch gekennzeichnet, dass** die Stützfüße mit einem elastischen Haltezahn (27) versehen sind, welcher mit der Öffnung der halben Rillenklemme und mit dem Fenster des radialen Anhängsels des Leitungskopplungsteils zusammenpasst.

8. Träger nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse des axialen Flügelrades mit Bajonettmitteln (8, 9) zum Ankoppeln desselben an die kegelstumpfförmigen Adaptorteile versehen ist.

9. Träger nach Anspruch 8, **dadurch gekennzeichnet, dass** die Einsteckelemente (8) der Bajonettanordnung regelmäßig außenseitig an den Mündungen des axialen Flügelradeinrichtungsgehäuses angeordnet sind, während die Aufnahmeelemente (9) innenseitig an den Mündungen der kegelstumpfförmigen Teile gelegen sind.

10. Träger nach Anspruch 9, **dadurch gekennzeichnet, dass** die Einsteckelemente aus länglichen Stiften (8) mit kreisförmigem Querschnitt gebildet sind und die Aufnahmeelemente durch einen axialen Eingang (9) und einen in der Umkreisrichtung sich verjüngenden und in einem Haltesitz, welcher etwas größer als ein Halbkreis des Querschnitts ist, endenden Pfad gebildet sind.

11. Träger nach Anspruch 8, **dadurch gekennzeichnet, dass** die Bajonettkopplung zwischen dem axialen Flügelradgehäuse und den kegelstrumpfartigen Adaptorteilen mittels einer radialen Halterung (35) gesichert wird.

12. Träger nach Anspruch 1, **dadurch gekennzeichnet, dass** die freie Hälfte der ringförmigen Rillenklemme an einem Ende mit einem T-förmigen Vor-

sprung (28), welcher mit einem an einem Ende der Stützfusshälfte der Klammer vorgesehenen Doppelhaken (29), gleichzeitig als die vorgenannte am anderen Ende mit einem Gehäuse (30) für einen Bolzen (31), welcher in eine in das Ende der letzteren gegenüber der Verbindung eingearbeiteten Nut (32) eingeschraubt ist, versehen ist, zusammenpasst, versehen ist.

Revendications

1. Support pour dispositif à roue hélice (1) pour fluide gazeux, en particulier un support pour insérer un tel dispositif, lequel peut être de types connus, par exemple hélicoïdal, hélicocentrifuge, etc., dans un conduit d'un diamètre plus petit, dans lequel sont utilisés de manière classique, pour accoupler les divers éléments de l'installation, des systèmes de serrage emboîtables ou à gorge annulaire qui retiennent des paires de brides juxtaposées des éléments à accoupler et, pour absorber les différences de diamètre entre eux, des éléments adaptateurs tronconiques entre lesquels est monté le carter du dispositif à roue hélice, lesdits éléments adaptateurs étant fixés de manière immobile les uns aux autres par un pont de support permettant le montage de l'ensemble sur une surface, **caractérisé en ce qu'**il est formé par au moins deux pieds de support indépendants (5, 5A) ayant chacun un demi-d'un collier de serrage à gorge annulaire (15A) et un moyen de pivotement et de fixation pour l'autre moitié libre (15B), lequel ensemble retient simultanément des brides respectives juxtaposées d'une partie d'accouplement (3) avec le conduit et une pièce adaptatrice tronconique (2) pour l'accouplement avec le carter du dispositif à roue hélice (1) tandis que lesdits pieds de support sont associés les uns aux autres à l'aide d'une plaque de montage résistante (18) qui, pourvue d'un moyen automatique d'accouplement avec la base de chacun des pieds, permet de fixer le dispositif à roue hélice sur une surface.

2. Support selon la revendication 1, **caractérisé en ce que** les pieds de support sont pourvus, à leur base (16), d'un évidement (19) permettant une insertion stable d'une extrémité de la plaque de montage (18), dans lequel doivent se trouver les moyens d'accouplement automatique pour la plaque de montage.

3. Support selon la revendication 2, **caractérisé en ce que** les moyens d'accouplement entre les bases (16) des pieds de support (5, 5A) et les extrémités de la plaque de montage (18) sont constitués par des systèmes à emboîtement.

4. Support selon la revendication 3, **caractérisé en ce que** les systèmes à emboîtement de chaque base des pieds de support sont constitués par des paires de dents (20) qui, montées sur des languettes élastiques (21) situées dans lesdites bases (16), s'engagent dans des fenêtres (22) ouvertes aux extrémités des plaques de montage.

5. Support selon la revendication 2, **caractérisé en ce qu'**un des pieds de support d'extrémité est pourvu d'un seul évidement (19A) tandis que les autres pieds de support d'extrémité et intermédiaire pour le cas où deux dispositifs à roue hélice ou davantage doivent être montés en série, sont pourvus de deux évidements (19) orientés dans des directions opposées.

6. Support selon la revendication 1, **caractérisé en ce que** le demi-collier à gorge annulaire (15A) de chaque pied de support est pourvu d'une ouverture (23) au point le plus bas du bas (24) de celui-ci pour le passage d'une patte (25) qui, ayant une fenêtre ouverte (26), s'étend radialement depuis la bride de la pièce d'accouplement (3) de conduit.

7. Support selon la revendication 6, **caractérisé en ce que** les pieds de support sont pourvus d'une dent de retenue élastique (27) s'engageant dans l'ouverture du demi-collier à gorge et dans la fenêtre de la patte radiale de la pièce d'accouplement de conduit.

8. Support selon la revendication 1, **caractérisé en ce que** le carter de à roue hélice est pourvu de moyens à baïonnette (8, 9) pour l'accouplement de celui-ci avec les pièces adaptatrices tronconiques.

9. Support selon la revendication 8, **caractérisé en ce que** les éléments mâles (8) du système à baïonnette sont disposés de manière régulière à l'extérieur des embouchures du carter à roue hélice, tandis que les éléments femelles (9) sont situés à l'intérieur des embouchures des parties tronconiques.

10. Support selon la revendication 9, **caractérisé en ce que** les éléments mâles sont constitués par des broches allongées (8) à section circulaire et les éléments femelles sont constitués par une entrée axiale (9) et un trajet conique dans la direction du périmètre et aboutissant dans un logement de retenue qui est un peu plus grand qu'un demi-cercle de la section.

11. Support selon le revendication 8, **caractérisé en ce que** l'accouplement à baïonnette entre le carter d'hélice et les pièces adaptatrices tronconiques est assuré par un moyen de retenue radial (35).

12. Support selon la revendication 1, **caractérisé en ce**

que la moitié libre du collier à gorge annulaire est pourvue, à une première extrémité, d'un bossage en T (28) qui coopère avec un double crochet (29) présent à une extrémité du demi-collier de pied de support, tandis que le premier est pourvu, à l'autre extrémité, d'un logement (30) ou d'un boulon (31) qui est vissé dans un écrou (32) inséré dans l'extrémité de ce dernier à l'opposé de l'assemblage.

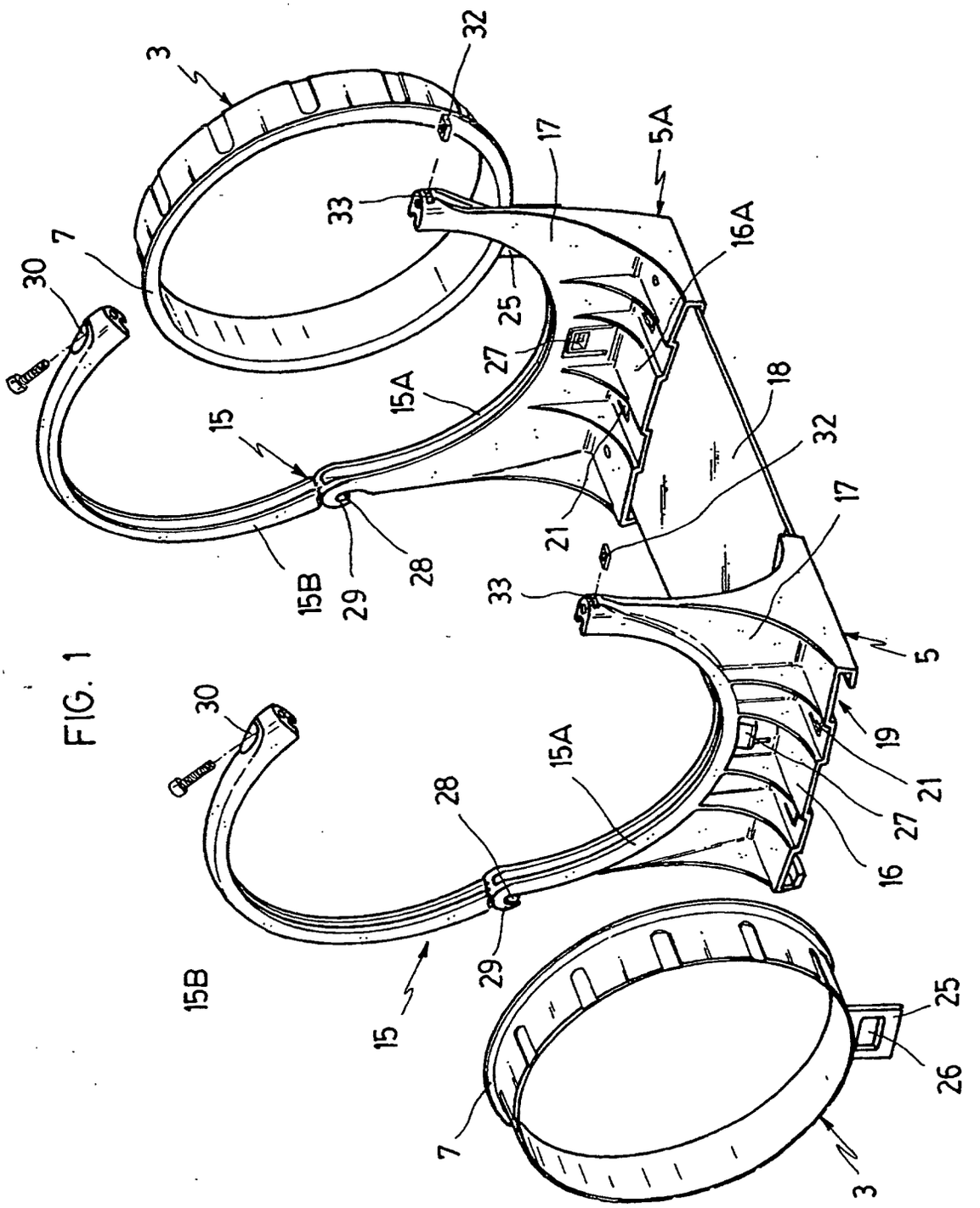

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17
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16A
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FIG. 1

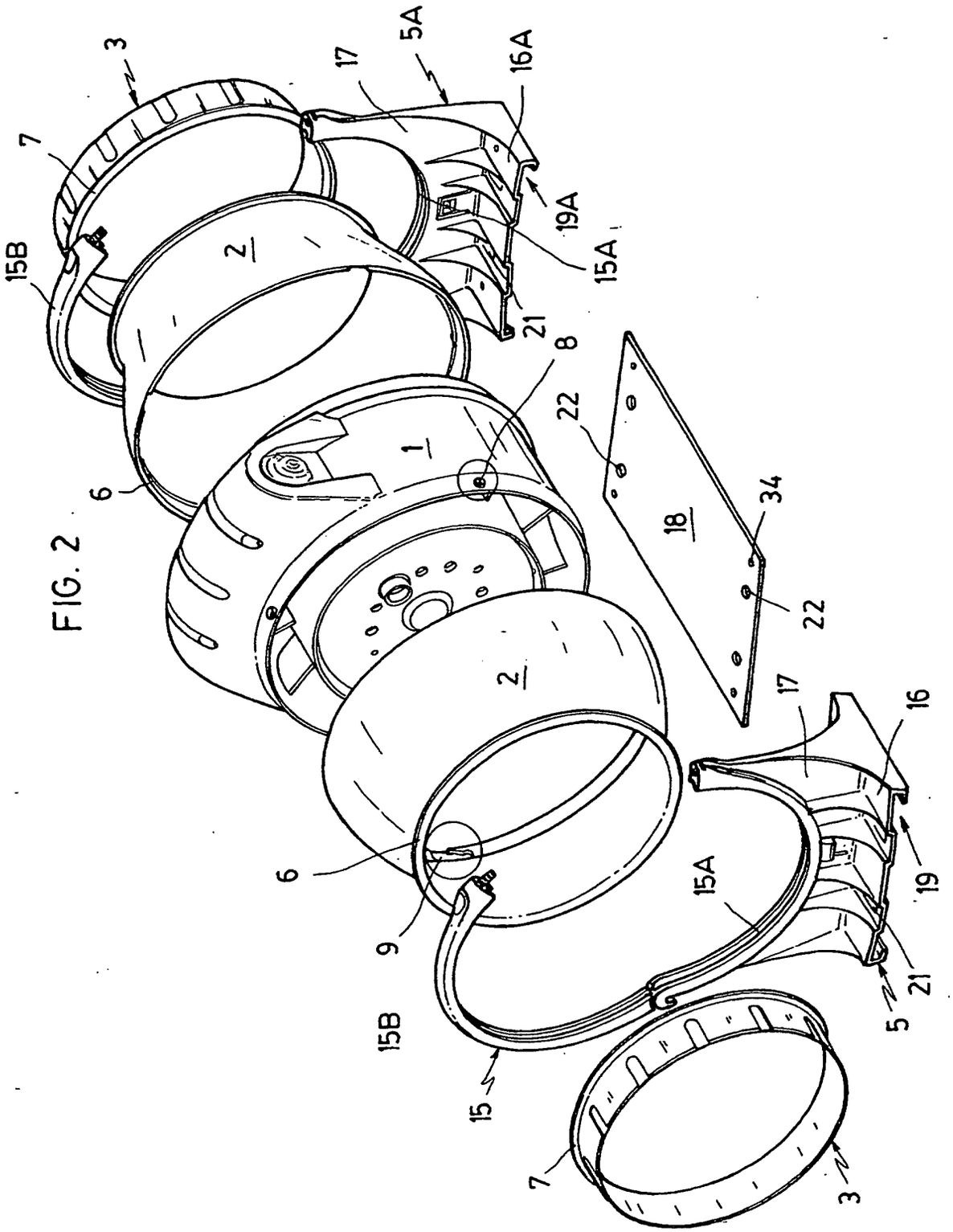

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5
15
7
3

FIG. 2

FIG. 3

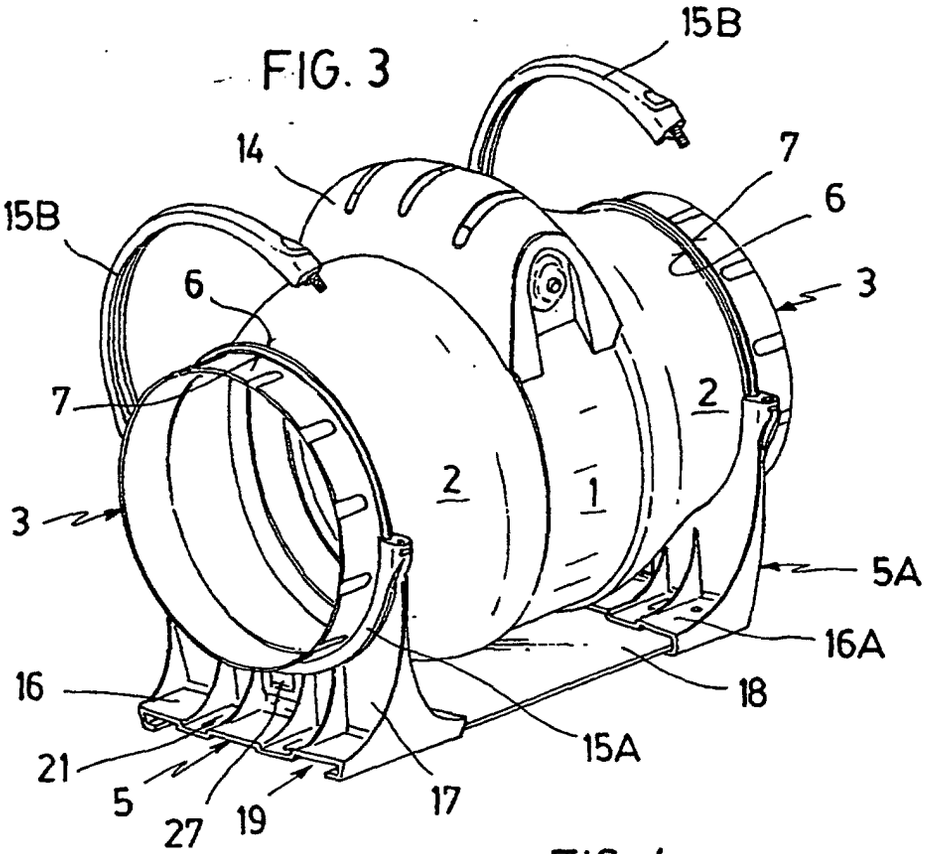
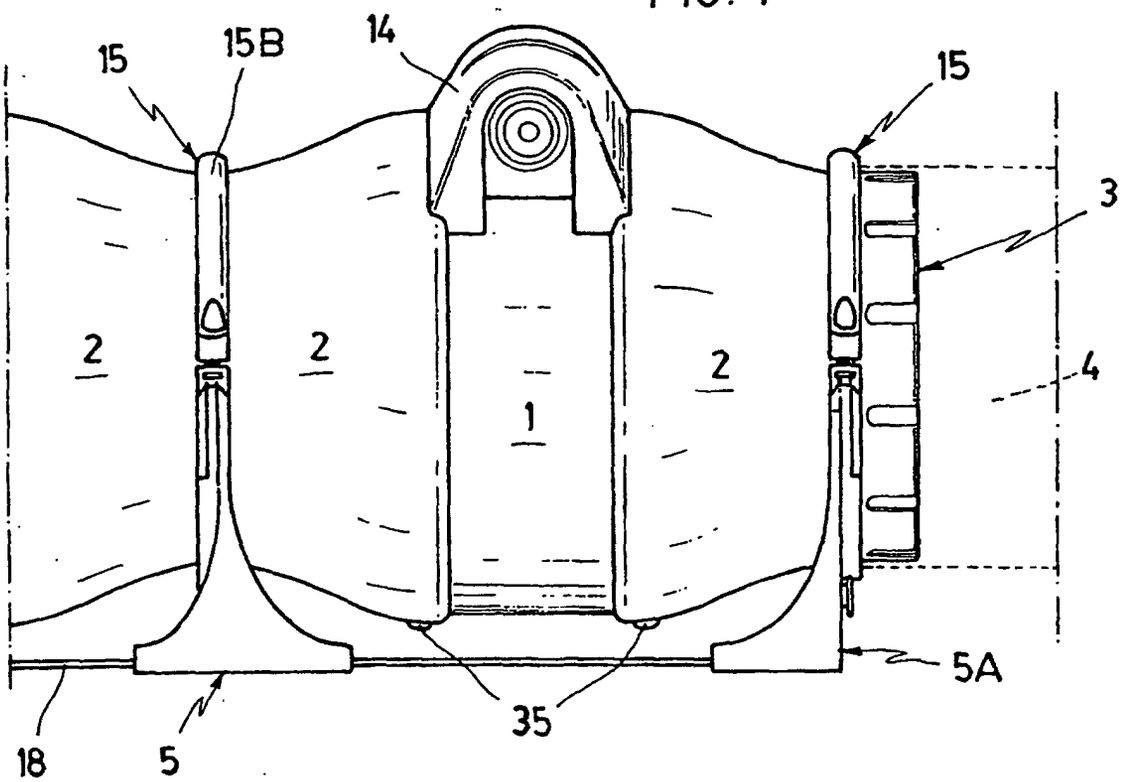

15B
14
7
6
3
15B
6
7
2
2
1
3
5A
16A
16
18
15A
21
5
27
19
17

FIG. 4


15
15B
14
15
3
2
2
2
1
4
5A
35
18
5

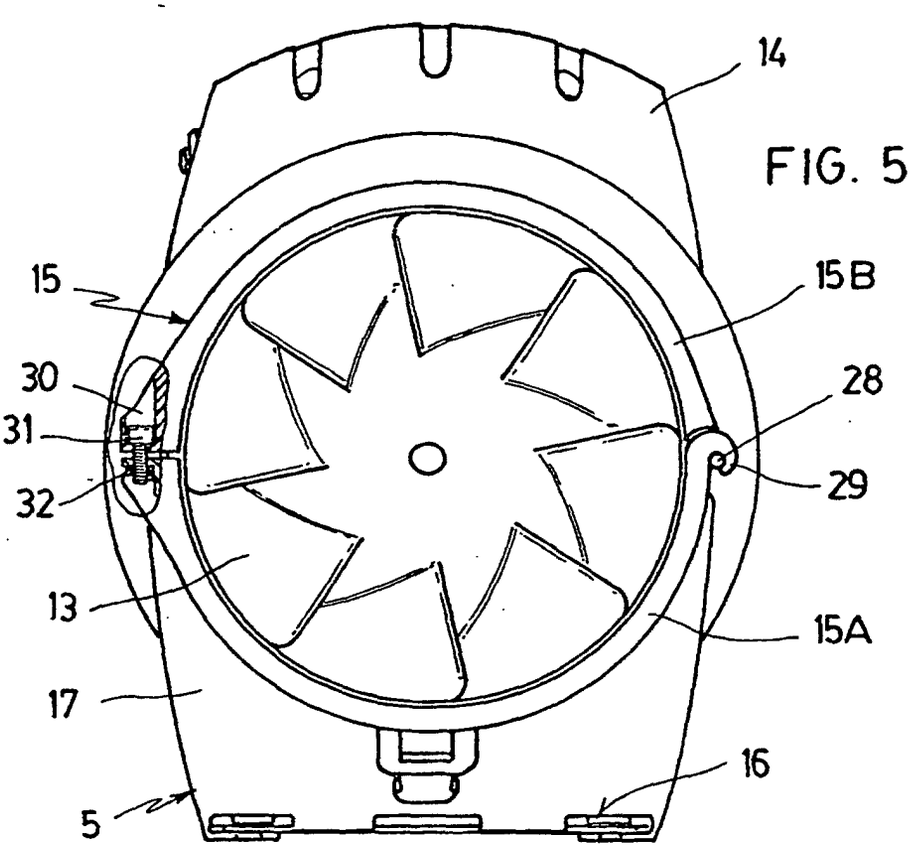


FIG. 5

FIG. 6

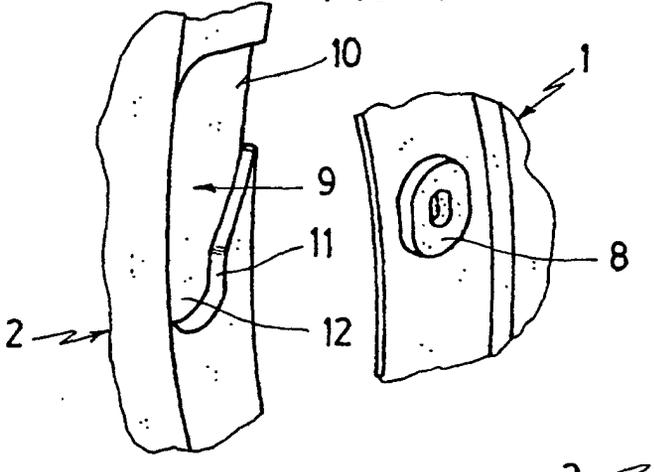
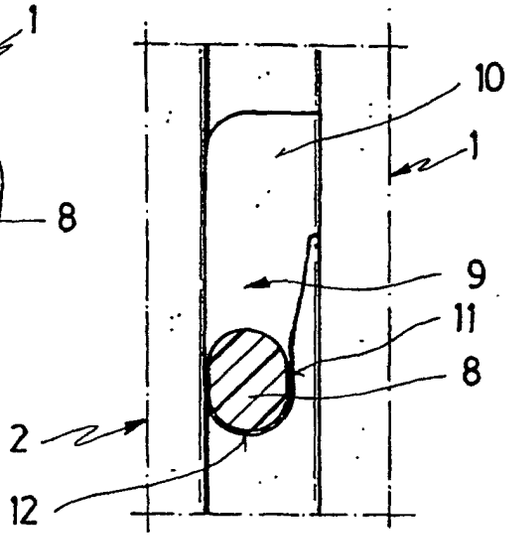


FIG. 7



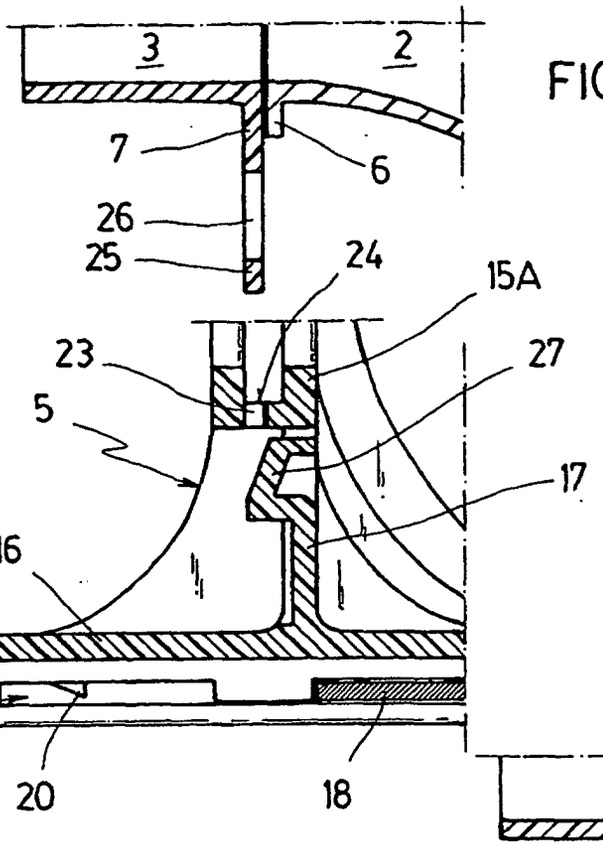


FIG. 8

FIG. 9

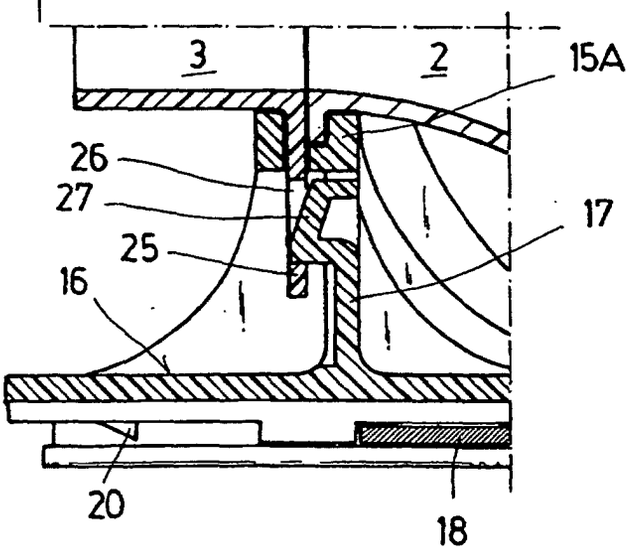


FIG. 10

