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(54) **A BURNER NOZZLE**

BRENNERDÜSE

BUSE DE BRÛLEUR

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Description

Technical field

[0001] The present invention relates to burner nozzle for atomizing liquid fuel with assistance of compressed gas, comprising a first outlet for compressed gas, having a center axis and a second outlet for liquid fuel according to the preamble of claim 1.

Background art

[0002] Liquefied gas as a fuel of prime movers in marine vessels and other mobile, and immobile, power plants has increasingly become of interest while the importance of environmental issues of particularly the exhaust emissions have increased.

[0003] Liquefied gas, such as liquefied natural gas, is typically stored at extremely low temperature and due to e.g. heat transfer from surrounding a part of the gas is evaporated as so called boil off gas. Admitting the boil off gas to the atmosphere is not desired. It is known as such to burn excess gas to convert it into composition significantly less harmful to the environment.

[0004] Such liquefied gas tanks and a fuel handling system requires also inerting of the spaces related to the tanks, pipes and so on for example for maintenance work. It is known as such to burn the gas present in the tanks and their auxiliaries to convert it into composition of non-reactive gas i.e. inert gas.

[0005] US 3240254 A discloses a burner nozzle for atomizing liquid fuel with assistance of compressed gas comprising an outlet for compressed gas, which outlet comprises an outwardly extending conical portion having a center axis, the burner nozzle further comprising a gas dispersing element which is arranged to the center axis at a distance from and coaxially with the first outlet in the direction away from the first outlet. The liquid fuel is introduced into the gas within the burner nozzle, and is sprayed out from the nozzle through its outlet.

[0006] US2006/278736 A1 concerns a sprinkler device for emitting atomized liquid, the device injecting the liquid into a gas flow stream where the liquid is atomized and projected away from the device. The device comprises a convergent nozzle through which the gas is discharged from the device. There is a deflector surface positioned spaced apart from the nozzle and a gap being established between the deflector surface and the nozzle outlet.

[0007] GB 1547770 A discloses a gas turbine fuel injector. The fuel injector is symmetrical about its longitudinal centre axis. The fuel injector consists of a substantially cylindrical hollow central body and an outer body which partially surrounds the central body and is supported thereon. In operation of the engine compressed air passes through the hollow central body and also through the annular flow path between the central body and the outer body. The internal surface of the central body is provided with a plurality of orifices connected to a fuel

system of the engine. Thus the fuel is introduced into the gas within the fuel injector.

[0008] US 3534909 A discloses an integral valve and injector and more particularly to a bi-propellant mixture ratio and flow controlling valve and a variable thrust injector. The valve-injector unit includes generally a housing, an injector chamber body and a pintle mounting member having a pintle head. The housing includes an outer cylindrical casing within which is mounted a disk member supporting an axially disposed annular cylinder which serves as oxidizer introduction means. The cylinder is tapered at its outside outer extremity a converging neck portion which terminates short of the pintle head. A pintle head support rod is axially disposed within the cylinder and the rod is attached to the end plate of a fixed cylindrical member. The annular cylindrical member is rigidly attached to the injector body by means of a support.

[0009] DE 103 14 941 A1 discloses a fuel injection device for a gas turbine burner having an inner fuel conduit and coaxial to it air channels. An end of the fuel conduit, which is inside the nozzle, there is provided a concentrically arranged conical piece for dispersing the fuel from the fuel conduit.

[0010] KR20150096540 discloses a method of combusting and providing inert gas for filling a storage tank by the inert gas. As an examples of boil-off gas flaring arrangements it is referred to publication WO 00/47463 A1.

[0011] Inert gas generators and boil off gas flaring arrangements often require an auxiliary burner configured to burn liquid fuel for supporting the combustion of diluted boil-off gas. A critical component in a burner is the fuel nozzle. In order to ensure that the burner operates at optimum performance when burning e.g. diesel or light fuel oil, the air and the fuel needs to be mixed in a proper and controlled manner. Further, in order to use the burner in a variety of configurations, a large turn-down ratio is required; that is, being able to maintain both the atomization grade i.e. ensuring a monodisperse and predictable spray and spray angle over a large output range.

[0012] Invention relates particularly to liquid fuel nozzle in which the liquid fuel is atomized with assistance of a compressed gas, preferably air.

[0013] It is an object to provide a fuel nozzle for a burner which provides better performance than known fuel nozzles.

Disclosure of the Invention

[0014] Objects of the invention can be met substantially as is disclosed in the independent claims and in the other claims describing more details of different embodiments of the invention.

[0015] According to an embodiment of the invention a burner nozzle for atomizing liquid fuel with assistance of compressed gas comprises a first outlet for compressed gas, having a center axis and a second outlet for liquid

fuel. The second outlet is arranged rotationally symmetrically around the first outlet in respect to the center axis, the first outlet comprises an outwardly extending conical portion, and the burner nozzle comprises a gas dispersing element which is arranged to the center axis at a distance from and coaxially with the first outlet in the direction away from the first outlet.

[0016] According to an embodiment of the invention the second outlet comprises an annular slit arranged coaxially with the first outlet.

[0017] According to an embodiment of the invention in that the second outlet is arranged axially at the end of the first outlet.

[0018] According to an embodiment of the invention the dispersing element is rotationally symmetrical in respect to the center axis and arranged to extend in axial direction.

[0019] According to an embodiment of the invention the radial dimension of the dispersing element is arranged to increase as the distance from the first outlet increases.

[0020] According to an embodiment of the invention the dispersing element is conical having its apex towards the first outlet.

[0021] According to an embodiment of the invention the burner nozzle has a body assembly comprises a first body part and a second body part, wherein the first body part comprises a gas flow channel arranged to extend through the first body part from a first end thereof to a second end, along the center axis, the second end of which gas flow channel constituting the first outlet, and a rotationally symmetrical outer surface in respect to the center axis, and wherein the second body part comprises a sleeve section axially extending over the outer surface of the first body part, wherein the sleeve section of the second body part and the outer surface of the first body part form an annular space between them, which annular space forms a fuel conduit and terminates to the second outlet.

[0022] According to an embodiment of the invention the first body part and the second body part are provided with means for aligning and retaining the first body part and the second body part in coaxial relationship with each other.

[0023] According to an embodiment of the invention the first body part comprising a first flange part arranged at the first end of the first body part, and the second body part comprising a second flange part at a first end of the second body part, and that the first and the second flange parts are provided with mating forms configured to align and retain the first body part and the second body part in coaxial relationship with each other.

[0024] According to an embodiment of the invention the gas flow channel comprises at a first end of the flow channel a flow channel section constricting towards the second end, followed by a flow channel extending towards the second end of the gas flow channel.

[0025] According to an embodiment of the invention

the dispersing element is fixed to the first body part.

[0026] According to an embodiment of the invention the dispersing element is fixed to the second body part.

[0027] By means of the invention the liquid fuel, such as diesel oil, is atomized using a compressed gas, typically air. This provides a possibility to use reduced fuel supply pressure. Also a more stable monodisperse spray over a large fuel flow rate range is obtained.

[0028] By means of the invention the nozzle may be modularized so that for example one second body part can be used in connection with a number of differently formed first body parts. This way the capacity of the fuel nozzle can be varied by changing only the first body part of the fuel nozzle.

[0029] The exemplary embodiments of the invention presented in this patent application are not to be interpreted to pose limitations to the applicability of the appended claims. The verb "to comprise" is used in this patent application as an open limitation that does not exclude the existence of also unrecited features. The fuel nozzle according to the invention is usable to any practical burner application other than described here for atomizing and combusting liquid fuel with assistance of compressed air. The features recited in depending claims are mutually freely combinable unless otherwise explicitly stated. The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims.

Brief Description of Drawings

[0030] In the following, the invention will be described with reference to the accompanying exemplary, schematic drawings, in which

Figure 1 illustrates a burner nozzle according to an embodiment of the invention,

Figure 2 illustrates a first body part of the burner nozzle according to an embodiment of the invention, and

Figure 3 illustrates a second body part of the burner nozzle according to an embodiment of the invention.

Detailed Description of Drawings

[0031] Figure 1 depicts schematically a burner nozzle 10 for atomizing liquid fuel with assistance of compressed gas according to an embodiment of the invention. The nozzle is configured to be attached to a separate burner body or a nozzle tube in a burner body (not shown) via which liquid fuel and compressed gas, advantageously air, may be introduced into the nozzle 10, as is depicted by the respective arrows 12, 14, which also show the general flow direction of the fluids. The fuel and the compressed air are then sprayed out of the nozzle 10 for atomizing and thereafter burning the fuel. The burner nozzle 10 is a twin fluid atomizer. The nozzle utilizes a

so called Air Centre Liquid Ring, where a thin annular liquid sheet is formed and upon exit is atomized using the expanding air exiting the centre outlet.

[0032] The burner nozzle 10 comprises a first outlet 16 for compressed gas. The first outlet is arranged coaxially into a center axis 18 of the nozzle 10. The compressed gas is used for assisting the atomization of liquid fuel introduced via the nozzle 10. Thus, the nozzle 10 is also provided with a second outlet 20 for liquid fuel which is arranged rotationally symmetrically around the first outlet 16 in respect to the center axis 18. In the embodiment of figure 1 the second outlet 20 is an annular slit 20 which is arranged coaxially with the first outlet. It is also feasible in the scope of the invention that instead of being absolutely continuous slit the second outlet 20 is comprised of a number of sectional slits separated by narrow, radial support protrusions in either of body parts (not shown). The purpose of the slit is to provide an annular film of liquid fuel to flow initially out of the nozzle 10, which is then effected by the flow of compressed gas.

[0033] The first outlet 16 comprises an outwardly extending conical portion 22, by means of which the flow of compressed gas is made to widen and directed to comprise a radial velocity component. In other words a radial cross sectional dimension of the conical portion 22 is arranged to increase towards the actual outlet. This way the flow of compressed gas and the annular film of liquid fuel coincide with each other and the fuel film is atomized into droplets and/or mist. The fuel burner 10 further comprises a gas dispersing element 24, which is arranged to the center axis 18 at a distance from and coaxially with the first outlet 16 in the direction away from the first outlet 16. The gas dispersing element 24 is formed so as to further direct the flow of compressed gas into a form of hollow cone, which facilitates the formation of cone-like flow pattern of the liquid fuel droplets and/or mist. The dispersing element 24 is rotationally symmetrical in respect to the center axis 18. The radial cross sectional dimension of the dispersing element 24 is arranged to increase as the distance from the first outlet 16 increases. More precisely the dispersing element in the figure 1 is conical having its apex point towards the first outlet 16. This will set the fuel spray to the desired angle and keep this throughout the entire flow range of the nozzle and ensures that the fuel spray is monodisperse over a wide range, further assisting in keeping the air / fuel mixture optimized.

[0034] As can be seen in the figure 1 the first outlet 16 and the second outlet 20 are arranged to open at a common axial position i.e. the second outlet 20 is arranged axially at the end of the first outlet 16. In the position shown in the figure 1 or when the center axis 18 is vertically oriented this means that the first outlet 16 and the second outlet 20 are arranged to open at same horizontal level.

[0035] The burner nozzle comprises a body assembly 26 of distinct parts. The body assembly 26 is described in more detail with a reference to the figures 2 and 3. The assembly comprises a first body part 30, which is shown

in the figure 2 and a second body part 32, which is shown in the figure 3. The first and the second body parts form the burner nozzle 10 when assembled such that the second body part partially encloses the first body part, as can be seen in the figure 1. Figure 2A shows a side view of the first body 30 part such that the right side shows a sectional drawing of the first body part and the left side shows a front view of the first body part. Figure 2B shows the first body part in the direction B of the figure 2A, that is from above in the figure. Figure 3A shows a side view of the second body part such that the right side shows a sectional drawing of the second body part and the left side shows a front view of the second body part. Figure 3B shows the second body part in the direction B of the figure 3A.

[0036] The first body part 30 comprises a gas flow channel 34, which is arranged to extend through the first body part from a first end 30', i.e. an inlet end of the burner nozzle a second end 30" of the burner nozzle, along the center axis 18. The gas flow channel 34 has a specific form such that the cross sectional area of the channel 34 is first gradually (shown by dashed line in the figure 2A) or stepwise constricted, beginning from the first end, such that there is a local constriction 36 in the channel 34. After the constriction 36, in the flow direction of the gas, a second end of the gas flow channel constitutes the first outlet 16 which outlet has a rotationally symmetrical surface 16' in the first body part 30, in respect to the center axis. The outer surface is rotationally symmetrical, advantageously of a shape of a cone, a cross sectional dimension of which increases as the distance from the local constriction 36 increases.

[0037] The first body part 30 and the second body part 32 are provided with means 40 for aligning and retaining the first body part and the second body part in coaxial relationship with each other. For that purpose the first body part 30 is provided with flange part 38 at the first end 30' thereof. The first body part 30 comprises a first flange part 38 arranged at the first end 30' of the first body part 30. The first flange part 38 is provided which one or more alignment protrusions 40. The protrusion 40 may be of different form. In the embodiment of figure 1 and 2 the protrusions 40 comprise two or more dowels or alike arranged to extend from otherwise generally flat surface of the flange part 38 towards second end 30' of the first body part 30. The protrusion may be also for example an annular ring protrusion. The means 40 for aligning and retaining the first body part and the second body part in coaxial relationship with each other may also be constructed as a specific form of the flange part 42 to provide the alignment effect by the form. In the figure 1 one can see how the first and the second body parts are aligned with each other when the dowels 40 are within the cavities 40' and the flange parts 38, 42 are tightly facing each other.

[0038] The first body part 30 is provided with a generally inwardly tapering outer surface 44, extending from the first flange part 36 in the direction from the first end

30' to the second end 30". More particularly the outer surface is in a form of a truncated cone in the figures. The outer surface 44 borders partially a fuel conduit formed between the first body part 30 and the second body part 32.

[0039] The first body part 30 is provided with axial openings 50 arranged to the first flange part 38. The openings are arranged to a locations radially outside the outer surface 44 of the first body part 30 to open in the annular fuel conduit formed between the first body part 30 and the second body part 32 when the first and the second body parts are assembled as intended. The openings 50 are formed in the first flange part 38 such that there is practically an annular opening around the outer surface 44.

[0040] Respectively the second body part 32 is provided with a second flange part 42 at a first end 30' of the second body part 32. The first and the second flange parts 38, 42 are provided with mating forms configured to align and retain the first body part 30 and the second body part 32 in coaxial relationship with each other. Therefore, the second flange part comprises one or more indentations 40' spaced and formed to mate with the protrusions in the first flange part 38 in the first body part 30. In the embodiment of figure 1 and 3 the indentation 40 comprise two or more cylindrical cavities or alike arranged to otherwise generally flat surface of the flange part 42.

[0041] The second body part 32 further comprises a sleeve section 46 which is axially extending from the second flange part 42 of the second body part 32. The sleeve section has substantially cylindrical outer surface having a rounded second end 30" edge. Internal surface 48 of the second body part is generally inwardly tapering circular surface extending from the second flange part 42 in the direction from the first end 30' to the second end 30". More particularly the internal surface 48 is in a form of a truncated cone in the figures. An angle in respect to the center axis 18 of the truncated cone of the second body part 32 is greater than an angle of the truncated cone of the first body part 30.

[0042] The sleeve section 46 of the second body part 32 is over the outer surface 44 of the first body part 30, when assembled to the first body part 30 as is shown in the figure 1. The second body part 32 has an opening 52 radially inside the flange part 42 and the sleeve section 46 into which opening the first body part 30 is assemblable such that the first flange part 36 is axially against the second flange part 42. When the first body part 30 and second body part 32 are assembled together as is shown in the figure 1, the sleeve section 48 of the second body part 32 and the outer surface 44 of the first body part 30 form an annular space 54 between them, which annular space connects the axial openings 50 in the first body part 30 to the second outlet 20 of the nozzle 10 and forms the fuel conduit formed between the first and the second part.

[0043] As can be seen in the figure 1 and 2 the dis-

persing element 24 is supported from the nozzle by means of axially oriented bars or a like 28. There are three rotationally symmetrically arranged bars 28 arranged in the first body part which are fixed to the dispersing element 24. Naturally the number of bars 28 can vary depending on the case. It is also conceivable that the dispersing element 24 can be supported by the bars from the second body part 46. However, is more advantageous to support the dispersing element from the first body part 30. That is because the bars 28 disturb less the formation of the fuel film, when it is only the gas, and not the liquid fuel, which need to flow passing the bars 28. The dispersing element 24, when being in a form of a cone has advantageously a circular base. However, the benefits of the invention, at least to some extent, can be obtained by using cone-like dispersing element having a polygon having more than 5 regular sides (pentagon). In the figures, the dispersing element 24 is depicted as a hollow cone.

Claims

1. A burner nozzle (10) for atomizing liquid fuel with assistance of compressed gas, comprising a first outlet (16) for compressed gas, which outlet comprises an outwardly extending conical portion (22) having a center axis (18), the burner nozzle (10) further comprising a gas dispersing element (24) which is arranged to the center axis (18) at a distance from and coaxially with the first outlet (16) in the direction away from the first outlet (16), **characterized in that** the burner nozzle comprises a second outlet (20) for liquid fuel which comprises an annular slit (20) arranged coaxially with the first outlet (16) of the burner nozzle (10) in respect to the center axis (18) and arranged axially at the end of the first outlet (16), and that the dispersing element (24) is of conical shape and has its apex towards the first outlet (16).

2. A burner nozzle (10) according to claim 1, **characterized in that** the burner nozzle (10) has a body assembly comprising a first body part (30) and a second body part (32), wherein the first body part comprises

a gas flow channel (34) arranged to extend through the first body part (30) from a first end (30') thereof to a second end (30"), along the center axis (18), the second end of which gas flow channel (34) constituting the first outlet (16); and

a rotationally symmetrical outer surface (44) in respect to the center axis (18), and the second body part (32) comprising a sleeve section (46) axially extending over the outer surface of the first body part (30), wherein the sleeve section (46) of the second body part

(32) and the outer surface (44) of the first body part (30) form an annular space between them, which annular space forms a fuel conduit and terminates to the second outlet (20).

3. A burner nozzle (10) according to claim 2, **characterized in that** the first body part (30) and the second body part (32) are provided with means for aligning and retaining the first body part (30) and the second body part (32) in coaxial relationship with each other.
4. A burner nozzle (10) according to claim 3, **characterized in that** the first body part (30) comprising a first flange part (38) arranged at the first end of the first body part (30), and the second body part (32) comprising a second flange part (42) at a first end of the second body part (32), and that the first and the second flange parts (38, 42) are provided with mating forms configured to align and retain the first body part (30) and the second body part (32) in coaxial relationship with each other.
5. A burner nozzle (10) according to claim 2, **characterized in that** the gas flow channel (34) comprises, at a first end of the flow channel, a flow channel section constricting (36) towards the second end, followed by a flow channel extending towards the second end of the gas flow channel (34).
6. A burner nozzle (10) according to claim 1 and 2, **characterized in that** the dispersing element (24) is fixed to the first body part (30).
7. A burner nozzle (10) according to claim 1 and 2, **characterized in that** the dispersing element (24) is fixed to the second body part (32).

Patentansprüche

1. Brennerdüse (10) zum Zerstäuben von flüssigem Brennstoff mit Hilfe von komprimiertem Gas, die einen ersten Auslass (16) für komprimiertes Gas umfasst, wobei der Auslass einen sich nach außen erstreckenden konischen Abschnitt (22) umfasst, der eine Mittenachse (18) aufweist, wobei die Brennerdüse (10) ferner ein Gaszerstreuungselement (24) umfasst, das zu der Mittenachse (18) in einem Abstand von und coaxial zu dem ersten Auslass (16) in der Richtung von dem ersten Auslass (16) weg eingerichtet ist, **dadurch gekennzeichnet, dass** die Brennerdüse einen zweiten Auslass (20) für flüssigen Brennstoff umfasst, der einen ringförmigen Schlitz (20) umfasst, der coaxial zu dem ersten Auslass (16) der Brennerdüse (10) in Bezug auf die Mittenachse (18) eingerichtet ist und axial an dem Ende des ersten Auslasses (16) eingerichtet ist, und dass das Zerstreuelement (24) konische Form auf-

weist und seine Spitze in Richtung des ersten Auslasses (16) aufweist.

2. Brennerdüse (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Brennerdüse (10) eine Körperanordnung aufweist, die ein erstes Körperteil (30) und ein zweites Körperteil (32) umfasst, wobei das erste Körperteil

einen Gasströmungskanal (34) umfasst, der dazu eingerichtet ist, sich durch das erste Körperteil (30) von einem ersten Ende (30') davon zu einem zweiten Ende (30'') entlang der Mittenachse (18) zu erstrecken, wobei das zweite Ende des Gasströmungskanals (34) den ersten Auslass (16) bildet; und eine rotationssymmetrische Außenoberfläche (44) in Bezug auf die Mittenachse (18), und wobei das zweite Körperteil (32) einen Hülseabschnitt (46) umfasst, der sich axial über die Außenoberfläche des ersten Körperteils (30) erstreckt, wobei der Hülseabschnitt (46) des zweiten Körperteils (32) und die Außenoberfläche (44) des ersten Körperteils (30) einen ringförmigen Raum zwischeneinander bilden, wobei der ringförmige Raum eine Kraftstoffleitung bildet und an dem zweiten Auslass (20) endet.

3. Brennerdüse (10) nach Anspruch 2, **dadurch gekennzeichnet, dass** das erste Körperteil (30) und das zweite Körperteil (32) mit Mitteln zum Ausrichten und Halten des ersten Körperteils (30) und des zweiten Körperteils (32) in coaxialer Beziehung zueinander versehen sind.

4. Brennerdüse (10) nach Anspruch 3, **dadurch gekennzeichnet, dass** das erste Körperteil (30) ein erstes Flanschteil (38) umfasst, das an dem ersten Ende des ersten Körperteils (30) eingerichtet ist, und ein zweites Körperteil (32), das ein zweites Flanschteil (42) an einem ersten Ende des zweiten Körperteils (32) umfasst, und dass das erste und das zweite Flanschteil (38, 42) mit zusammenpassenden Formen versehen sind, die dazu konfiguriert sind, das erste Körperteil (30) und das zweite Körperteil (32) in coaxialer Beziehung zueinander auszurichten und zu halten.

5. Brennerdüse (10) nach Anspruch 2, **dadurch gekennzeichnet, dass** der Gasströmungskanal (34) an einem ersten Ende des Strömungskanals einen Strömungskanalabschnitt (36) umfasst, der sich in Richtung des zweiten Endes verengt, gefolgt von einem Strömungskanal, der sich in Richtung des zweiten Endes des Gasströmungskanals (34) erstreckt.

6. Brennerdüse (10) nach Anspruch 1 und 2, **dadurch gekennzeichnet, dass** das Zerstreuungselement (24) an dem ersten Körperteil (30) befestigt ist.
7. Brennerdüse (10) nach Anspruch 1 und 2, **dadurch gekennzeichnet, dass** das Zerstreuungselement (24) an dem zweiten Körperteil (32) befestigt ist.

Revendications

1. Buse de brûleur (10) pour pulvériser un combustible liquide à l'aide de gaz comprimé, comprenant une première sortie (16) pour le gaz comprimé, laquelle sortie comprend une partie conique s'étendant vers l'extérieur (22) présentant un axe central (18), la buse de brûleur (10) comprenant en outre un élément de dispersion de gaz (24) qui est agencé par rapport à l'axe central (18) à distance de et coaxialement à la première sortie (16) dans la direction s'éloignant de la première sortie (16), **caractérisé en ce que** la buse de brûleur comprend une deuxième sortie (20) pour le combustible liquide qui comprend une fente annulaire (20) disposée coaxialement à la première sortie (16) de la buse du brûleur (10) par rapport à l'axe médian (18) et disposée axialement à l'extrémité de la première sortie (16), et **en ce que** l'élément de dispersion (24) est de forme conique et présente son sommet vers la première sortie (16).
2. Buse de brûleur (10) selon la revendication 1, **caractérisée en ce que** la buse de brûleur (10) présente un ensemble de corps comprenant une première partie de corps (30) et une deuxième partie de corps (32), dans lequel la première partie de corps comprend

un canal d'écoulement de gaz (34) agencé pour s'étendre à travers la première partie de corps (30) depuis une première extrémité (30') de celle-ci jusqu'à une deuxième extrémité (30''), le long de l'axe central (18), la deuxième extrémité de canal d'écoulement de gaz (34) constituant la première sortie (16) ;
et une surface extérieure symétrique en rotation (44) par rapport à l'axe central (18), et la deuxième partie de corps (32) comprenant une section de manchon (46) s'étendant axialement sur la surface extérieure de la première partie de corps (30), dans laquelle la section de manchon (46) de la deuxième partie de corps (32) et la surface extérieure (44) de la première partie de corps (30) forment un espace annulaire entre elles, lequel espace annulaire forme un conduit de carburant et aboutit à la deuxième sortie (20).

3. Buse de brûleur (10) selon la revendication 2, **ca-**

ractérisée en ce que la première partie de corps (30) et la deuxième partie de corps (32) sont pourvues de moyens d'alignement et de retenue de la première partie de corps (30) et de la deuxième partie de corps (32) en relation coaxiale l'une avec l'autre.

4. Buse de brûleur (10) selon la revendication 3, **caractérisée en ce que** la première partie de corps (30) comprend une première partie de bride (38) agencée à la première extrémité de la première partie de corps (30), et la deuxième partie de corps (32) comprenant une deuxième partie de bride (42) à une première extrémité de la deuxième partie de corps (32), et **en ce que** les première et deuxième parties de bride (38, 42) sont pourvues de formes d'accouplement configurées pour aligner et retenir la première partie de corps (30) et la deuxième partie de corps (32) en relation coaxiale l'une avec l'autre.
5. Buse de brûleur (10) selon la revendication 2, **caractérisée en ce que** le canal d'écoulement de gaz (34) comprend, à une première extrémité du canal d'écoulement, un tronçon de canal d'écoulement se rétrécissant (36) vers la deuxième extrémité, suivi par un canal d'écoulement s'étendant vers la deuxième extrémité du canal d'écoulement de gaz (34).
6. Buse de brûleur (10) selon les revendications 1 et 2, **caractérisée en ce que** l'élément de dispersion (24) est fixé à la première partie de corps (30).
7. Buse de brûleur (10) selon les revendications 1 et 2, **caractérisée en ce que** l'élément de dispersion (24) est fixé à la deuxième partie de corps (32).

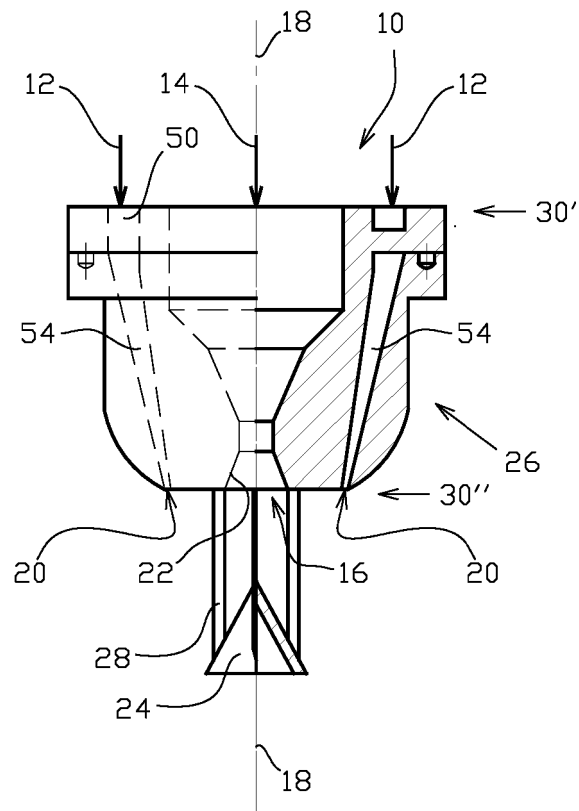


FIG. 1

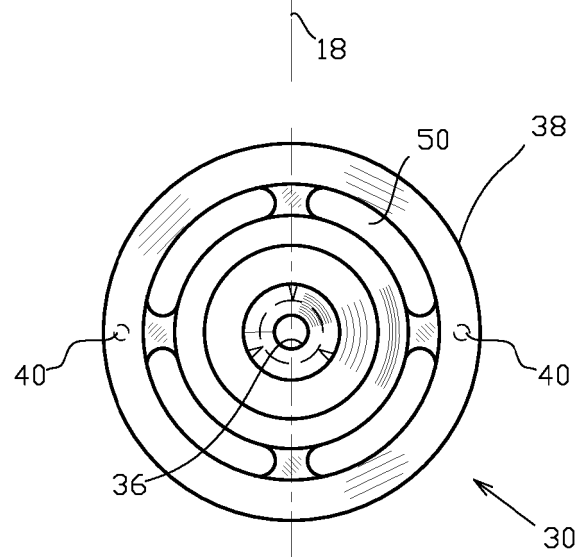
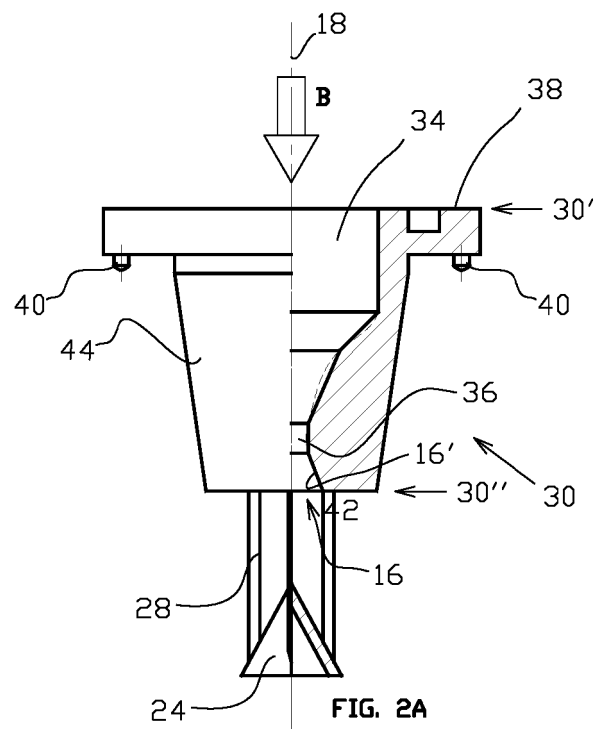


FIG. 2

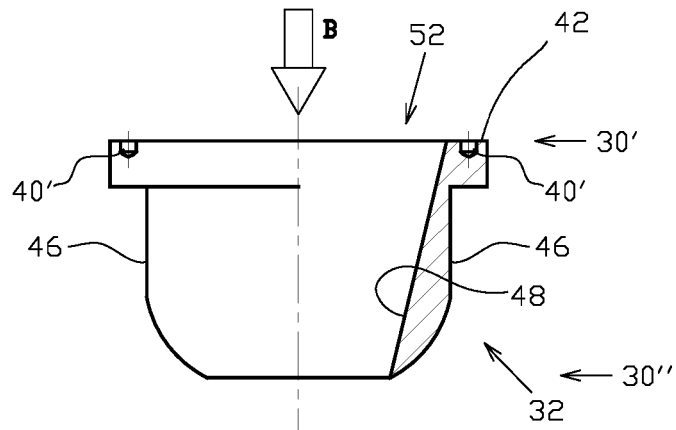


FIG. 3A

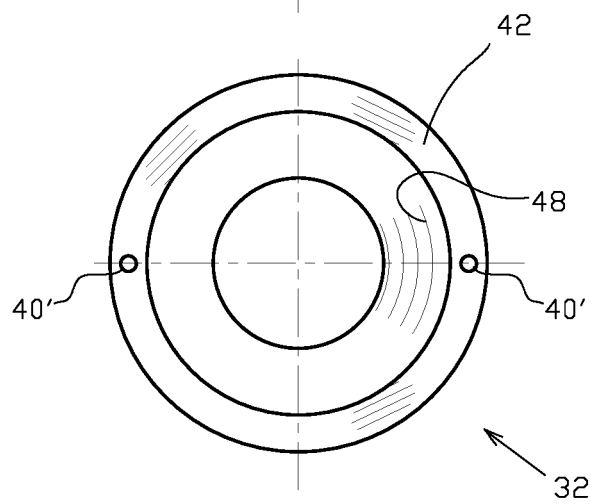


FIG. 3B

FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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