



Clarke, Modet & Co.

COLOMBIA

E-MAIL: clarkemodet@clarkemodet.com.co
SANTAFÉ DE BOGOTÁ, A.A. 92397

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SEÑORES
DIVISION DE NUEVAS CREACIONES
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
E. S. D.

SUPERINDUSTRIA Y COMERCIO
Radicacion : 02035643 00000002
Fecha (HH): 2002-06-22 10:33:36
Tramite : 002 PATENTES D 1 REGISTRO/ 329 COMPLETEN
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES
Folios: 22

REF: SOLICITUD N° 02055683 ✓
FECHA SOLICITUD: Junio 27, 2002
PATENTE: VÁLVULA MEJORADA DE EXCESO DE FLUJO
SOLICITANTE: BRASS CRAFT MANUFACTURING COMPANY

ASUNTO: PRESENTACIÓN DE LA PRIORIDAD

DILIA RODRIGUEZ D'ALEMAN, en mi condición de apoderada de la sociedad solicitante en el expediente de la referencia, por el presente escrito me permito presentar.

Copia certificada de la prioridad estadounidense reivindicada N° 09/894,491 de Junio 28 de 2.002 y su traducción al español.

Esta prioridad esta siendo presentada dentro del término de 16 meses que exige la Decisión 486 de la comisión de la Comunidad Andina, esto es OCTUBRE 27 DE 2.002.

Señor Jefe,


DILIA RODRIGUEZ D'ALEMAN
CCR/srr
p-443

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TRADUCCIÓN OFICIAL No. 02/195 de un documento escrito en inglés, el cual para su identificación se sella con el sello del traductor al tiempo con la presente. Esta traducción ha sido preparada por Juan Pablo Piedrahita Aguilera, Traductor e Intérprete Oficial debidamente reconocido de conformidad con el Certificado de Idoneidad Profesional No. 0045 expedido por la Universidad Nacional de Colombia.

(Se traduce certificado de la Oficina de Patentes y Marcas de los Estados Unidos de América No. 09/894,491, escrito en inglés.)

PA 857764

ESTADOS UNIDOS DE AMERICA

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Junio 24, 2002

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NÚMERO DE SOLICITUD: **09/894,491**

02/195
TRADUCCION OFICIAL No. 02/195
JUAN PABLO PIEDRAHITA AGUILERA
TRADUCTOR E INTERPRETE OFICIAL
CERTIFICADO DE IDONEIDAD 045
UNIVERSIDAD NACIONAL DE COLOMBIA

FECHA DE SOLICITUD: *Junio 28, 2001*

Por autoridad del

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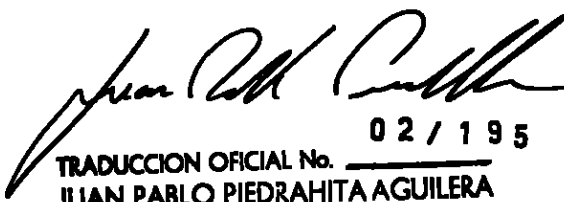
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ES TRADUCCIÓN FIEL Y COMPLETA de la cual se deja copia en los archivos
de esta oficina para su confrontación y a la cual me remito.

Bogotá, 15 de Julio, 2002.


02 / 195
TRADUCCION OFICIAL No. 02 / 195
JUAN PABLO PIEDRAHITA AGUILERA
TRADUCTOR E INTERPRETE OFICIAL
C. IDONEIDAD 045
UNIVERSIDAD NACIONAL DE COLOMBIA

REIVINDICACIONES

1. Una válvula de exceso de flujo que comprende:

un cuerpo para guiar un plato, y para mantener un magneto, dicho cuerpo tienen una pluralidad de brazos que se extienden radialmente hacia el interior que se extienden desde una porción de aseguramiento exterior para ser asegurada dentro de la periferia interior de un conducto, dicho cuerpo define una porción que mantiene un magneto en una extensión radialmente interior, y dichos brazos guían un plato de válvula, dicho plato de válvula está normalmente empujado hacia dicho magneto. Pero al ser movible a distancia de dicho magneto debe, el flujo a través de dicha válvula, incrementarse más allá de una cantidad predeterminada.



2. Una válvula como se estableció en la reivindicación 1, en donde una periferia exterior de dicha válvula se espacia separada de la periferia

válvula para ubicar adecuadamente dicho plato con relación a dicho asiento de válvula.

7. Una válvula como se estableció en la reivindicación 6, en donde dicho cuerpo de válvula circunda radialmente dicho asiento de válvula.

8. Un conducto que incluye una válvula de exceso de flujo que comprende:

un conducto;

un cuerpo en dicho conducto para guiar un plato, y para soportar un magneto, dicho cuerpo tiene una pluralidad de brazos que se extienden radialmente hacia el interior que se extienden desde una porción de aseguramiento exterior para asegurarse dentro de la periferia interior de dicho conducto, dicho cuerpo define una porción de soporte de magneto en una extensión radialmente interior, y dichos brazos guían además un plato de válvula, dicho plato es normalmente empujado hacia dicho magneto, pero al ser movable de manera separada de dicho magneto debe el flujo a través de

interior del conducto cuando la válvula se ubica en un conducto.

3. Una válvula como se estableció en la reivindicación 1, en donde un asiento de válvula separada se asocia con dicho cuerpo de válvula, y también se ubica en un conducto con dicho cuerpo de válvula.

4. Una válvula como se estableció en la reivindicación 1, en donde el conducto que circunda dicha válvula suministra un asiento de válvula para limitar dicho plato de válvula.

5. Una válvula como se mencionó en la reivindicación 1, en donde dicho magneto se mantiene en una posición central generalmente radial, dichos brazos se extienden a una porción de cono truncado, con porciones de pinza para mantener dicho magneto en dicho nicho.

6. Una válvula como se estableció en la reivindicación 1, en donde un asiento de válvula separado se asocia con dicho cuerpo de válvula, dicho cuerpo de válvula termina en una porción de dicho asiento de

di2cha válvula incrementarse más allá de una cantidad predeterminada; y

un asiento de válvula, dicho conducto circunda dicho asiento de válvula y dicho cuerpo de válvula.

9. Un conducto como se mencionó en la reivindicación 8, en donde dicho asiento de válvula se forma para estar separado de dicho cuerpo de válvula y dicho conducto.

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THE UNITED STATES OF AMERICA

~~TO ALL TO WHOM THESE PRESENTS SHALL COME:~~

UNITED STATES DEPARTMENT OF COMMERCE

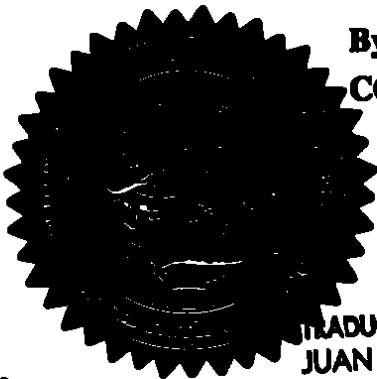
United States Patent and Trademark Office

June 24, 2002

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 09/894,491

FILING DATE: June 28, 2001



By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

J. Edelen

TRADUCCION OFICIAL No. 024 EDELEN
JUAN PABLO PIEDRAHITA AGUIRRE, ~~Commissioning~~ Officer
TRADUCCION E INTERPRETE OFICIAL
C/ DONCEIDAD 045
UNIVERSIDAD NACIONAL DE COLOMBIA

Box Patent Application
ASSISTANT COMMISSIONER OF PATENTS
Washington, D. C. 20231

Sir:

Transmitted herewith for filing is a patent application of

Inventor(s): Glover, et alFor: IMPROVED EXCESS FLOW VALVE

Enclosed are:

- ☒ An 10 page patent application
- ☒ 4 sheet of drawings - ☒ Formal ☐ Informal
- ☒ An Assignment of the invention to Brass Craft Manufacturing Company
- ☐ A certified copy of a _____ application.
- ☒ A Combined Declaration and Power of Attorney
- ☐ An associate power of attorney.
- ☐ A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27.
- ☐ PTO Form 1449 with copies of patents cited in specification. (IDS).
- ☐ This application claims priority to Provisional Application No. _____ which was filed on _____

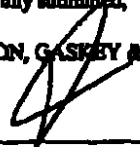
The filing fee has been calculated as shown below:

	No. Filed	No. Extra	Small Entity		Large Entity	
Basic Fee			\$345		\$710	\$710
Total Claims	9-20		X 9	\$	X 18	\$
Indep. Claims	2-3		X 39	\$	X 78	\$
Multiple Dep. Claim(s) Present						\$
			TOTAL		TOTAL	\$710

- ☐ Please charge my Deposit Account No. 50-1482 in the amount of \$ _____. A duplicate copy of this sheet is enclosed.
- ☒ Checks in the amount of \$710.00 to cover the filing fee and \$40.00 to cover the recording fee.
- ☐ The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 50-1482. A duplicate copy of this sheet is enclosed.
- ☐ Any additional filing fees required under 37 CFR 1.16.
- ☒ Any patent application processing fees under 37 CFR 1.17.

Respectfully submitted,

CARLSON, GASKY & OLDS, P.C.


Theodore W. Olds, Reg No. 33,080
400 West Maple Road, Suite 350
Birmingham, Michigan 48009
(248) 988-8360

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"EXPRESS MAIL" Mailing Label No. EL668872206US. Date of Deposit June 28, 2001 I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner of Patents, Box Patent Application, Washington, D. C. 20231.


Laura Combs

EL668872206US

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IMPROVED EXCESS FLOW VALVE**BACKGROUND OF THE INVENTION**

- [1] This invention relates to excess flow valves for controlling flow through a conduit wherein the valve minimizes the pressure drop through the valve and also reduces the number of parts typically required.
- [2] Excess flow valves are utilized to limit the amount of fluid flow through a conduit. Generally, some way of holding the valve in a generally open position maintains the valve in an open position allowing flow through the conduit if the volume flow through the conduit is below predetermined limit. If the volume flow increases above the limit, or stated another way, if the pressure drop across the valve exceeds a certain value, then the valve is moved to a closed position restricting flow through the conduit.
- [3] One type of excess flow valve uses a magnet to hold the valve at a generally opened position. The typical prior art magnetic excess flow valve has been incorporated into a capsule, wherein the entire structure for providing a valve seat, a valve guide, and a magnet holder are all incorporated as a single capsule item. Inevitably, the prior art has resulted in undesirably high pressure drop across the valve due to the high number of parts received in the flow path in this prior art type valve.
- [4] In addition, the prior art valves have had non-symmetric structure such that inadvertent resistance to flow has resulted due to variations in the orientation of the various valve components. This is undesirable.

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SUMMARY OF THE INVENTION

[5] In disclosed embodiments of this invention, a simplified excess flow valve is provided which results in a relatively small pressure drop across the valve assembly. This is achieved by reducing the number of parts, and eliminating restriction to flow through the conduit due to the valve assembly to the extent possible when the valve is open. In preferred embodiments, a first body portion incorporating a valve guide and a magnet holder is separate from the valve seat. In some embodiments the valve seat may be provided by a separate valve seat, and in other embodiments the valve seat is provided by a surface in one of the conduit halves.

[6] In the second type of inventive embodiments, the valve is preferably mounted at a connection between two conduit portions, such that the valve seat may be provided at one of those two conduit portions. Moreover, there is less structure at the outer periphery of the valve to disrupt or otherwise provide a restriction to flow. Generally, the excess flow valves allow flow around the outer periphery of the valves when the valve is in its open position. The prior art has had structure in the way of the flow, which results in undesirably high pressure drop. The present invention incorporates its valve guiding function with a plurality of circumferentially spaced legs extending radially inwardly from a radially outer portion. This structure presents less of a restriction to flow than the prior art, which generally extends it along the entire circumference of the valve. With the present invention there is thus less disruption or other resistance to flow.

[7] These and other features of the present invention can be best understood from the following specification and drawings, the following of which is a brief description.

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BRIEF DESCRIPTION OF THE DRAWINGS

- [8] Figure 1 is a cross-sectional view through a first embodiment of the present invention.
- [9] Figure 2 shows a portion of the Figure 1 valve taken in a direction generally spaced by 90° from the Figure 1 cross-section.
- [10] Figure 3 is a perspective view of the Figure 1 valve.
- [11] Figure 4 is an end view of the Figure 1 valve.
- [12] Figure 5 shows another embodiment of the present invention.
- [13] Figure 6 is a cross-sectional view of the Figure 5 embodiment.
- [14] Figure 7 is an end view of the Figure 5 embodiment along line B-B.
- [15] Figure 8 is an end view spaced from the Figure 6 cross-sectional view.
- [16] Figure 9 is an end view of another valve.
- [17] Figure 10 is another end view of the Figure 9 valve.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

- [18] As shown in Figure 1, an excess flow valve 20 is positioned within a conduit 22. A first body portion 24 provides a valve seat at 26. The outer periphery 28 of the valve seat portion 24 engages the inner periphery of a conduit 22. A fluid guide portion 30 has a generally cylindrical portion also engaging the inner periphery of the conduit 20. Circumferentially spaced arms 32 (Figure 2) extend inwardly. These arms hold a magnet 34. A frusto-conical web 36 connects the legs, and inner ends 38 clip the magnet 34. A disk valve 40 is movable inwardly of the legs and toward the valve seat 26. As can be seen, fluid can flow through an opening 42 generally around the entire circumference of the valve 40 except as blocked by 32. Preferably

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the valve is generally cylindrical such that it is symmetrical. In this way, there will be little or no variation in the resistance to flow through the passage 42, and the pressure drop across the valve will be minimized compared to the prior art. As shown in Figure 2, the magnet 34 is held within each of the plurality of arms 32. As can be further appreciated from this view, the magnet 34 is also held by several clips 38.

[19] The valve 20 is illustrated in Figure 3 in perspective view. As can be appreciated, the arms 32 have an outer peripheral portion 44 which contacts the inner periphery of the conduit 20. A further connecting portion 46 also contacts the inner periphery. The arms 32 extend radially inwardly to the frusto-conical web 36, and the magnet clips 38 are positioned spaced from the web 36. The valve plate 40 is guided by the arms, for movement toward and away from the valve seat.

[20] As shown in Figure 4, the magnet is held by clips 38 each extending inwardly from frusto-conical web 36. The circumferentially spaced arms 32 present less resistance to flow through the passage 42 than did the prior art which circumferentially surrounded the valve. Further, by utilizing a separate valve seat the present invention provides a simple valve assembly.

[21] Figure 5 shows another embodiment taken along S-S as shown in Figure 7. In Figure 5, the conduit is shown to be a two-part conduit 120 and 122. A threaded connection 124 is formed between the two conduit portions while a recess 126 is formed into the face of one of the conduit portions. A valve seat 128 is provided radially inwardly of the recess. An opposed end surface 130 of the other conduit half 122 captures a valve assembly 132. While the valve assembly 132 is shown axially captured, the outer periphery of the valve body 132 could also be formed to

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be an interference fit within the conduit 120, and such that the conduit body 122 need not be positioned at any particular axial location relative to the conduit 120. The valve body 132 holds a magnet 139 adjacent a valve plate 136. As shown in Figure 6, the body 132 does not have arm portions 134 around its entire circumference. Instead, as is the case with the prior embodiment, the arms 134 are circumferentially spaced. An outer portion 137 is received between the conduit halves 120 and 122.

[22] Figure 7 is a view looking from the right hand side toward the left of Figure 5. Shown in Figure 7, the valve is positioned aligned with a central cylindrical web 138, which is preferably a relatively small diameter compared to the valve plate 136.

[23] Figure 8 shows the valve assembly 132, and the arms 134 extending to the magnet 139. This view is from the right looking to the left.

[24] Figure 9 shows yet another embodiment 200. In embodiment 200 a separate valve seat 202 is provided along with a separate valve guide and magnet holder portion 204. The magnet 206 is received in a space provided by several circumferentially spaced arms 208. A plate retainer structure 210 is provided at the forward end of the valve guide. The plate 212 moves forwardly and selectively seats against a valve seat 214, when the valve seat is positioned to extend radially inwardly of the plate retainer 210. As shown in Figure 10, there may be cut portions 216 circumferentially spaced around the portion 204 of the valve retainer body 200. These portions will facilitate the clipping movement of the plate 212 inwardly of the plate retainer portions 210.

[25] Although preferred embodiments of this invention have been disclosed, a worker in this art would recognize that certain modifications would come within the

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scope of this invention. For that reason the following claims should be studied the true scope and content of this invention.

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CLAIMS

1. An excess flow valve comprising:

a body for guiding a plate, and for holding a magnet, said body having a plurality of radially inwardly extending arms extending from an outer securement portion to be secured within the inner periphery of a conduit, said body defining a magnet holding portion at a radially inner extent, and said arms further guiding a valve plate, said valve plate being normally biased toward said magnet, but being movable away from said magnet should the flow through said valve increase beyond a predetermined amount.

2. A valve as set forth in Claim 1, wherein an outer periphery of said valve is spaced away from an inner periphery of the conduit when said valve is positioned in a conduit.

3. A valve as set forth in Claim 1, wherein a separate valve seat is associated with said valve body, and is also to be positioned in a conduit with said valve body.

4. A valve as set forth in Claim 1, wherein the conduit surrounding said valve provides a valve seat for abutting said valve plate.

5. A valve as recited in Claim 1, wherein said magnet is held at a generally radially central position, said arms extending to a frusto-conical portion, with clip portions for holding said magnet in a magnet recess.

6. A valve as set forth in Claim 1, wherein a separate valve seat is associated with said valve body, said valve body abutting a portion of said valve seat to properly position said plate relative to said valve seat.

7. A valve as set forth in Claim 6, wherein said valve body radially surrounds said valve seat.

8. A conduit including an excess flow valve comprising:

a conduit;

a body in said conduit for guiding a plate, and for holding a magnet, said body having a plurality of radially inwardly extending arms extending from an outer securement portion to be secured within the inner periphery of said conduit, said body defining a magnet holding portion at a radially inner extent, and said arms further guiding a valve plate, said valve plate being normally biased toward said magnet, but being movable away from said magnet should the flow through said valve increase beyond a predetermined amount; and

a valve seat, said conduit surrounding said valve seat and said valve body.

9. A conduit as recited in Claim 8, wherein said valve seat is formed to be separate from both said valve body and said conduit.

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ABSTRACT OF THE DISCLOSURE

A number of improved excess flow valves are disclosed wherein the flow around a magnet holding portion of the valve body is generally unrestricted to reduce the pressure drop across the valve. The valve is preferably also formed separately from its valve seat to reduce the complexity of the valve, and allow it to have less resistance to flow. The valve seat may be provided as a separate part, or may be provided in the conduit.

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COMBINED DECLARATION AND POWER OF ATTORNEY

As the below named inventors, we hereby declare: that our residences, post office addresses and citizenships are as stated near our names below; that we are joint inventors and we believe we are the original and first inventors of the subject matter of which is claimed and for which a patent is sought on the invention entitled

IMPROVED EXCESS FLOW VALVE

which is described and claimed in the attached specification and amended by an amendment thereto submitted therewith (if any); that we have reviewed and understand the contents of this specification, including the claims, as amended by any amendment referred to above; that we do not know and do not believe the same was ever known or used in the United States of America before our invention thereof or patented or described in any printed publication, in any country before our invention thereof for more than one year prior to this application, or in public use or on sale in the United States of America more than one year prior to this application; that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by us or our legal representatives or assigns more than twelve (12) months prior to this application; that we acknowledge our duty to disclose information of which we are aware which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a); and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by us or our legal representatives or assigns except as follows: NONE.

We hereby appoint Theodore W. Olds, Registration No. 33,080; John E. Carlson, Registration No. 37,794; David J. Gaskey, Registration No. 37,139; Kerrie A. Laha, Registration No. 42,777; William Gottschalk, Registration No. 44,130; David L. Wier, Registration No. 46,350; and Karin H. Butchko, Registration No. 45,864 as our attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith. Please address all correspondence and telephone calls to:

THEODORE W. OLDS
CARLSON, GASKEY & OLDS
400 W. Maple Road, Ste. 350
Birmingham, MI 48009
(248) 968-8360

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so

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made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: 6-20-01


Name: Donald S. Glover

Post Office and
Residence Address:

1183 Dorchester
Birmingham, Michigan 48009

Citizenship:

United States

Dated: 6/20/01


Name: James E. Scanlon

Post Office and
Residence Address:

50577 West Ten Mile Road
Novi, Michigan 48374

Citizenship:

United States

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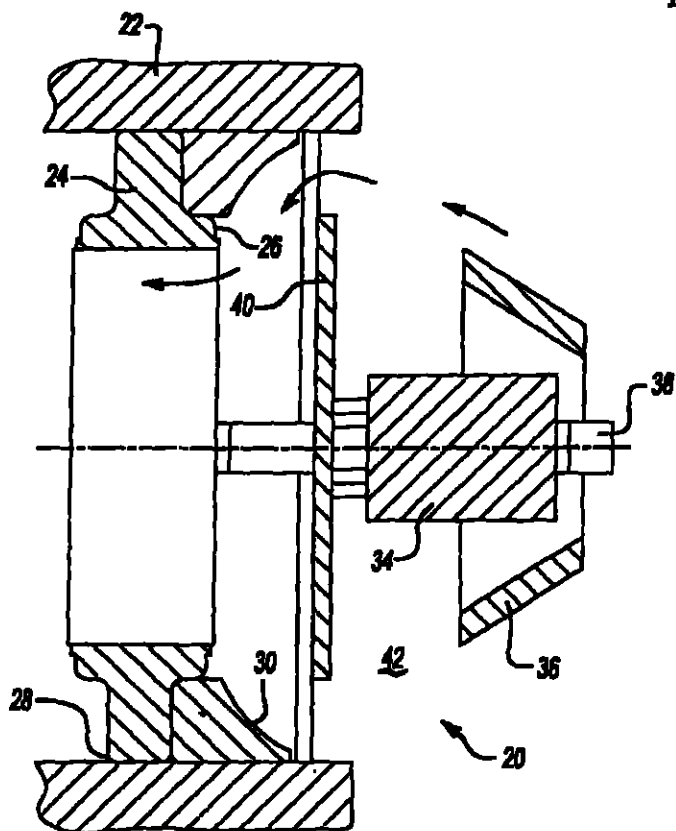


Fig-1

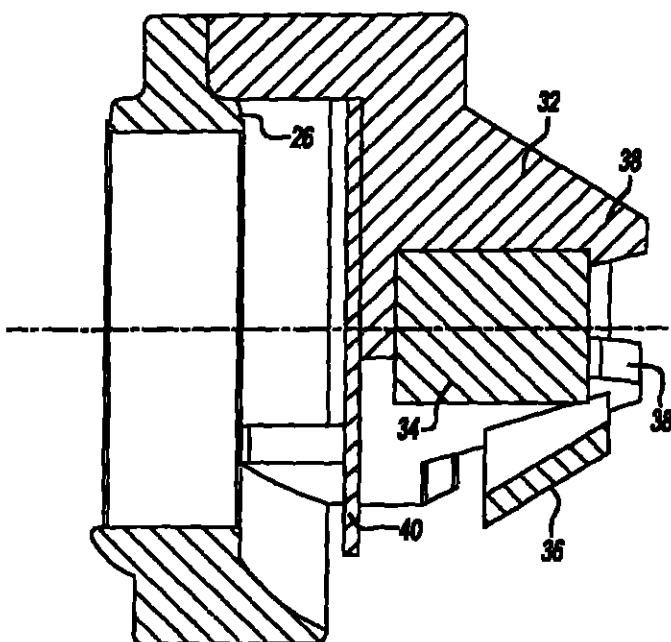


Fig-2

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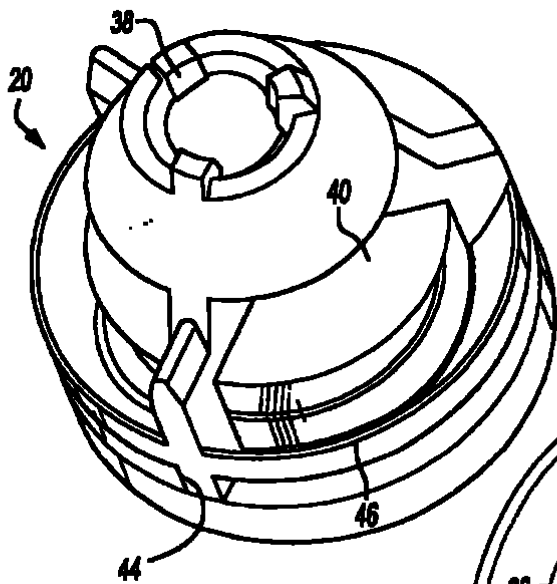


Fig-3

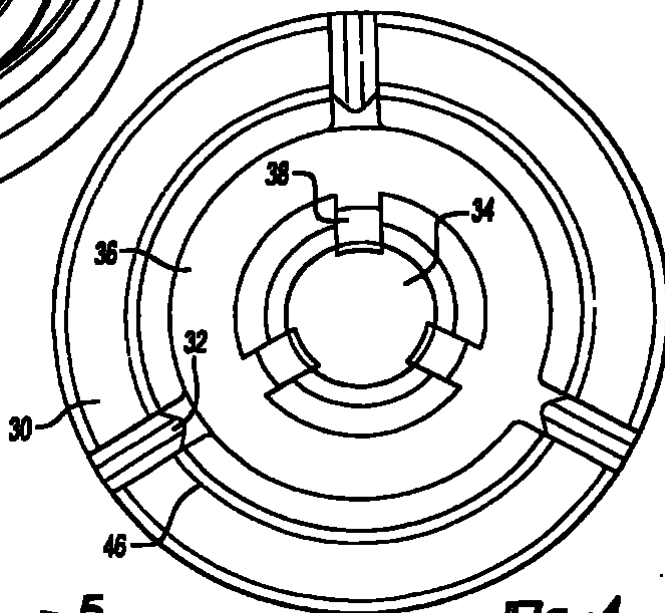


Fig-4

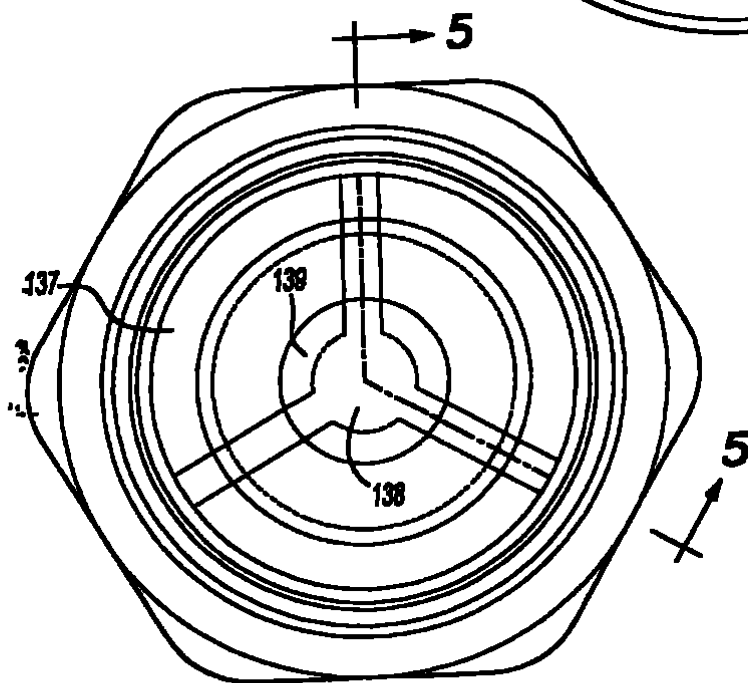


Fig-7

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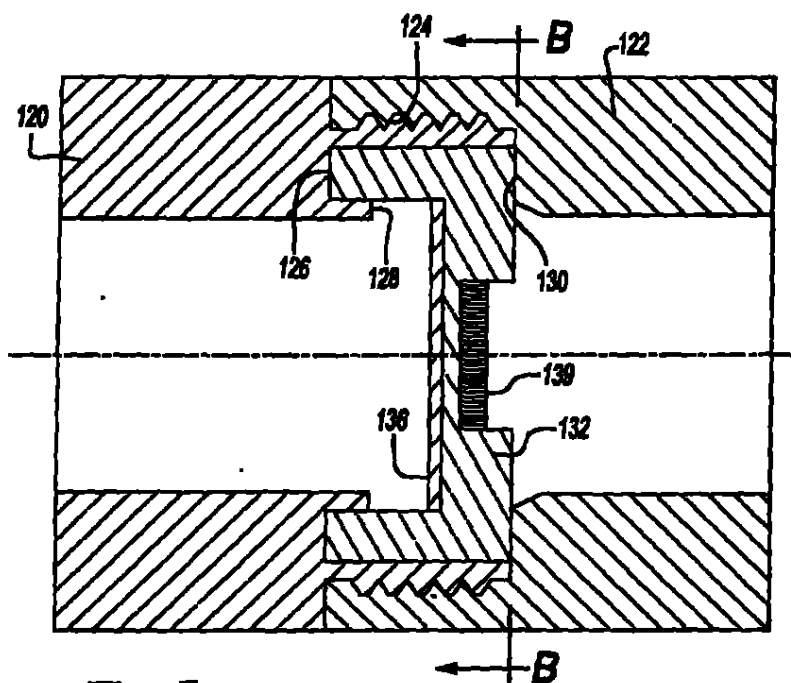


Fig-5

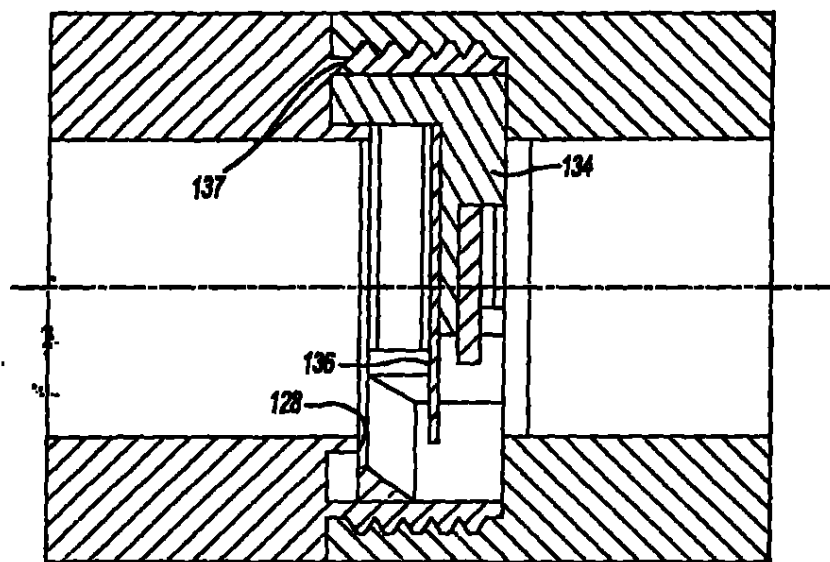


Fig-6

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Fig-8

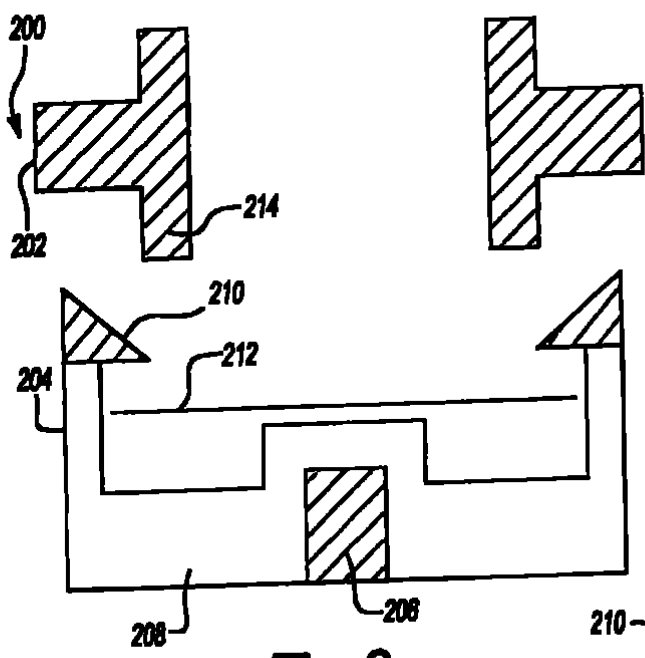
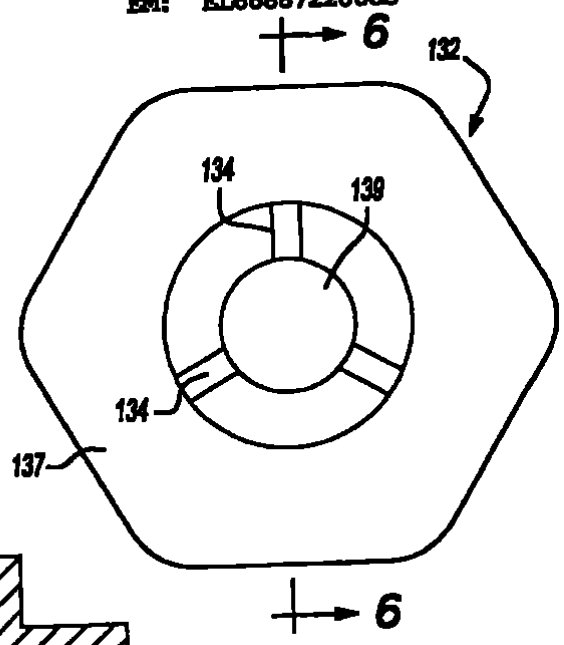


Fig-9

Fig-10

