



Industria y Comercio
SUPERINTENDENCIA

Delegatura de Propiedad Industrial

Division de Nuevas Creaciones

PCT
SOLICITUD

PATENTE DE INVENCION

21 EXPEDIENTE No

05-118377

54 TITULO

Adaptacion para alivio de presion de
Bombas

51 CLASIFICACION INTERNACIONAL

F04 D 29/08 D, 27/00

71 SOLICITANTE

Weir Worman Ltd

DOMICILIO

New south wales Australia

74 APODERADO

Dilia Maria Rodriguez D' Aleman

22 BOGOTA, D C,

Octubre 24 2005

2

 Industria y Comercio SUPERINTENDENCIA		PETITORIO SUPERINDUSTRIA Y COMERCIO Radicacion : 05118377 00000000 Fecha (AMD): 2005-11-22 16:31:33 Tramite : 011 PCT-PATENT 378 FASE NACI 411 PRESENTAC Dependencia: 2020 DIVISION DE NUEVAS CREACIONES		Folios: 60
FORMULARIO ÚNICO DE SOLICITUD DE PATENTE PCT ENTRADA EN FASE NACIONAL				
1) SOLICITUD DE:				
☒ Patente de invención ☐ Patente de Modelo de Utilidad				
☒ Capitulo I. ☐ Capitulo II.				
2) SOLICITANTE (71)		Nombre: WEIR WARMAN LTD. Dirección: 1 Marden Street, Artarmon, New South Wales 2064, Australia Nacionalidad o domicilio: New South Wales, Australia Lugar de constitución: Australia		
		IDENTIFICACIÓN C.C. ☐ NIT: ☐ C.E. ☐ OTRO ☐ Cual _____ NÚMERO _____		
		Teléfono: _____ Fax: _____ E. Mail: _____		
3) REPRESENTANTE O APODERADO		Nombre: DILIA MARÍA RODRÍGUEZ D'ALEMAN Dirección: Carrera 11 N°. 86-53 Piso 6 Bogotá D.C. Teléfono: 6181088 Fax: 6350824 E. Mail: info@clarkemodet.com.co		
		IDENTIFICACIÓN C.C. ☒ NIT: ☐ C.E. ☐ OTRO ☐ NÚMERO: 41.654.882 TP: 20824 CSJ		
4) INVENTOR (ES) (72)		Nombre: 1. BURGESS, Kevin, Edward Dirección: 37 Christel Avenue, Carlingford, New South Wales 2118, Australia Nacionalidad o Domicilio: Australiano		
5) PCT (86) Solicitud Internacional No. PCT/AU2004/000646 Fecha: Mayo 17, 2004 Publicación Internacional No. WO2004/104423 A1 Fecha: Dic. 2, 2004				
6) Título (54) ADAPTACIÓN PARA ALIVIO DE PRESIÓN DE BOMBA				
7) Clasificación Internacional: F04D 29/08, 27,00				
8) PRIORIDAD		33) País de Origen	(32) Fecha	(31) Número de Solicitud
SI ☒ NO ☐		AUSTRALIA	Mayo 23, 2003	2003902582
9) Comprobante de pago N°. 05-79,884 Fecha: Octubre 14, 2005				
Instrucciones para el diligenciamiento del presente formulario. Ver reverso de esta pagina				

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

SUPERINDUSTRIA Y COMERCIO
Radicacion : 05118377 00000000 Folios: 60
Fecha (AMD): 2005-11-22 16:31:33
Tramite : 011 PCT-PATENT 378 FASE NACI 411 PRESENTAC
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 05 - 79,884
FECHA : OCTUBRE 14 DE 2005

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO POPULAR	050-00110-6	45331664	13/10/2005	5,064,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE IN 443,000.00
		TOTAL :	\$ 443,000.00

SON: CUATROCIENTOS CUARENTA Y TRES MIL PESOS

RESPONSABLE : _____

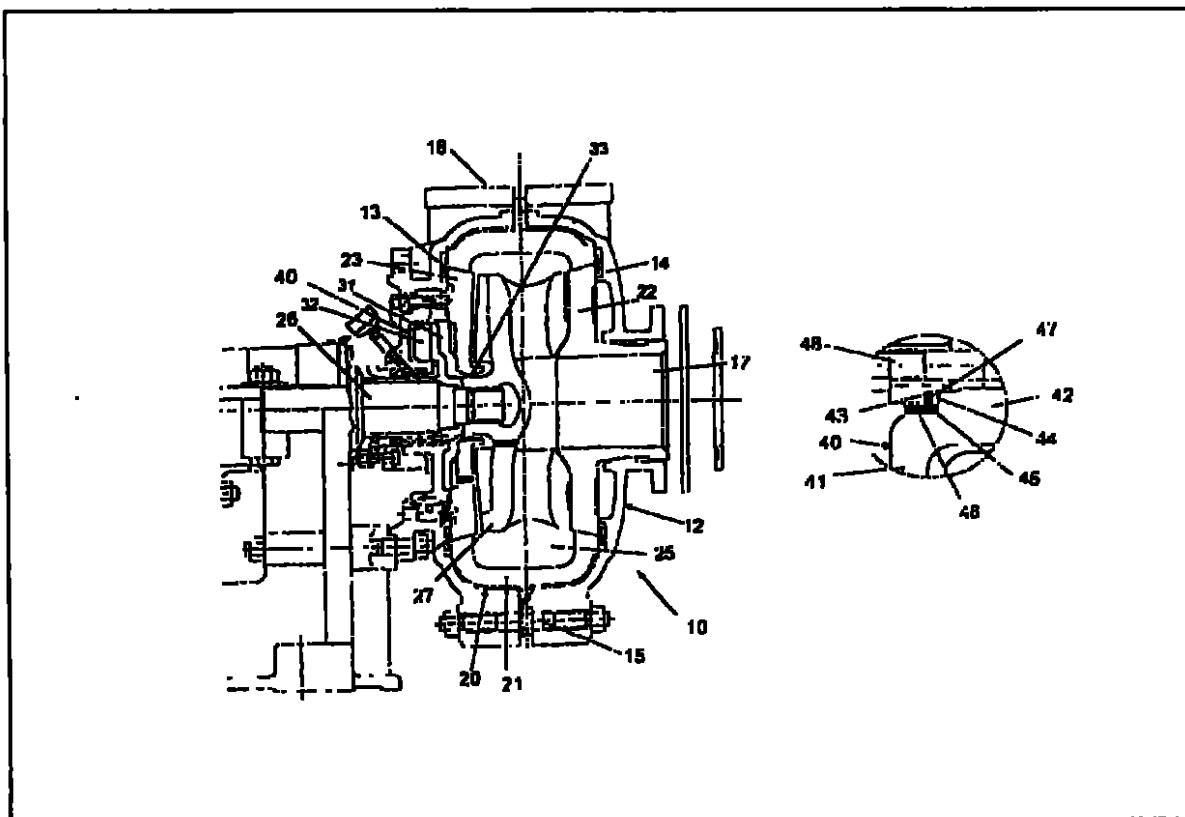
RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

10)

ANEXOS

- ☒ Comprobante de pago de la tasa de presentación de la solicitud
- ☐ Comprobante de pago por reivindicación de prioridad
- ☐ Documento que acredite la existencia y representación legal cuando el solicitante sea persona Jurídica
- ☐ Poderes, si fuera el caso
- ☐ Documento de cesión del inventor al solicitante o a su causante
- ☐ Declaraciones
- ☒ Copia de la solicitud Internacional. (Resumen, descripción, reivindicación, Dibujos).
- ☒ Traducción de la solicitud Internacional al castellano. (Resumen, descripción, reivindicación, Dibujos)
- ☐ Copia del examen preliminar efectuado por la IPEA
- ☐ De ser el caso, copia del contrato de acceso
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas
- ☐ De ser el caso, certificado de depósito del material biológico
- ☐ Arte final 12 x 12 y 6 x 6 cm
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionados parcial o totalmente con la invención de esta solicitud.
- ☒ Otros:
 1. Reporte internacional de búsqueda
 2. Opinión escrita de la autoridad de búsqueda Internacional
 3. Notificación del recibo de la copia
 4. Notificación de la recepción del documento de prioridad
 5. Notificación oficinas designadas

11) FIGURA CARACTERÍSTICA:



12) Solicitud concesión de la patente,

NOMBRE: DILIA RODRIGUEZ D'ALEMAN

FIRMA: [Signature]

C.C. 41.654.882 de Bogota TP 20824 CSJ

Instrucciones para el diligenciamiento del presente formulario. Ver reverso de esta pagina

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
2 December 2004 (02.12.2004)

PCT

(10) International Publication Number
WO 2004/104423 A1

(51) International Patent Classification⁷: F04D 29/08, 27/00

(21) International Application Number:
PCT/AU2004/000646

(22) International Filing Date: 17 May 2004 (17.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003902582 23 May 2003 (23.05.2003) AU

(71) Applicant (for all designated States except US): WEIR
WARMAN LTD [AU/AU]; 1 Marden Street, Artarmon,
New South Wales 2064 (AU).

(72) Inventor; and

(75) Inventor/Applicant (for US only): BURGESS, Kevin,
Edward [AU/AU]; 37 Christel Avenue, Carlingford, New
South Wales 2118 (AU).

(74) Agents: SMEETON, Anthony, Richard et al.; Davies
Collison Cave, Level 10, 10 Barrack Street, Sydney, New
South Wales 2000 (AU).

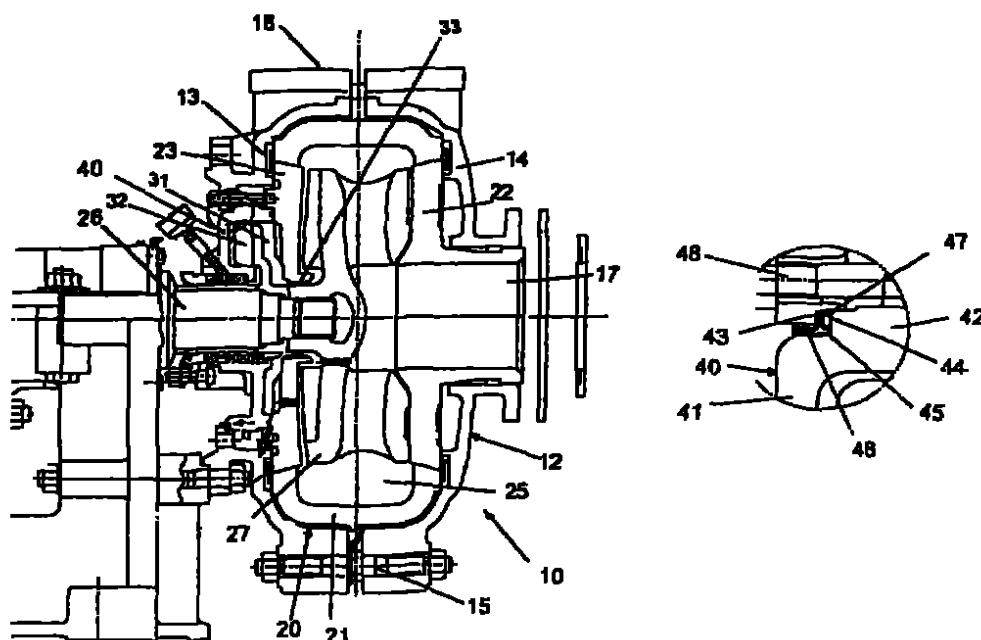
(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, GR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SI, SK,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

[Continued on next page]

(54) Title: PRESSURE RELIEF ARRANGEMENT FOR A PUMP



(57) Abstract: A pressure relief arrangement for a pump (10) which includes a pump housing assembly with a pumping chamber (25) therein, the pump housing assembly including a section (41) mounted for movement between a normal operating position and a venting position, a shearing element (45) being adapted to retain the section in the normal operating position, the section (41) being mounted so that upon the pressure within the pumping chamber (25) can act on the section (41) and upon the pressure within the pumping chamber (25) reaching a specified pressure, the shearing element (45) will fail thereby permitting movement of the section (41) from the normal operating to the venting position.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

5

- 1 -

PRESSURE RELIEF ARRANGEMENT FOR A PUMP

The present invention relates generally to pumps and more particularly, to a pressure relief arrangement for pumps.

5

Normal water pumps do not handle solids but it has been noted that when the flowrate is say, equal to or less than 10% than that of the maximum flowrate at any particular pump speed, the temperature of the liquid recirculating inside the pump will increase with time. The heat generated causes the pump casing and components to also increase in temperature. It is therefore quite common for manufacturers to recommend a minimum flowrate for a pump to avoid this problem area. Measurement and control of flowrate and therefore temperature for water pumps are relatively easy and there is a multitude of suitable equipment available. Some schemes involve a separate bypass to maintain flow through the pump.

15

Centrifugal Slurry Pumps are typically applied in a very wide range of industries and applications worldwide and most commonly in mining plants. The mixture of liquids (commonly water) and solids that make up the slurry that these slurry pumps handle are also very wide ranging. Similar to water pumps, slurry pumps will heat up if operated at low flowrates for any significant time. Low flow rates can be caused inadvertently by blockages occurring in the pump due to the slurry they are pumping. The heat generated can also be detrimental to the wear resistant hard metal or natural rubber liners commonly used in slurry pumps. In a worst case scenario it is possible that the steam generated from such overheating under pump blockage conditions may cause the pump to explode.

25

Slurry pumps are normally installed in quite similar types of arrangements with a hopper to gravity feed the slurry into the pump, followed by different length pipelines generally with bends, sloping or horizontal sections of pipework and in some cases valves or tanks are located along the pipeline to the final discharge point.

30

For measuring slurry flowrate or slurry fluid temperature there are relatively few

- 2 -

options available, as slurry can easily clog or jam instruments and/or cause wear. Consequently, it is common practice to utilise very few instruments in the pumping of slurry and to rely on the continuous flow of slurry from one process to another. Slurry pump manufacturers and suppliers can provide a minimum flowrate for a slurry pump, but
5 with the wide range of possible duties, change in slurry properties and the possibility of solids settling in the pipeline or pump, such minimum flowrate recommendations will not by themselves guarantee that the flowrate will not change or drop in service to critically low levels.

10 Transport of the slurry particles relies on maintaining a certain velocity in the pipeline; otherwise particles tend to settle out on the bottom of the pipe. As the velocity drops further, the solids will build-up in the pipeline and eventually may cause a blockage. A similar scenario can occur in a slurry pump operating at very low or zero flowrate. The solids start to settle out in the pump and can cause a blockage. Even if the pump is
15 running, the pump can eventually become completely choked with solids.

All horizontal slurry pumps have a pump casing with an impeller rotating inside the casing, the impeller is attached to one end of a cantilevered shaft. The shaft rotates in bearings and enters the drive side of the pump casing through a seal chamber. The seal
20 chamber is normally a separate component that is fitted at the back of the pump casing and takes a number of forms. One form is a stuffing box, which contains packing rings that seal the shaft as it passes through the seal chamber / pump casing wall. Another form is an expelling chamber. One or both of these two forms can be utilised regardless of the pump duty, liner material or application. Another type of sealing is by means of a mechanical
25 seal. In all cases, the seal is contained in the seal chamber, which is supported by the pump casing.

The seal chamber at the drive side of the pump is supported by the pump casing and generally sealed at its periphery against the internal pump liner, which could be metal
30 or elastomer material. The internal pressure inside the pump casing acts onto the inside surface of the seal chamber. The seal chamber is sealed against the main pump liner with a

- 3 -

seal such as an O-ring seal or other type of elastomer seal.

It is an object of the present invention to provide a pressure relief arrangement for use in pumps.

5

According to one aspect of the present invention there is provided a pressure relief arrangement for a pump which includes a pump housing assembly with a pumping chamber therein, the pump housing assembly including a section mounted for movement between a normal operating position and a venting position, a shearing element being adapted to retain the section in the normal operating position, the section being mounted so that pressure within the pumping chamber can act on the side section, the arrangement being such that upon the pressure within the pumping chamber reaching a specified pressure the shearing element will fail thereby permitting movement of the side wall section from the normal operating to the venting position. In the venting position the pressure within the pumping chamber can be relieved.

In one form of the invention, the pump includes a pumping chamber and a sealing chamber in fluid communication therewith, the sealing chamber including a side wall section mounted for movement between an operative position and a venting position, the shearing element being adapted to retain the side wall in the operative position. The arrangement is such that upon the pressure within the sealing chamber reaching a specified pressure, the shearing element will fail thereby permitting movement of the side wall section from the operative position to the venting position.

The pump may include a casing having two parts operatively connected together with the pumping chamber therein. The pump may include an inlet and outlet as is conventional. An impeller may be provided within the pumping chamber and is adapted to be driven by a drive shaft.

The sealing chamber may form part of a sealing assembly, the side wall section being mounted for limited axial movement.

- 4 -

Preferably, the side wall section is mounted in an installed position relative to one of the parts of the housing. The pump casing and the side wall section may have cooperating shoulders thereon and the shearing element may be adapted to be disposed therebetween. In one form, the shearing element may include a ring shaped body having one or more shearing flanges projecting generally radially therefrom. In the installed position, one side edge of the ring is adapted to abut against one of the shoulders and the shearing flange is adapted to abut against another of the shoulders. The shoulders of the parts are spaced apart so that on failure of the shearing element axially movement between the two parts is permitted.

10

In another form the or each shearing flange is replaced with a protruding shear pin which is adapted to fit into a hole in the ring shaped body. In this embodiment the load is taken by the or each pin which fails in shear at a particular pressure.

15

There may further be provided means for inhibiting rotation of the side wall. In one form, such means may include one or more lugs which are adapted to abut against a part of the pump casing.

20

According to another aspect of the present invention there is provided a shearing element for use in the arrangement described above, the shearing element including a body portion and shearing lug or projection which is adapted to fail at a specified overpressure within the pump chamber. Preferably, the shearing element includes a ring shaped body with one or more lugs or pins extending radially therefrom. Preferably, two lugs are provided each having a length so as to provide for failure at an axially applied shear force resulting from a specified over pressure of the slurry within the pump.

25

Preferred embodiments of the invention will hereinafter be described with reference to the accompanying drawings and in those drawings:

30

Figure 1 is a schematic side elevation of a pump according to one embodiment of the present invention;

- 5 -

Figure 2 is a detail from Figure 1 of a seal ring of the present invention;

Figure 3 is a further detail of part of the assembly of the pump of Figure 1;

5 Figure 4 is a schematic side elevation of a pump according to another embodiment of the invention;

Figure 5 is a detail from Figure 4 of a seal ring of the invention; and

10 Figures 6 and 7 are illustrations of two forms of shearing elements according to the invention.

Referring to Figures 1 to 3 of the drawings there is shown a pump generally indicated at 10 which includes a housing assembly comprising a pump casing 12 including
15 two parts 13 and 14 connected together by a series of bolts 15. The pump includes an inlet 17 and an outlet 18. A liner 20 is disposed within the pump casing and includes a peripheral section 21, an inlet section or throatbush 22 and a rear section 23. The pump further includes an impeller 27 disposed within a pumping chamber 25 operatively connected to a drive shaft 26.

20

The housing assembly further includes a dynamic seal assembly, the drive shaft 26 extends into the pumping chamber 25 through the dynamic seal assembly which includes a seal chamber 31 having an expeller 32 therein. The seal chamber 31 is in communication with the pumping chamber 25 via connecting passage 33.

25

The dynamic seal assembly further includes an outer seal wall 40 which includes a side wall section 41 and a peripheral wall section 42. The seal wall is adapted to be mounted in a normal operating position relative to the pump casing. To this end the seal wall 40 and casing part 13 having cooperating shoulders 43 and 44 with a shearing element
30 45 therebetween. As shown in Figure 6 the shearing element 45 includes a ring 46 having one or more shearing flanges 47 projecting radially from the ring. In the normal operating

- 6 -

position one side edge of the ring abuts against shoulder 44 and the shearing flange abuts against shoulder 43. As is apparent from Figure 2 of the drawings, in the installed position shoulders 43 and 44 are spaced apart. Bolts 48 retain the two parts in the normal operating position. The edge of the peripheral wall section includes a sealing element which may be in the form of an O-ring 29 which provides a seal between the wall and the rear section of the liner 23. In the embodiment of Figure 7 the flanges 47 are replaced by shear pins 49.

It will be appreciated that any pressure within the seal chamber will cause an axial force be applied to the shear ring. The material of the shear ring can be metal or non-metal provided such material has consistent mechanical strength properties. As described earlier, the shearing element includes a ring shaped body 46 with preferably two or more flanges or lugs 47 on its outer diameter. The axial force generated by slurry pressure occurring in the pump is transferred into these lugs or flanges. The lugs are sized so that the area under shear stress is calculated commensurate with the size of the pump and the desired pressure at which failure of the shear ring will occur. The dimensions of each lug can be varied to vary the area under shear and thereby varying the pressure at which failure of the shear ring will occur.

The shearing element is designed in such a manner that when the pump internal pressure increases to a predetermined value due to say a blockage and zero or near zero flowrate, the lugs will fail thereby allowing the seal chamber wall 40 to move axially outwards from the pump casing section 13. This movement unseats or blows out the seal 29 between the seal chamber and the internal pump liner (eg O-ring) and allows escape of slurry thus relieving the internal over pressure within the pump. The movement of wall 40 and venting is shown by the arrows in Figure 1.

The pressure at which the shearing element fails could be set between the pump's maximum allowable operating pressure rating and its maximum allowable test pressure. Specifying a pressure in this range means that the pump components and bolting are not overstressed during the over-pressurisation and can be safely re-used following the replacement of the failed shearing element.

- 7 -

When the seal between liner and seal chamber leaks, the over-pressurisation is relieved inside the pump. As the shear ring has failed and the seal chamber seal has been displaced axially a leak occurs past the O-ring or elastomeric seal 29. The leak will continue as the seal chamber has been permanently moved out of position.

5

To facilitate the continued relief of pressure, liquid and solids will be forced out past the seal on the seal chamber and then to atmosphere via a series of grooves or flute like passageways on the periphery of the seal chamber or through the radial side walls of casing section 13. Leakage will therefore be continuous between the seal chamber and the
10 pump casing to the outside atmosphere until the pressure inside the pump is close to atmosphere. Relief of the high pressure and steam will be past the sealing O-ring in the seal chamber as a gap is developed by the failure of the shear ring and the seal chamber moving. Escape to the outside atmosphere could be via slots or grooves in the seal chamber (as described) but escape could also be via special holes in the drive side portion
15 of the pump casing. Vent pipes could be attached to the vent holes in the casing to direct the escaping liquid and steam downwards to the ground. This would provide added safety.

Leakage and spray from the pump may be contained by a guard or the like over the back or drive side of the pump. In another arrangement the venting flow may be guarded
20 and directed downwards towards the ground.

The seal chamber may be free to rotate with the shaft if the shear ring fails and the seal chamber is displaced axially and outwards from the pump. To prevent rotation of the seal chamber, one or more lugs 49 are cast or fitted to the outside diameter of the seal
25 chamber and the lugs are trapped by a stud bolt or similar to prevent rotation.

Figures 4 and 5 illustrate a further embodiment of a pump according to the present invention. The same reference numerals have been used to identify the same parts as described with reference to Figures 1 to 3.

30

In this embodiment the dynamic seal assembly of the housing assembly is replaced

- 8 -

with a gland seal assembly. The gland seal assembly includes a gland seal housing or stuffing box 41 mounted for axial movement relative to the pump casing, the shearing element 45 being installed and operable in a similar fashion to that described earlier.

- 5 Although a clearance 31 is shown it is not essential to the working of the invention. All that is required is that pressure within the pumping chamber can act on the gland seal housing or stuffing box 41.

- 10 The invention provides an arrangement with a continual stand-by pressure relieving capability. The invention as configured is largely independent of pump construction, materials from which the pump components are made, pump components used, the pump installation arrangements, and the associated pipework, any adjustments that the pump user is likely to make to the pump rendering the invention as an install and forget over pressure relief protection device.

15

- Advantages of the arrangement include the following: the element fails at a safe pressure and not the pump; ie the pump is unaffected. The failure pressure is well within the pumps maximum design pressure. The pump can be re-used by removing and replacing the failed element with a new one. The leakage is contained and controlled.
- 20 There is no possibility of pieces 'flying' following a failure. The element is retrofittable when the element fails, none of the other pump parts are put at subsequent risk of failing such as might be the case if the impeller rubbed on the casing due to misalignment immediately following failure.

- 25 Finally, it is to be understood that various alterations, modifications and/or additions may be incorporated into the various constructions and arrangements of parts without departing from the spirit or ambit of the invention.

- 9 -

WE CLAIM:

1. A pressure relief arrangement for a pump which includes a pump housing assembly with a pumping chamber therein, the pump housing assembly including a section mounted for movement between a normal operating position and a venting position, a shearing element being adapted to retain the section in the normal operating position, the section being mounted so that pressure within the pumping chamber can act on the section, the arrangement being such that upon the pressure within the pumping chamber reaching a specified pressure the shearing element will fail thereby permitting movement of the side wall section from the normal operating to the venting position.
2. A pressure relief arrangement according to claim 1 wherein the pump housing assembly includes the pumping chamber and a sealing chamber therein which are in fluid communication, the sealing chamber including a side wall forming said section mounted for movement between the normal operating position and the venting position, the shearing element being adapted to retain the side wall in the normal operating position, the arrangement being such that upon the pressure within the sealing chamber reaching a specified pressure, the shearing element will fail thereby permitting movement of the side wall from the normal operating position to the venting position.
3. A pressure relief arrangement according to claim 3 the pump housing assembly further includes a pump casing, the side wall section being mounted relative to the pump casing, each having cooperating shoulders thereon and the shearing element being adapted to be disposed therebetween, the shearing element including a ring shaped body having one or more shearing member projecting generally radially therefrom, the arrangement by such that in the installed position, one side edge of the ring is adapted to abut against one of the shoulders and the shearing member is adapted to abut against another of the shoulders, the shoulders of the parts being spaced apart so that on failure of the shearing element axially movement between the two parts is permitted.

- 10 -

4. A pressure relief arrangement according to claim 2 or claim 3 further including means for inhibiting rotation of the side wall.
5. A pressure relief arrangement according to claim 3 or 4 wherein the or each shearing element is in the form of a flange or lug projecting from the ring.
6. A pressure relief arrangement according to claim 3 or claim 4 wherein the or each shearing element in the form of a shear pin mounted to and projecting from the ring.

10

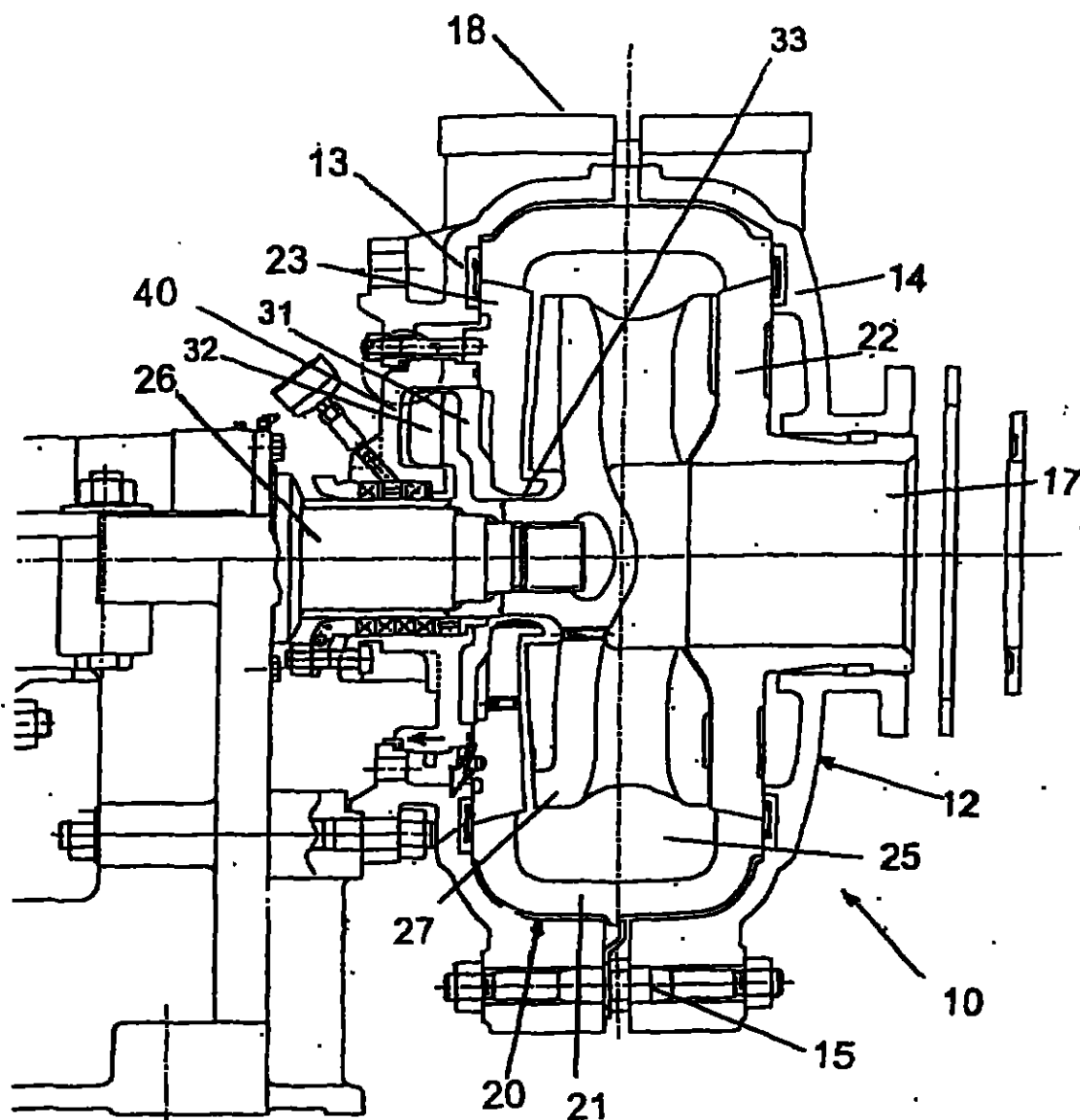


FIG. 1

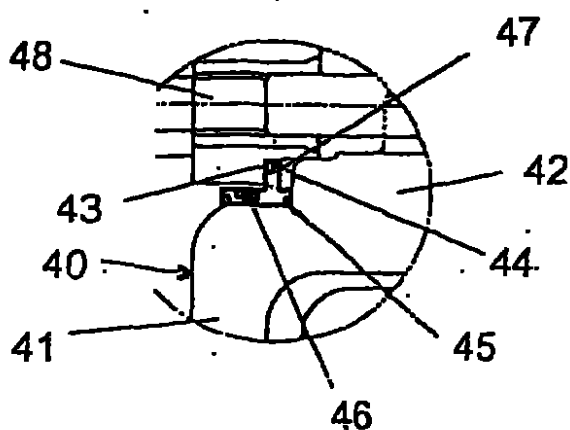
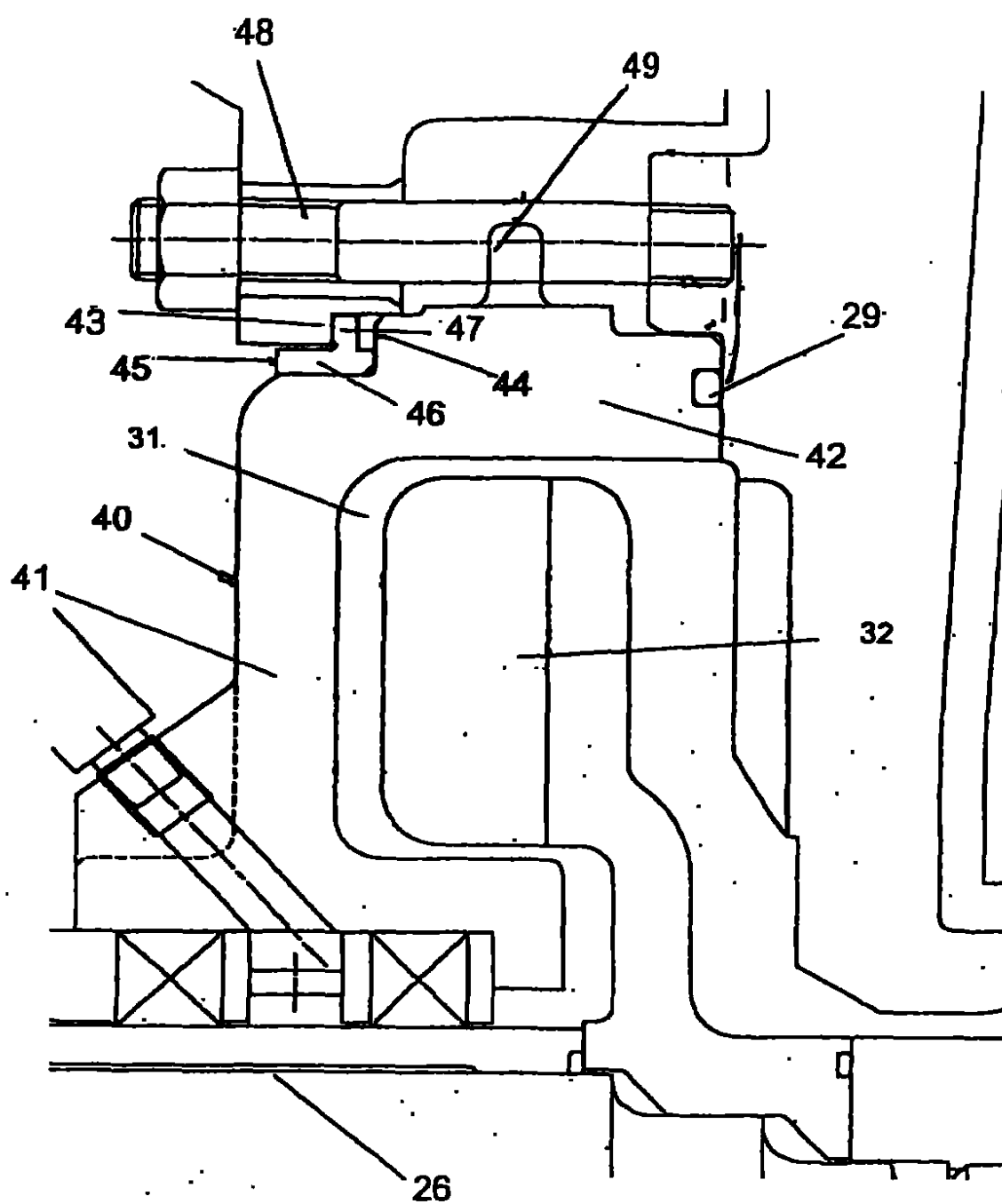
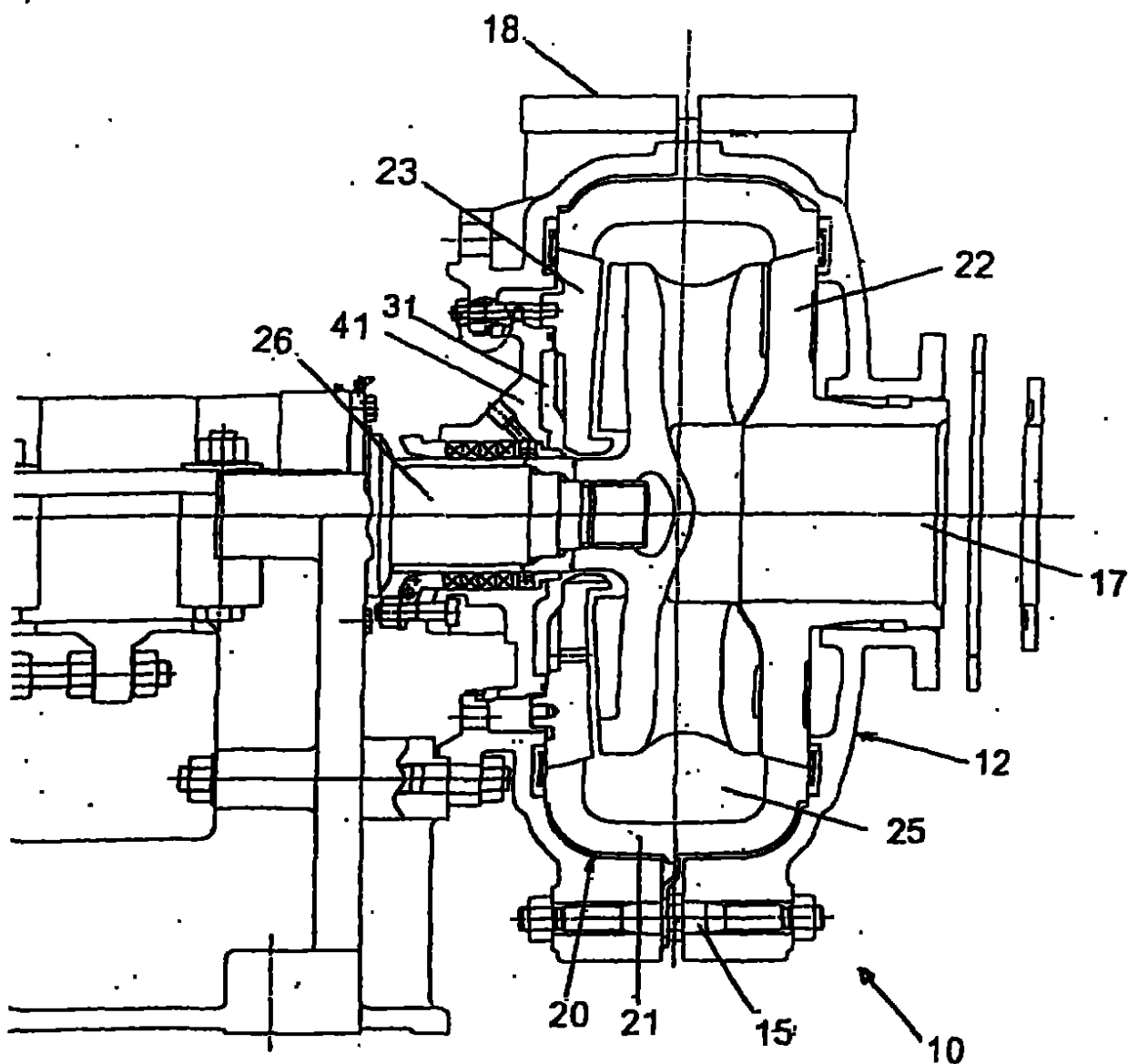
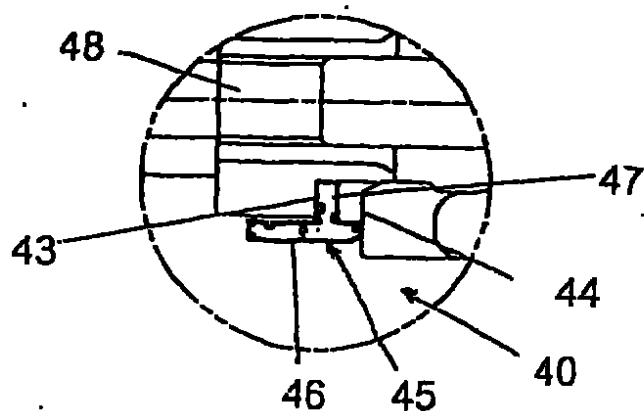
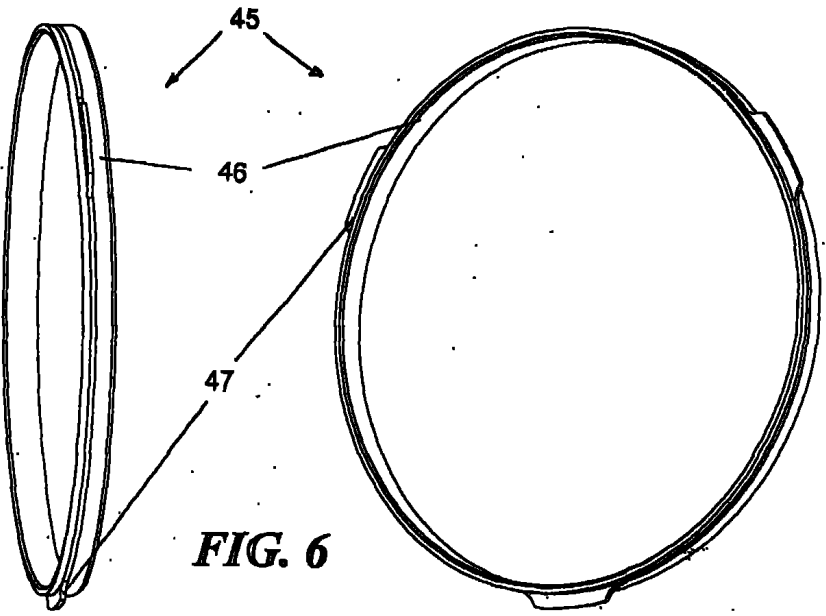


FIG. 2

**FIG. 3**

**FIG. 4****FIG. 5**



Handwritten mark resembling a stylized 'H' or a signature.

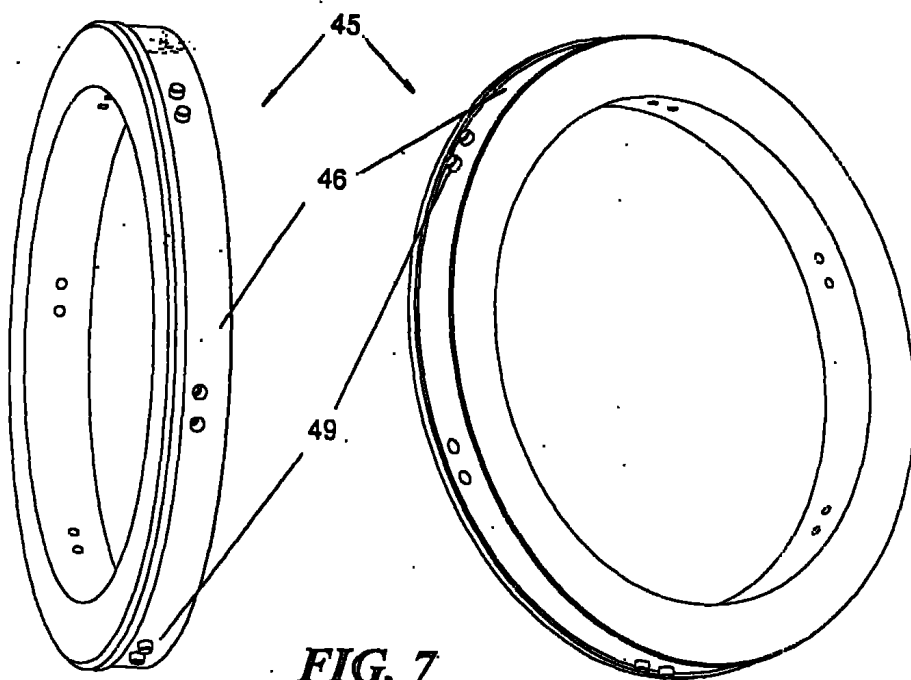


FIG. 7



(10) REPUBLICA DE CHILE
MINISTERIO DE ECONOMIA
FOMENTO Y RECONSTRUCCION
SUBSECRETARIA DE ECONOMIA



DEPARTAMENTO DE PROPIEDAD INDUSTRIAL

(11) N° REGISTRO

(12) TIPO DE SOLICITUD:

☐

INVENCION

☐

MODELO DE UTILIDAD

☐

PRECAUCIONAL

☐

MEJORA

☐

REVALIDA

(43) Fecha de Publicación:

(51) Int. Cl. °:

(21) Número de Solicitud:

(22) Fecha de Solicitud

(30) Número de Prioridad: (país, n° y fecha)
AUSTRALIA

2003902582

23-05-2003

(71) Nombre Solicitante: (Incluir dirección y tel.)

WEIR WARMAN LTD.
1 MARDEN STREET
ARTARMON, NEW SOUTH WALES 2064
AUSTRALIA
3677000

(72) Nombre Inventor(es): (Incluir dirección)

KEVIN EDWARD BURGESS
37 CHRISVEL AVENUE, CARLINGFORD
NEW SOUTH WALES 2118
AUSTRALIA

(74) Representante: (Incluir dirección y teléfono)

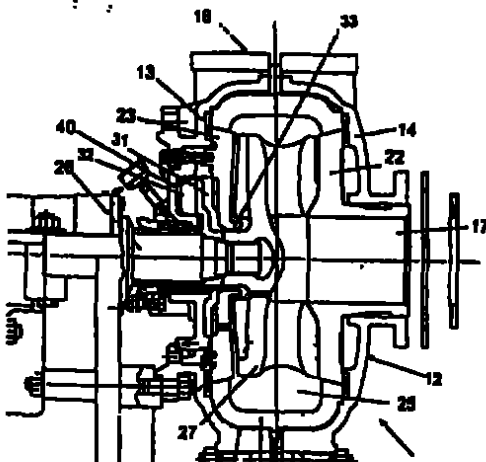
MILITZA MARINKOVIC GUTIERREZ
NUEVA TAJAMAR 481, T.NORTE, PISO 21
LAS CONDES, SANTIAGO
3677000

(54) Título de la Invención: (máximo 330 caracteres)

ADAPTACION PARA ALIVIO DE PRESION DE BOMBA.

(57) Resumen: (máximo 1800 caracteres)

ADAPTACIÓN PARA ALIVIO DE PRESIÓN DE UNA BOMBA QUE INCLUYE UN MONTAJE DE ENVOLTURA DE BOMBA CON CÁMARA DE BOMBEO, EL MONTAJE DE ENVOLTURA DE LA BOMBA INCLUYE UNA SECCIÓN QUE ESTÁ AJUSTADA PARA PERMITIR EL MOVIMIENTO ENTRE UNA POSICIÓN DE FUNCIONAMIENTO NORMAL Y UNA POSICIÓN DE VENTILACIÓN, ADAPTÁNDOSE UN ELEMENTO CORTANTE PARA MANTENER LA SECCIÓN EN LA POSICIÓN DE FUNCIONAMIENTO NORMAL, LA SECCIÓN MONTADA DE TAL MANERA QUE LA PRESIÓN DENTRO DE LA CÁMARA DE BOMBEO PUEDA ACTUAR EN LA SECCIÓN. TAL ADAPTACIÓN, AL ALCANZAR LA PRESIÓN DENTRO DE LA CÁMARA DE BOMBEO UNA DETERMINADA PRESIÓN, HARÁ QUE EL ELEMENTO CORTANTE FALLE Y PERMITIRÁ ENTONCES EL MOVIMIENTO DE LA SECCIÓN DE PARED LATERAL DESDE LA POSICIÓN DE FUNCIONAMIENTO NORMAL A LA POSICIÓN DE VENTILACIÓN.



PROP. INDUSTRIAL
RECEPCION
DOCUMENTOS

MEMORIA DESCRIPTIVA

Esta invención se refiere en general a bombas, pero en particular, a una adaptación para aliviar la presión de las bombas.

Las bombas de agua normales no tratan sólidos pero se ha notado que cuando el ritmo de flujo es equivalente o inferior al 10% que el del ritmo máximo de flujo a cualquiera velocidad de la bomba, la temperatura del líquido que circula dentro de la bomba aumentará con el tiempo. El calor que se genera causará también un aumento de temperatura en la cubierta de la bomba y sus componentes. Por lo tanto, es muy corriente que los fabricantes de estas bombas recomienden un ritmo mínimo de flujo para evitar el problema en esta área. El control y medida de flujo de las bombas de agua es relativamente fácil, en consecuencia, también la temperatura, y hay una gran variedad de equipos apropiados disponibles. Algunos modelos incluyen un bypass separado para mantener el flujo dentro de la bomba.

Las Bombas Centrifugadoras de Relaves se usan en todo el mundo en una gran variedad de industrias y aplicaciones, mas comúnmente en plantas mineras. La mezcla de líquidos (generalmente agua) y sólidos que produce el relave que es tratado con este tipo de bombas es también de una extensa variedad. Lo mismo que en bombas de agua, las bombas de relave también se recalentarán cuando funcionan con ritmos de flujo bajos por un tiempo largo. Los ritmos de flujo bajos se pueden causar inesperadamente por bloqueos que ocurren en la bomba debido al relave que se está bombeando. La temperatura generada puede ser también perjudicial en cuanto al deterioro de los metales duros resistentes o revestimientos naturales de caucho o goma que se usan comúnmente en las bombas de relave. En una situación peor, es posible que el vapor generado por el recalentamiento de una bomba que presenta condiciones de bloqueo, pudiera causar la explosión de la misma.

Las bombas de relave se instalan normalmente en tipos de equipos similares con una tolva para alimentar el relave dentro de la bomba por gravedad.

NOTA
DE INGENIERIA

seguidas por conductos de tuberías de distintas longitudes generalmente curvas, oblicuas u horizontales en algunas partes y en algunos casos las válvulas o tanques se colocan a lo largo de las tuberías hasta su punto final de descarga.

Existen pocas opciones disponibles para medir los niveles de flujo de relave o las temperaturas del flujo de relaves, debido a que el relave se obstruye fácilmente, atasca instrumentos y/o puede causar desgaste.

En consecuencia, es muy común utilizar pocos instrumentos en el bombeo de relave y se depende del flujo continuo de éste desde un proceso al otro. Los fabricantes y proveedores de bombas de relave pueden proporcionar un ritmo mínimo de flujo para una bomba de relave, pero debido a la amplitud de trabajos posibles, el cambio de características del relave y la posibilidad de sedimentos sólidos en las tuberías o bombas, las recomendaciones de un ritmo mínimo de flujo no garantizarán que los ritmos de flujo no cambiarán o bajarán a niveles críticos.

El transporte de las partículas de relave depende de la mantención de una cierta velocidad en las tuberías, de otra manera, las partículas tienden a posarse en el fondo de los tubos. Al bajar la velocidad, los sólidos se van acumulando en las tuberías pudiendo producir un bloqueo. Una situación similar se puede producir en una bomba de relave que está trabajando a un ritmo de flujo muy bajo o cero. Los sólidos empiezan a acumularse en la bomba y pueden producir un bloqueo. Aun cuando la bomba siga funcionando, ésta podría bloquearse totalmente con los sólidos.

Todas las bombas horizontales de relave tienen una cubierta de bomba con un propulsor que gira dentro de la cubierta, el propulsor esta sujeto a uno de los extremos de un eje volado. El eje gira en soportes y entra en el lado propulsor de la cubierta de la bomba a través de una cámara selladora. La cámara selladora es generalmente un componente separado que está situado en la parte trasera de la cubierta de bomba y tiene varias formas. Una forma es una caja de empaquetaduras, que contiene anillos de plétón que sellan el eje al pasar éste a través de la cámara selladora de la pared de la cubierta de la bomba. Otra forma

PROP. INDUS.
RECEPCION

18

es una cámara expulsora. Una o ambas de estas formas pueden ser utilizadas cualquiera que sea el trabajo de la bomba, el material para cubrir o su aplicación. Otro tipo de sellante es por medio de un sellador mecánico. En todos los casos el sello se encuentra en la cámara selladora, la cual se apoya en la cubierta de la bomba.

La cámara selladora del lado propulsor de la bomba está apoyado por la cubierta de la bomba y generalmente sellada en su periferia contra el revestimiento interior de la bomba, que puede ser de metal o material elastomérico. La presión interna dentro de la cubierta de la bomba actúa sobre la superficie interna de la cámara selladora. La cámara selladora está sellada contra el revestimiento principal de la bomba con un sello tipo O-ring u otro tipo de sello elastomérico.

El objetivo de la presente invención es proveer una adaptación para ser usada en bombas para el alivio de presión.

De acuerdo a un aspecto del presente invento, se suministra una adaptación para el alivio de presión en bombas, que incluye un montaje de envolturas de bomba con una cámara de bombeo adentro, la envoltura del montaje de la bomba incluye una sección que se ajusta para el movimiento entre una posición normal de funcionamiento y una posición de ventilación, adaptándose un elemento cortante para mantener la sección en la posición normal de funcionamiento, siendo la sección montada de manera tal que la presión dentro de la cámara de bombeo pueda actuar en la sección lateral, y la adaptación de tal forma que al alcanzar la presión dentro de la cámara de bombeo una presión determinada, el elemento cortante fallará permitiendo así que la sección de la pared lateral se mueva de su posición de funcionamiento normal a una posición de ventilación. En la posición de ventilación se podrá aliviar la presión dentro de la cámara de bombeo.

En una forma de la invención la bomba incluye una cámara de bombeo y una cámara selladora con comunicación de flujo inmediata, incluyendo la cámara selladora una sección de pared lateral que está ajustada para el movimiento entre

una posición operacional a una posición de ventilación, estando el elemento cortante adaptado para mantener la pared lateral en posición operativa. La adaptación es tal que al alcanzar la presión interior de la cámara selladora una presión determinada, el elemento cortante fallará, permitiendo así el movimiento de la sección de la pared lateral desde la posición operativa a la posición de ventilación.

La bomba puede incluir una envoltura con dos partes que se conectan en forma funcional a la vez con la cámara de bombeo. La bomba puede incluir una entrada y una salida como es lo convencional. Puede tener dentro de la cámara de bombeo un propulsor que se adapta para ser impulsado por un eje propulsor.

La cámara selladora puede formar parte de un montaje sellador, estando la sección de pared lateral ajustada para movimientos axiales limitados. De preferencia, la sección de la pared lateral está montada en una posición establecida unida a una de las partes de la envoltura. La cubierta de la bomba y la sección de la pared lateral pueden tener lomos auxiliares y el elemento cortante puede ser adaptado para eliminarlo de entremedio. En una forma el elemento cortante puede incluir un cuerpo en forma de anillo con una o varias pestañas cortantes que por lo general se proyectan desde ahí en forma radial. En la posición establecida, un borde lateral del anillo se adapta para apoyarse en uno de los lomos y la pestaña cortante se adapta para apoyarse en otro de los lomos. Los lomos de las partes están espaciados para que en el caso de una falla del elemento cortante, se permita el movimiento axial entre las dos partes. En otra de las formas, cada una de (the or each) las pestañas cortantes es reemplazada por una pinza cortante sobresaliente que se adapta para encajar dentro de un agujero en el cuerpo con forma de anillo. En esta ensambladura, el peso lo toma cada una de las pinzas, las que suspenden el corte a una presión determinada.

Se pueden suministrar mas medios para inhibir la rotación de la pared lateral. De una forma, tales medios pueden incluir una o más asas que se adaptan

20

para apoyarse en una parte de la cubierta de la bomba.

En otros aspectos de la presente invención, se provee un elemento cortante para ser usado en la adaptación descrita más arriba, incluyendo el elemento cortante una pieza y una asa o saliente cortante que se adapta para que falle a una presión excesiva dentro de la cámara de la bomba. De preferencia, el elemento cortante incluye una pieza circular con uno o mas anillos o pinzas que se extienden de ahí en forma radial. Preferentemente, se proporcionan dos asas cada una de cierta extensión para servir de suspensión a una fuerza cortante que se aplica en forma axial y es consecuencia de una determinada presión excesiva del relave en el interior de la bomba.

Las ensambladuras preferidas del invento serán descritas de aquí en adelante en los dibujos de referencia que se acompañan:

La Figura 1 Es la elevación gráfica de un costado de una bomba según la ensambladura del presente invento.

La Figura 2 es un detalle de la Figura 1 de un anillo sellante del presente invento.

La Figura 3 es otro detalle de parte del montaje de la bomba de la Figura 1

La Figura 4 es la elevación lateral gráfica de una bomba de acuerdo a otra ensambladura del invento.

La Figura 5 es un detalle de la Figura 4 de un anillo sellante del invento.

Las Figuras 6 y 7 son ilustraciones de dos formas de elementos cortantes según el invento.

Con respecto a las Figuras 1 al 3 de los dibujos, se muestra una bomba que en general se indica como (10) que incluye un montaje de envoltura (12) conteniendo dos partes (13) y (14) conectadas entre si por una serie de pernos (15). La bomba incluye una entrada (17) y una salida (18). Dentro de la cubierta de la bomba hay un revestimiento (20) que incluye una sección periférica (21), una sección de entrada en forma de cuello (22) y una sección trasera (23). La bomba también incluye un propulsor (27) que está dispuesto dentro de la cámara de

GRUP. LYL. U.
20 FEBRERIO 1973

21

bombeo (25) conectado operativamente a un eje propulsor (26).

El montaje de la envoltura incluye además un montaje de sello dinámico, el eje propulsor (26) se extiende dentro de la cámara de bombeo (25) a través del montaje del sello dinámico que incluye una cámara selladora (31) con un expulsor (32) dentro de la misma. La cámara selladora (31) está comunicada con la cámara de bombeo (25) a través de un pasaje de conexión (33).

El montaje del sello dinámico incluye además una pared selladora exterior (40) con una sección de pared lateral (41) y una sección de pared periférica (42). La pared selladora está adaptada para ser montada en una posición de funcionamiento normal con respecto a la cubierta de la bomba. En este extremo la pared selladora (40) y la parte envoltura (13) tienen lomos auxiliares (43) y (44) con un elemento cortante entremedio (45). Como se muestra en la Figura 6 el elemento cortante (45) incluye un anillo que tiene una o más pestañas cortantes (47) que se proyectan en forma radial desde el anillo. En la posición de funcionamiento normal el borde lateral del anillo se apoya contra el lomo (44) y las pestañas cortantes se apoyan en lomo (43). Como aparece en el dibujo de la Figura 2, en la posición establecida los lomos (43) y (44) están espaciados. Los tornillos 43 mantienen las dos partes en la posición normal de funcionamiento. El borde de la sección de la pared periférica incluye un elemento sellante que puede estar en la forma de un O-ring (29) que tiene un sellante entre la pared y la sección posterior del revestimiento (23). En la ensambladura de la Figura 7 las pestañas (47) son reemplazados por pinzas cortantes (49).

Se podrá observar que cualquier presión dentro de la cámara selladora va a causar una fuerza axial en el anillo cortante. El material del anillo cortante puede ser de metal o no, siempre que dicho material tenga las características mecánicas de resistencia apropiadas. Como se ha descrito anteriormente, el elemento cortante incluye una pieza en forma de anillo (46) de preferencia con dos o más pestañas o asas (47) en su diámetro externo. La fuerza axial generada por la presión del relave que se produce en la bomba es transferida a estas asas o pestañas. Las asas están dimensionadas para que el área bajo la tensión cortante

22

sea calculada en proporción con el tamaño de la bomba y se produzca la presión deseada para que opere la falla del anillo cortante. Las dimensiones de cada asa pueden ser cambiadas para alterar el área de corte, variando por lo tanto la presión donde la falla o suspensión del anillo va a ocurrir.

El elemento cortante está diseñado de tal manera que cuando la presión interna aumenta a un nivel predeterminado debido a un bloqueo con ritmo de flujo cero o cerca de cero, las asas entonces van a fallar permitiendo que la pared de la cámara selladora (40) se mueva en forma axial hacia el exterior de la envoltura de la bomba, sección (13). Este movimiento frena o revienta el sello (29) entre la cámara selladora y la envoltura interior de la bomba (Ej. O-ring) dejando escapar el relave, aliviando así la presión interna excesiva dentro de la bomba. El movimiento de la pared (40) y ventilación están marcados con una flecha en la Figura 1.

La presión bajo la cual se suspende o falla el elemento cortante puede ser fijada entre el ritmo de operación máximo permitido y el ritmo de presión de prueba máximo permitido. El definir la presión en estos niveles significa que los componentes y fijaciones de pernos de la bomba no están esforzados en exceso durante el exceso de presurización y pueden ser usados otra vez sin problemas después de reemplazar el elemento cortante que ha fallado.

Quando hay una filtración del sello entre el revestimiento y la cámara selladora, la presión excesiva se alivia dentro de la bomba. Como el anillo cortante ha fallado y el sello de la cámara selladora ha sido desplazado en forma axial, se produce una filtración después del O-ring o sello elastomérico (29). La filtración va a continuar debido a que la cámara selladora ha sido desplazada permanentemente fuera de su posición.

Para facilitar un continuo alivio de presión, los líquidos y sólidos van a ser expulsados fuera después del sello de la cámara selladora y luego hacia la atmósfera por medio de una serie de ranuras o corredores tipo flauta en la periferia de la cámara selladora o a través de las paredes laterales radiales de la cubierta sección (13). La filtración será por lo tanto continua entre la cámara

23

selladora y la cubierta de la bomba hacia fuera al aire hasta que la presión dentro de la bomba se cierre a la atmósfera. El alivio de la alta presión y del vapor se producirá pasado el O-ring de la cámara selladora debido a que se produce un hueco por la falla del anillo cortante y del movimiento de la cámara selladora. El escape hacia el espacio exterior puede ser a través de ranuras o estrías en la cámara selladora (como ya se ha descrito) pero también podría haber escape a través de agujeros especiales en la parte de transmisión lateral de la bomba. Se podrían poner tubos "Vera" en los respiraderos de la cubierta para dirigir hacia abajo al suelo el líquido y vapor que escapa. Esto añadiría una mayor seguridad

La filtración y pulverización de la bomba pueden ser controladas mediante un seguro o algo similar en la parte posterior o transmisión lateral de la bomba. En otra adaptación el flujo de ventilación puede ser asegurado y dirigido hacia abajo al suelo.

La cámara selladora podrá estar libre para girar con el eje si el anillo cortante falla y la cámara selladora es desplazada en forma axial fuera de la bomba. Para prevenir la rotación de la cámara selladora, una o más asas (49) están moldeadas o adaptadas al diámetro exterior de la cámara selladora y las asas son atrapadas por un tornillo opresor o similar para prevenir la rotación.

Las Figuras 4 y 5 ilustran otra ensambladura de bomba según este invento. Se han usado los mismos números de referencia para identificar las mismas partes que se han descrito en las Figuras 1 al 3.

En esta ensambladura el montaje del sello dinámico del montaje de la envoltura se reemplaza por un ensamblaje sellador de collar. El ensamblaje sellador de collar tiene una envoltura de sellador de collar o caja de empaquetaduras (41) ajustada para el movimiento axial en relación a la cubierta de la bomba, siendo el elemento cortante instalado (45) y operable de una manera similar a la anteriormente descrita.

Aunque se muestra un desahogo, (31) éste no es esencial para que funcione el invento. Todo lo que se requiere es que la presión dentro de la cámara de bombeo actúe en la envoltura de sellador de collar o caja de empaquetaduras.

24

(41).

La Invención tiene una adaptación de capacidad de reserva de alivio de presión continua. La invención, tal como está configurada, es en gran medida autónoma en cuanto a los materiales de construcción de los componentes de las bombas, de componentes de bombas usados, de la adaptación de la instalación de la bomba y tuberías asociadas, de cualquier ajuste que el usuario de la bomba quisiera hacer en la misma, dando al invento una condición de montaje que hace olvidar el dispositivo de seguridad de alivio de presión excesiva.

Las ventajas que incluye la adaptación son las siguientes: el elemento falla a una presión segura, no así la bomba, por lo tanto no se perjudica la bomba. La falla de presión está completamente dentro de la presión máxima diseñada para la bomba. La bomba puede ser usada nuevamente sacando y reemplazando el elemento que ha fallado por uno nuevo. La filtración se detiene y controla. No hay posibilidades de piezas "volando" después de una falla. El elemento es re-encajable cuando falla, ninguna de las otras piezas de la bomba está expuesta a una falla consecutiva, como podría ser el caso si el propulsor rozara en la cubierta debido a un desalineamiento inmediato después de una falla.

Finalmente hay que entender que se pueden incorporar varias alteraciones, modificaciones y/o adiciones dentro de las diversas construcciones y adaptaciones de piezas sin apartarse del espíritu o ámbito de la invención.

PROP. IND. D. E.

REIVINDICACIONES

25

Reivindicamos:

1. Una adaptación de alivio de presión para una bomba que incluye un ensamble de carcasa de bomba con una cámara de bombeo en ésta, el ensamble de carcasa de bomba incluye una sección montada para movimiento entre una posición de operación y una posición de ventilación, un elemento cortante se adapta para retener la sección en la posición de operación normal, la sección se monta de tal manera que la presión dentro de la cámara de bombeo pueda actuar en la sección, la adaptación es de tal forma que luego que la presión dentro de la cámara de bombeo alcanza una presión específica, el elemento cortante fallará permitiendo de esta manera el movimiento en la sección de pared lateral desde la posición normal a la posición de ventilación.
2. Una adaptación de alivio de presión de acuerdo con la reivindicación 1 en donde el ensamble de carcasa de bomba incluye una cámara de bombeo y una cámara selladora en ésta que está en comunicación de fluido, la cámara selladora incluye una pared lateral que



forma dicha sección motada para movimiento entre la posición de operación normal y la posición de operación de purga, el elemento cortante se adapta para retener la pared lateral en la posición de operación normal, la adaptación es de tal forma que luego de que la presión dentro de la cámara selladora alcanza una presión específica, el elemento cortante fallará permitiendo por lo tanto el movimiento de la pared lateral desde la posición de operación normal a la posición de ventilación.

3. Una adaptación de alivio de presión de acuerdo con la reivindicación 2 en donde el ensamble de carcasa de bomba incluye adicionalmente un cubierta de bomba, la sección de pared lateral se monta con relación al cubierta de bomba, cada uno tiene lomos cooperantes en éste y el elemento cortante se adapta para ser colocado entre ellos, el elemento cortante incluye un cuerpo en forma de anillo que tiene uno o más miembros de corte que se proyectan generalmente en forma radial a éste, la adaptación que está en la posición instalada, un borde lateral del anillo se adapta para apoyarse contra uno de los lomos y el miembro de corte se adapta para apoyarse contra el otro lomo, los lomos de las partes están espaciados

20
27

de tal forma que en caso de que falla del movimiento axial del elemento cortante se permita el movimiento axial entre las dos partes

4. Una adaptación de alivio de presión de acuerdo con la reivindicación 2 o la reivindicación 3 que incluye adicionalmente medios para inhibir la rotación de la pared lateral
5. Una adaptación de alivio de presión de acuerdo con la reivindicación 3 o 4 en donde el o cada uno de los elementos cortantes tiene la forma de pestaña o asa que se proyecta desde el anillo.
6. Una adaptación de alivio de presión de acuerdo con la reivindicación 3 o 4 en donde el o cada uno de los elementos cortantes en la forma de pinza cortante está montada en el anillo y que se proyecta desde el mismo.

22

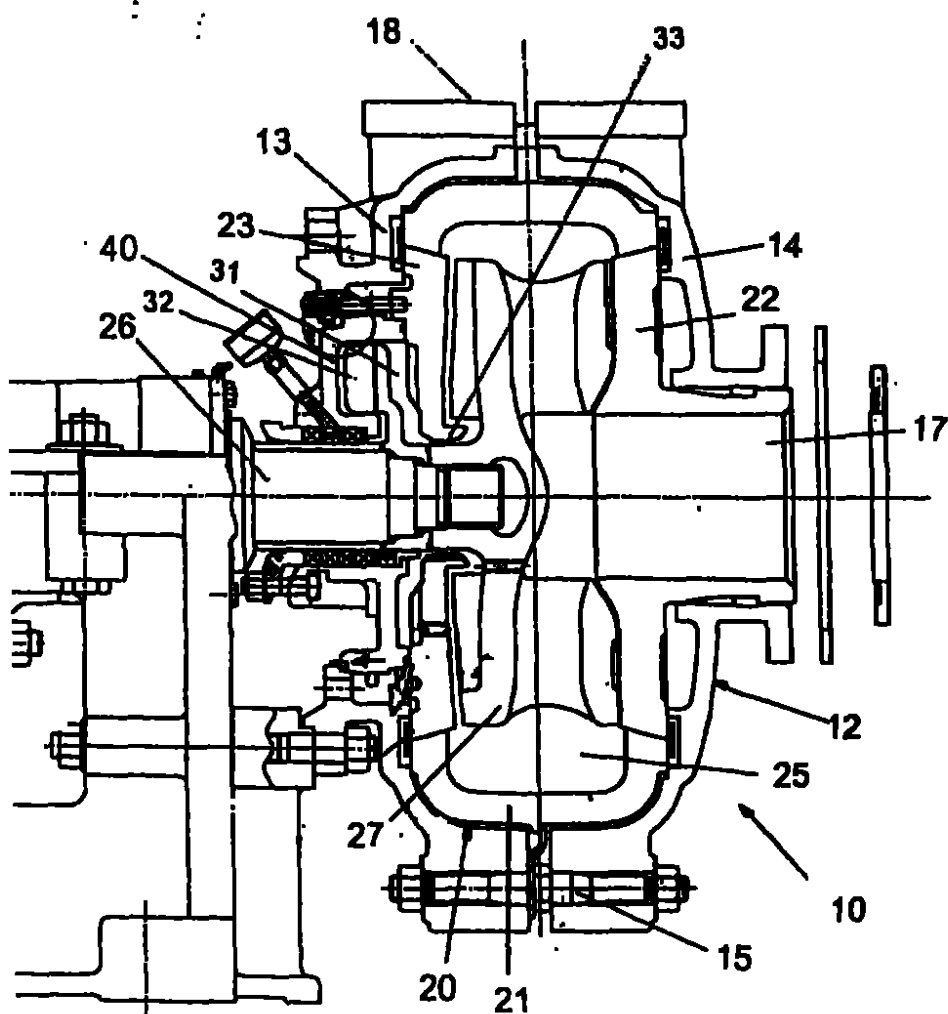


FIG. 1

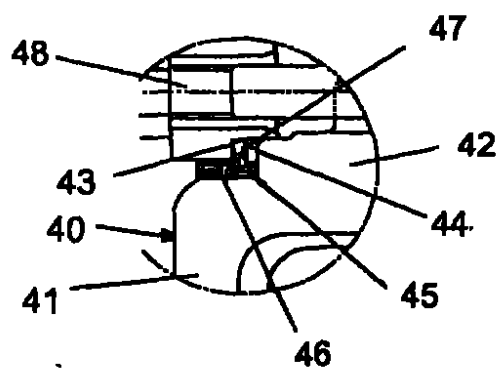


FIG. 2

FIG. 2

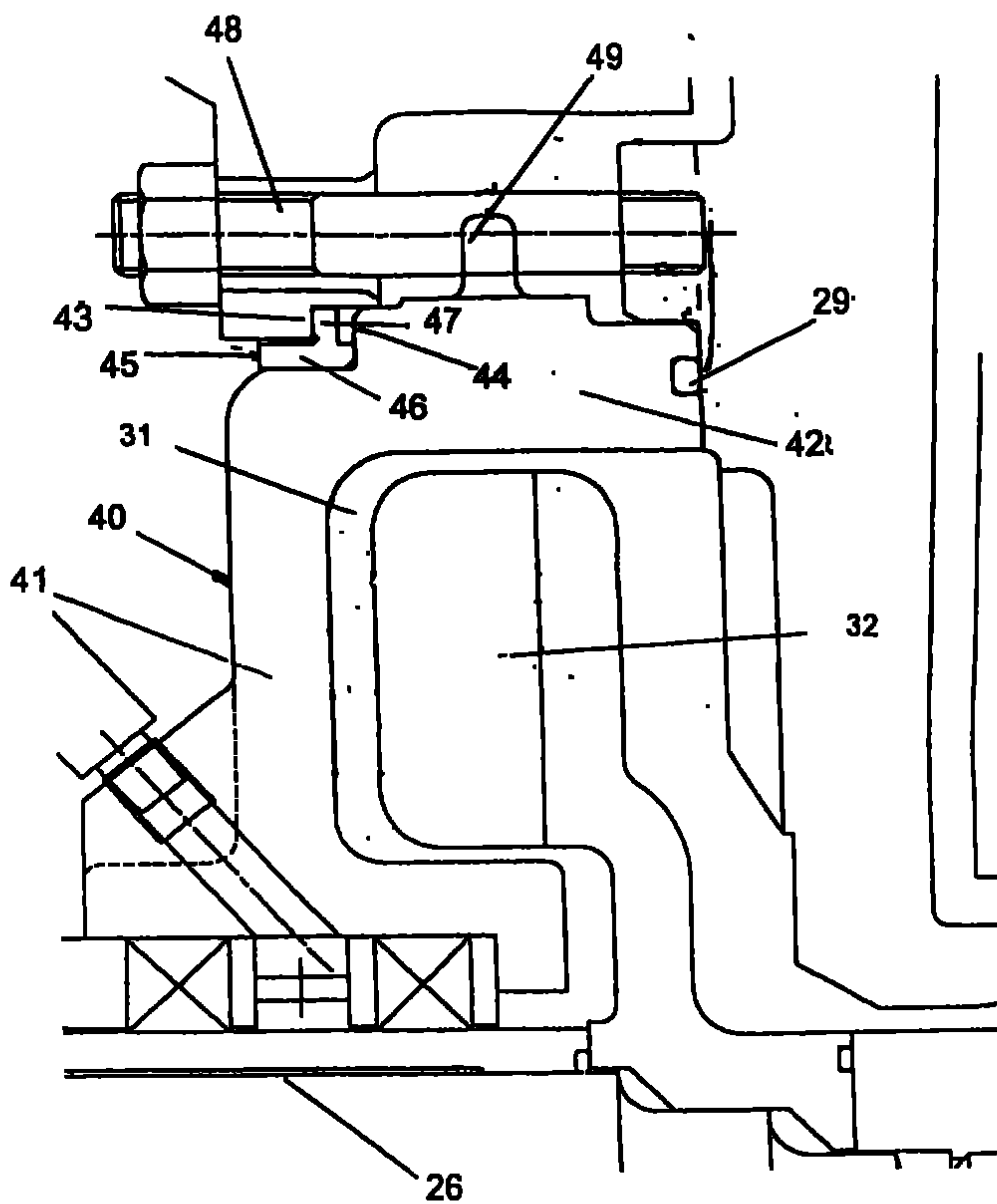


FIG. 3

5

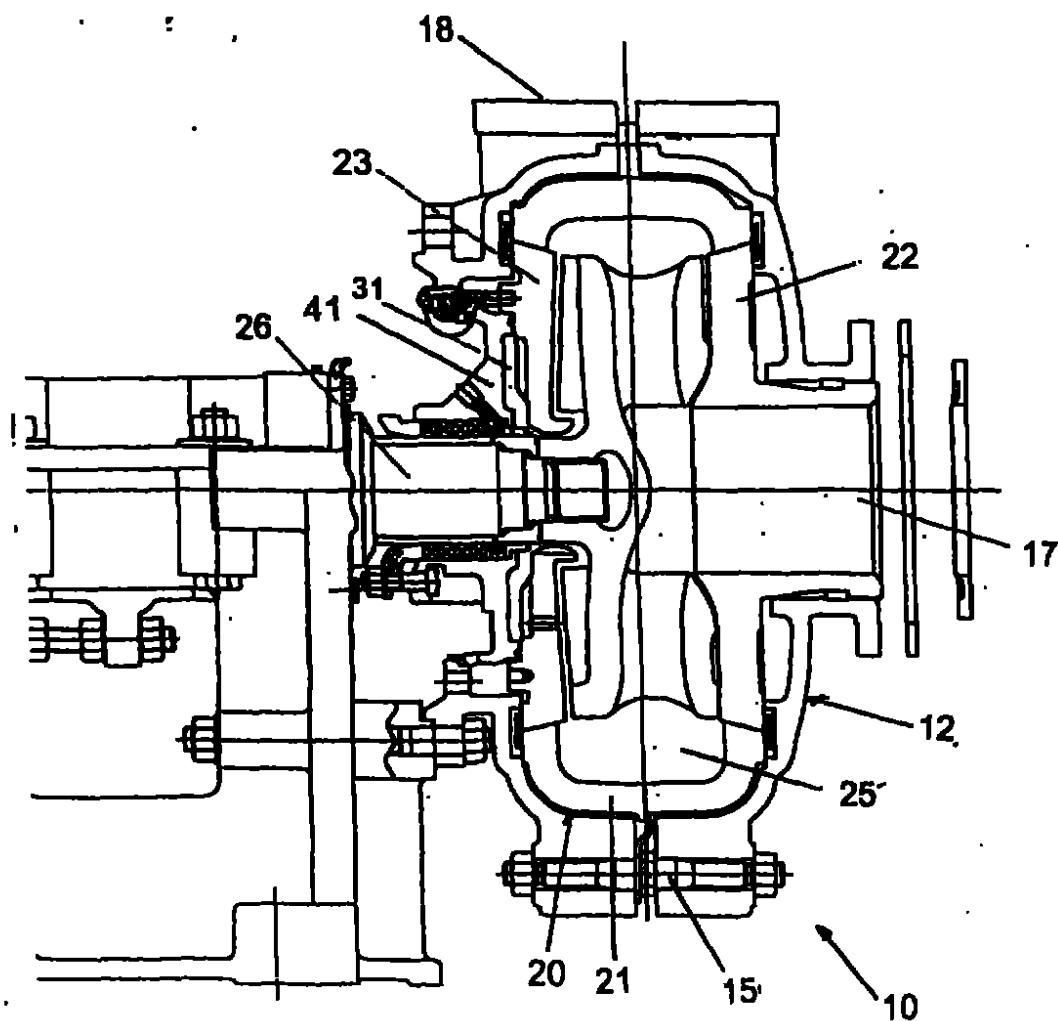


FIG. 4

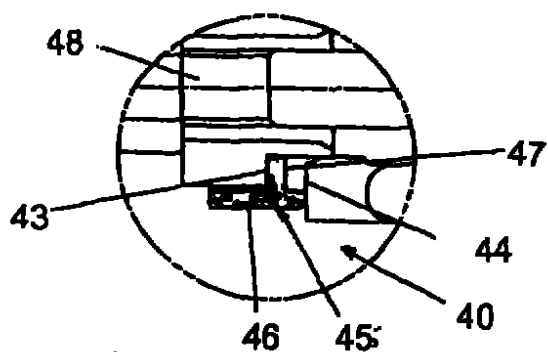


FIG. 5

DEPT. OF COMMERCE
OFFICE OF THE SECRETARY
WASHINGTON, D.C.

31

31

FOR INFO
RECEIVED

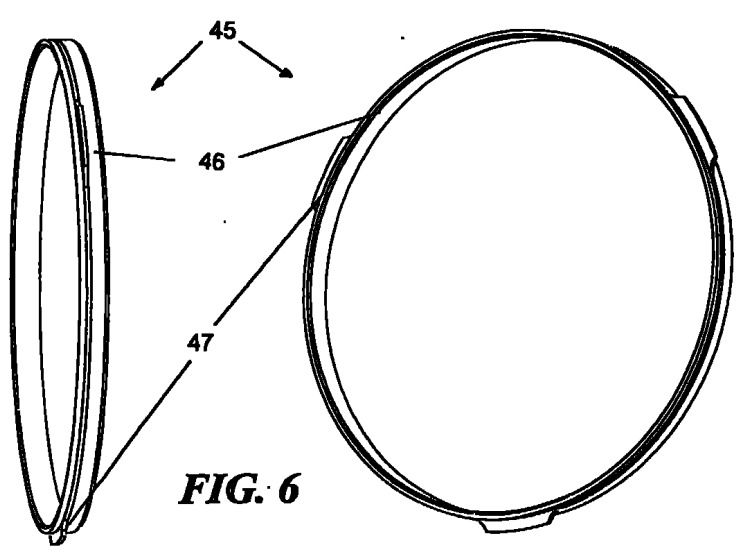


FIG. 6

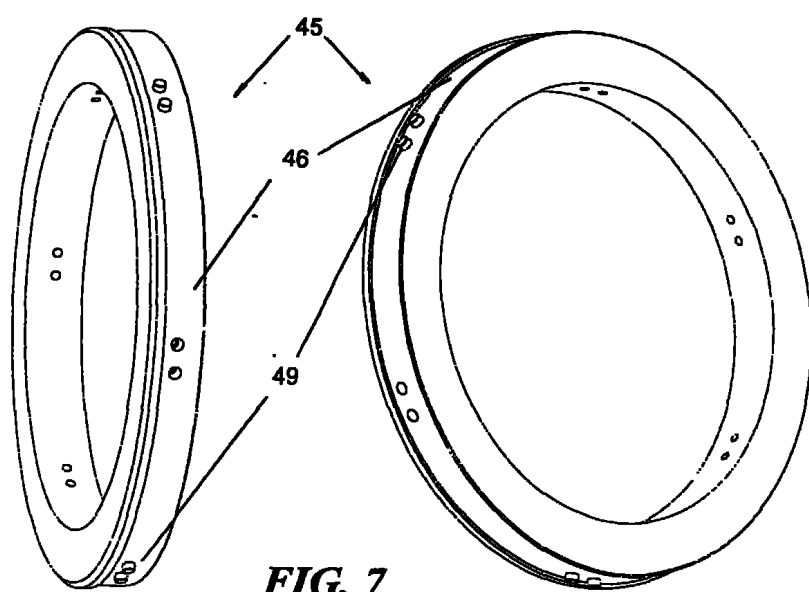


FIG. 7

45

132

FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2004/000646

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. ⁷: F04D 29/08, 27/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See below under "Electronic database consulted"

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

AU: IPC: F04D 29/08, 27/00

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI: IPC F04D, F04B, F04C with keywords: pressure, relief, casing shear and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5472318A (FRANK et al.) 5 December 1995 The whole document	1-6
A	CA 1220399A (DOWEL SCHLUMBERGER CANADA INC.) 14 April 1987 The whole document	1-6
A	DE 4116697C1 (NETZSCH-MOHNOPUMPEN GmbH) 12 March 1992 Abstract and Figure	1-6



Further documents are listed in the continuation of Box C



See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

24 June 2004

Date of mailing of the international search report

29 JUN 2004

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaaustralia.gov.au
Facsimile No. (02) 6285 3929

Authorized officer

ASANKA PERERA
Telephone No: (02) 6283 2373

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2004/000646

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
US	5472318	CA	2151544	JP	8038956
CA	1220399	US	4687421		
DE	4116697	AU	18786/92	BR	9205295
		US	5318416	WO	9220923
				EP	0540736
				ZA	9203678
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.					
END OF ANNEX					

PATENT COOPERATION TREATY
PCT

INTERNATIONAL SEARCH REPORT
(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 12239521/ARS	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/AU2004/000646	International filing date (day/month/year) 17 May 2004	(Earliest) Priority Date (day/month/year) 23 May 2003
Applicant WEIR WARMAN LTD et al		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box No. II).

3. ☐ Unity of invention is lacking (See Box No. III).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure Nos 1, 2.

☒ Fig 1, as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☒ Figure 2, as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

Box No. IV Text of the Abstract (Continuation of item 5 of the first sheet)

A pressure relief arrangement for a pump (10) which includes a pump housing assembly with a pumping chamber (25) therein, the pump housing assembly including a section (41) mounted for movement between a normal operating position and a venting position, a shearing element (45) being adapted to retain the section in the normal operating position, the section (41) being mounted so that upon the pressure within the pumping chamber (25) can act on the section (41) and upon the pressure within the pumping chamber (25) reaching a specified pressure, the shearing element (45) will fail thereby permitting movement of the section (41) from the normal operating to the venting position.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2004/000646

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. 7: F04D 29/08, 27/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See below under "Electronic database consulted"

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

AU: IPC : F04D 29/08, 27/00

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI : IPC F04D, F04B, F04C with keywords: pressure, relief, casing shear and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5472318A (FRANK et al.) 5 December 1995 The whole document	1-6
A	CA 1220399A (DOWEL SCHLUMBERGER CANADA INC.) 14 April 1987 The whole document	1-6
A	DE 4116697C1 (NETZSCH-MOHNOPUMPEN GmbH) 12 March 1992 Abstract and Figure	1-6



Further documents are listed in the continuation of Box C



See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

24 June 2004

Date of mailing of the international search report

29 JUN 2004

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaustalia.gov.au
Facsimile No. (02) 6285 3929

Authorized officer

ASANKA PERERA

Telephone No : (02) 6283 2373

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2004/000646

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
US	5472318	CA	2151544	JP	8038956
CA	1220399	US	4687421		
DE	4116697	AU	18786/92	BR	9205295
		US	5318416	WO	9220923
				EP	0540736
				ZA	9203678

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX

PCT REQUEST

Paper Copy (NOT for submission)

0	For receiving Office use only	
0-1	International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	Form PCT/RO/101 PCT Request	
0-4-1	Prepared Using	PCT-SAFE [EASY mode] Version 3.50 (Build 0002.162)
0-5	Petitioner The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	Australian Patent Office (RO/AU)
0-7	Applicant's or agent's file reference	12239521/ARS
I	Title of invention	PRESSURE RELIEF ARRANGEMENT FOR A PUMP
II	Applicant	
II-1	This person is	applicant only
II-2	Applicant for	all designated States except US
II-4	Name	WEIR WARMAN LTD
II-5	Address	1 Marden Street Artarmon, New South Wales 2064 Australia
II-6	State of nationality	AU
II-7	State of residence	AU
II-8	Telephone No.	61 2 9934 5100
II-9	Facsimile No.	61 2 9934 5242
III-1	Applicant and/or inventor	
III-1-1	This person is	applicant and inventor
III-1-2	Applicant for	US only
III-1-4	Name (LAST, First)	BURGESS, Kevin, Edward
III-1-5	Address	37 Christel Avenue Carlingford, New South Wales 2118 Australia
III-1-6	State of nationality	AU
III-1-7	State of residence	AU

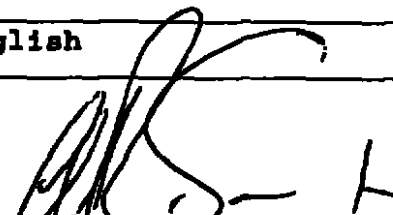
PCT REQUEST

Paper Copy (NOT for submission)

IV-1	Agent or common representative; or address for correspondence The person identified below is hereby/ has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name (LAST, First)	SMEETON, Anthony, Richard
IV-1-2	Address	Davies Collison Cave Level 10, 10 Barrack Street Sydney, New South Wales 2000 Australia
IV-1-3	Telephone No.	61 2 9262 2611
IV-1-4	Facsimile No.	61 2 9262 1080
IV-1-5	e-mail	tsmeeton@davies.com.au
IV-2	Additional agent(s)	additional agent(s) with same address as first named agent
IV-2-1	Name(s)	CARTER, Christopher, John; COWLE, Anthony, John; HEISEY, Ross, Mitchell; HIRD, William; SCHILLING, Frederick Lyle; SMITH, Alistair, James; STEARNE, Peter, Andrew; THOO, Laurence, Wei Yong
V	DESIGNATIONS	
V-1	The filing of this request constitutes under Rule 4.8(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.	
VI-1	Priority claim of earlier national application	
VI-1-1	Filing date	23 May 2003 (23.05.2003)
VI-1-2	Number	2003902582
VI-1-3	Country	AU
VI-2	Priority document request The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI-1
VII-1	International Searching Authority Chosen	Australian Patent Office (ISA/AU)
VII-2	Request to use results of earlier search; reference to that search	
VII-2-1	Date	27 June 2003 (27.06.2003)
VII-2-2	Number	2003902582
VII-2-3	Country (or regional Office)	AU

PCT REQUEST

Paper Copy (NOT for submission)

VIII	Declarations	Number of declarations	
VIII-1	Declaration as to the identity of the inventor	-	
VIII-2	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	-	
VIII-3	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	-	
VIII-4	Declaration of inventorship (only for the purposes of the designation of the United States of America)	-	
VIII-5	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	-	
IX	Check list	number of sheets	electronic file(s) attached
IX-1	Request (including declaration sheets)	4	✓
IX-2	Description	8	-
IX-3	Claims	2	-
IX-4	Abstract	1	✓
IX-5	Drawings	5	-
IX-7	TOTAL	20	
	Accompanying items	paper document(s) attached	electronic file(s) attached
IX-8	Fee calculation sheet	✓	-
IX-17	PCT-SAFE physical media	-	✓
IX-19	Figure of the drawings which should accompany the abstract	1	
IX-20	Language of filing of the international application	English	
X-1	Signature of applicant, agent or common representative		
X-1-1	Name (LAST, First)	SMERTON, Anthony, Richard	
X-1-2	Name of signatory		
X-1-3	Capacity		

PCT REQUEST

Paper Copy (NOT for submission)

FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/AU
10-6	Transmittal of search copy delayed until search fee is paid	

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	
------	--	--

PATENT COOPERATION TREATY

42

From the:
INTERNATIONAL SEARCHING AUTHORITY

To:

Davies Collison Cave
GPO Box 3876
SYDNEY NSW 2001

DCC (Sydney)
Mail Recd

30 JUN 2004

ARND provided by (m)
on 30/06/04
Action

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) **29 JUN 2004**

Applicant's or agent's file reference
12239521/ARS

FOR FURTHER ACTION
See paragraph 2 below

International application No.

PCT/AU2004/000646

International filing date (day/month/year)

17 May 2004

Priority date (day/month/year)

23 May 2003

International Patent Classification (IPC) or both national classification and IPC

Int. Cl. ⁷ **F04D 29/08, 27/00**

Applicant

WEIR WARMAN LTD et al

1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|--|
| ☒ | Box No. I | Basis of the opinion |
| ☐ | Box No. II | Priority |
| ☐ | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| ☐ | Box No. IV | Lack of unity of invention |
| ☒ | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement |
| ☐ | Box No. VI | Certain documents cited |
| ☐ | Box No. VII | Certain defects in the international application |
| ☐ | Box No. VIII | Certain observations on the international application |

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the IPEA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaustalia.gov.au
Facsimile No. (02) 6285 3929

Authorized Officer

ASANKA PERERA
Telephone No. (02) 6283 2373

43

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/AU2004/000646

Box No. 1 Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/AU2004/000646

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-6	YES
	Claims	NO
Inventive step (IS)	Claims 1-6	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-6	YES
	Claims	NO

Citations and explanations:

All the documents cited in the ISR were category A only. Therefore the claimed invention is not disclosed in any of these patent documents and hence all the claims are novel.

The claimed invention is not obvious in the light of any of the cited documents nor is it disclosed in any obvious combination of them. It is also considered that it would not be obvious to a person skilled in the art in the light of common general knowledge either by itself or in combination with any of these documents.

PATENT COOPERATION TREATY

45

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF RECEIPT OF
RECORD COPY

(PCT Rule 24.2(a))

To:

SMEETON, Anthony, Richard
Davies Collison Cave
Level 10, 10 Barrack Street
Sydney, New South Wales 2000
Australia

Date of mailing (day/month/year) 21 June 2004 (21.06.2004)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 12239521/ARS	International application No. PCT/AU2004/000646

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

WEIR WARMAN LTD (for all designated States except US)

BURGESS, Kevin, Edward (for US)

International filing date : 17 May 2004 (17.05.2004)

Priority date(s) claimed : 23 May 2003 (23.05.2003)

Date of receipt of the record copy
by the International Bureau : 15 June 2004 (15.06.2004)

List of designated Offices :

AP : BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG

National : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 338.87.40

Authorized officer:

Sabine Przymusinski

Telephone No. (41-22) 338 9484

Continuation of Form PCT/IB/301

NOTIFICATION OF RECEIPT OF RECORD COPY

46

Date of mailing (day/month/year) 21 June 2004 (21.06.2004)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 12239521/ARS	International application No. PCT/AU2004/000646

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

☒ time limits for entry into the national phase - see updated important information (as of April 2002)

☐ requirements regarding priority documents (if applicable)

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated on the cover sheet of this Notification by paying national fees and furnishing translations, as prescribed by Articles 22 and 39 and the applicable national laws. In addition, the applicant may also have to comply with other special requirements applicable in certain Offices. It is the applicant's responsibility to ensure the necessary steps to enter the national phase are taken in a timely fashion. Most Offices do not issue reminders to applicants in connection with the entry into the national phase.

The applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of 18 months from the priority date (see Article 39(1)), but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see PCT Gazette No. 44/2001 of 1 November 2001, pages 18928, 18932 and 18934, as well as the PCT Newsletter, October and November 2001 and February 2002 issues.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For regular updates on the applicable time limits (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the PCT Gazette ("Section IV" part published on a weekly basis), to the PCT Newsletter (on a monthly basis) and to the relevant National Chapters in Volume II of the PCT Applicant's Guide (the paper version of which is updated usually twice a year and the Internet version of which is updated usually on a weekly basis). Finally, a cumulative table of all applicable time limits for entering the national phase is available from WIPO's Internet site, via links from various pages the site including those of the Gazette, Newsletter and Guide, at <http://www.wipo.int/pct/en/index.html>.

Information about the requirements for filing a demand for international preliminary examination is set out in the PCT Applicant's Guide, Volume I/A, Chapter IX. Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 18 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 18-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 18-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within the time limit which is reasonable under the circumstances (Rule 17.1(c)).

Where several priorities are claimed, the priority date to be considered for the purposes of computing the 18-month time limit (and all other PCT time limits) is the filing date of the earliest application whose priority is claimed (Article 2(x)(b)).

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

SMEETON, Anthony, Richard
Davies Collison Cave
Level 10, 10 Barrack Street
Sydney, New South Wales 2000
Australia

Date of mailing (day/month/year) 21 June 2004 (21.06.2004)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 12239521/ARS	
International application No. PCT/AU2004/000646	International filing date (day/month/year) 17 May 2004 (17.05.2004)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 23 May 2003 (23.05.2003)
Applicant WEIR WARMAN LTD et al	

- By means of this Form, which replaces any previously issued notification concerning submission or transmittal of priority documents, the applicant is hereby notified of the date of receipt by the International Bureau of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to a date of receipt, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- (If applicable) The letters "NR" appearing in the right-hand column denote a priority document which, on the date of mailing of this Form, had not yet been received by the International Bureau under Rule 17.1(a) or (b). Where, under Rule 17.1(a), the priority document must be submitted by the applicant to the receiving Office or the International Bureau, but the applicant fails to submit the priority document within the applicable time limit under that Rule, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- (If applicable) An asterisk (*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b) (the priority document was received after the time limit prescribed in Rule 17.1(a) or the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b)). Even though the priority document was not furnished in compliance with Rule 17.1(a) or (b), the International Bureau will nevertheless transmit a copy of the document to the designated Offices, for their consideration. In case such a copy is not accepted by the designated Office as priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
23 May 2003 (23.05.2003)	2003902582	AU	02 June 2004 (02.06.2004)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 338.87.40	Authorized officer Sabine Przymusinski Telephone No. (41-22) 338 9484
--	---

From the INTERNATIONAL BUREAU

PCT

FIRST NOTICE INFORMING THE APPLICANT OF
THE COMMUNICATION OF THE INTERNATIONAL
APPLICATION (TO DESIGNATED OFFICES WHICH
DO NOT APPLY THE 30 MONTH TIME LIMIT
UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

To:

SMEETON, Anthony, Richard
Davies Collison Cave
Level 10, 10 Barrack Street
Sydney, New South Wales 2000
AUSTRALIE

Date of mailing (day/month/year)

23 December 2004 (23.12.2004)

Applicant's or agent's file reference

12239521/ARS

IMPORTANT NOTICE

International application No.

PCT/AU2004/000646

International filing date (day/month/year)

17 May 2004 (17.05.2004)

Priority date (day/month/year)

23 May 2003 (23.05.2003)

Applicant

WEIR WARMAN LTD et al

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), does apply, please see Form PCT/IB/308(Second and Supplementary Notice) (to be issued promptly after the expiration of 28 months from the priority date).
2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, does not apply, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:
02 December 2004 (02.12.2004)

CH

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, does not apply, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1:

FI, LU, SE, TZ, UG, ZM

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. TIME LIMITS for entry into the national phase

For the designated Office(s) listed above, and unless a demand for international preliminary examination has been filed before the expiration of 19 months from the priority date (see Article 39(1)), the applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 20 MONTHS from the priority date.

In practice, time limits other than the 20-month time limit will continue to apply, for various periods of time, in respect of certain of the designated Offices listed above. For regular updates on the applicable time limits (20 or 21 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.+41 22 740 14 35

Authorized officer

Dorothee Mülhausen

Facsimile No.+41 22 338 87 40

From the INTERNATIONAL BUREAU

PCT

SECOND AND SUPPLEMENTARY NOTICE
INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO DESIGNATED OFFICES
WHICH APPLY THE 30 MONTH TIME
LIMIT UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

To:

SMEETON, Anthony, Richard
Davies Collison Cave
Level 10, 10 Barrack Street
Sydney, New South Wales 2000
AUSTRALIE

Date of mailing (day/month/year)

29 September 2005 (29.09.2005)

Applicant's or agent's file reference

12239521/ARS

IMPORTANT NOTICE

International application No.

PCT/AU2004/000646

International filing date (day/month/year)

17 May 2004 (17.05.2004)

Priority date (day/month/year)

23 May 2003 (23.05.2003)

Applicant

WEIR WARMAN LTD et al

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), does not apply, please see Form PCT/IB/308 (First Notice) issued previously.
2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, does apply, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:
(02 December 2004 (02.12.2004))

AU, AZ, BY, CN, CO, DZ, EP, HU, KG, KP, KR, MD, MK, MZ, NA, RU, SY, TM, US

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, does apply, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1:

AE, AG, AL, AM, AP, AT, BA, BB, BG, BR, BW, BZ, CA, CR, CU, CZ, DE, DK, DM, EA, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, ID, IL, IN, IS, JP, KE, KZ, LC, LK, LR, LS, LT, LV, MA, MG, MN, MW, MX, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, SC, SD, SG, SK, SL, TJ, TN, TR, TT, UA, UZ, VC, VN, YU, ZA, ZW

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. **TIME LIMITS** for entry into the national phase

For the designated or elected Office(s) listed above, the applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain of the designated or elected Office(s) listed above. For regular updates on the applicable time limits (30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Dorothee Mülhausen

Facsimile No. +41 22 740 14 35

Facsimile No. +41 22 338 87 40



FORMATO DE DIGITALIZACION
RELACION DE ANEXOS



Royal
Technologies S.A.
Incorporated in the State of New York

51

Expediente No		05118377	No de Folio
Item		No de unidades	
1	CD		
2	DVD		
3	REVISTA		
4	LIBRO		
5	PERIODICO		
6	DISQUETES		
7	SOBRE DE MANILA X	1	✓
8	SOBRE BLANCO TAMAÑO CARTA		
9	SOBRE BLANCO TAMAÑO OFICIO		
10	OTROS:		

Observaciones:

SIN CONTENIDO

2659

P-697
25

TRADUCCIÓN OFICIAL No. 04/014 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, por el Ministerio de Relaciones Exteriores y autorizado por el Ministerio del Interior y de Justicia, por resolución número 718 de 2003.

(Se traduce un Poder otorgado por la compañía Weir Warman Ltd., con fecha Diciembre 16, 2003, , Apostilla No. T4185, escritos en Inglés.)

COLOMBIA

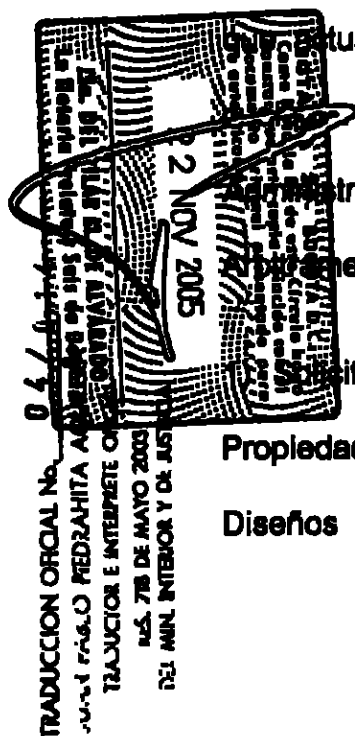
(Dirección en español)

PODER

El suscrito, Doug Jones representante legal de Weir Warman Ltd., sociedad constituida y existente bajo las leyes de Australia desarrollando su actividad comercial en la actualidad, domiciliada en 1 Marden Street, Artamon, New South Wales 2064, Australia, por el presente otorgamos Poder a DILIA MARÍA RODRÍGUEZ D'ALEMÁN, identificada con cédula de ciudadanía No. 41.654.882 de Bogotá y Tarjeta Profesional 20824 y CLAUDIA LUCIA CARO RAMIREZ, identificada con Tarjeta Profesional 36448 y cédula de ciudadanía No 40.017.374 de Tunja, con domicilio en Santafé de Bogotá, Colombia, para

actuando en su orden en nombre de la otorgante la representen ante entidad, autoridad y/o persona, especialmente ante las del orden Administrativo, Contencioso Administrativo, Judicial, Tribunales de Arbitraje y/o cualquier otro en lo referente a la siguiente:

Solicitar, tramitar, obtener y/o registrar cualesquiera de las modalidades de Propiedad Industrial, tales como: Patentes de Invención, Modelos de Utilidad; Diseños Industriales, variedades vegetales, Marcas, Lemas, Nombres y



Enseñas Comerciales y Denominaciones de Origen; así como sus renovaciones, prórrogas, traspasos, cambios de nombre y/o domicilio, contratos y licencias.

2) Solicitar, tramitar, obtener, y/o registrar derechos de autor, en cualquiera de sus presentaciones así como la protección de secretos industriales y know-how.

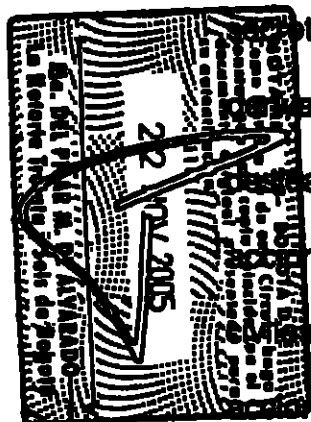
3) Solicitar, tramitar, obtener y/o registrar registros sanitarios, permisos y/o licencias de funcionamiento; así como sus renovaciones o prórrogas, cesiones, traspasos, cambios de nombre y/o domicilio, contratos y licencias.

4) Ejercer acciones de oposición, observación, reclamos, reivindicaciones, reconsideración, reposición, apelación, cancelación administrativa o judicial, nulidad, protección al consumidor, concesión de licencias, protección de

secretos industriales y demás acciones y recursos relacionados con derechos relacionados de los asuntos arriba indicados y en contra de la competencia judicial, acciones derivadas de la obtención o explotación de licencias, acciones de indemnización de perjuicios. También podrán intervenir en juicios civiles, comerciales, penales, contencioso-administrativos, tutelas y de policía; acciones o juicios promovidos por el mandante o contra él.

5) Registrar nombres de dominio ante la entidad competente.

6) En el ejercicio de este mandato los mandatarios arriba mencionados quedan



0 4
TRADUCCION OFICIAL No.
JUAN PABLO MEDUAHITA AGUIRRE
TRADUCCION E INTERPRETE OFICIAL
DES. 718 DE MAYO 2003
DEL MIN. INTERIOR Y DE JUSTICIA

54

facultados para: conciliar, cancelar, transigir, aceptar cláusulas compromisorias, desistir, recibir y tomar posesión de la cosa objeto de litigio y renunciar o desistir derechos concedidos o en curso de concesión, admitir los hechos del proceso.

7) Ratificar o no la agencia oficiosa.

8) Así mismo facultamos a los mencionados apoderados para recibir notificaciones y designar apoderados judiciales o extrajudiciales, sustituir el presente poder y revocar las sustituciones que hicieren.

Dado y firmado en PORT MACQUAIRE, AUSTRALIA, hoy día 16 de Diciembre de 2003.

Por: (Firmado)Ilegible

CERTIFICADO NOTARIAL (Cuando el solicitante es una SOCIEDAD)

(Poderes) otorgados en El Salvador, México, Estados Unidos de América y

hoy 16 de Diciembre del 2003, el suscrito Notario CERTIFICA que:

1) **JONES**, (nombre de quien firma el poder), mayor de edad y domiciliado en PORT MACQUAIRE, AUSTRALIA, suscribió el anterior documento.

2) El otorgante le es conocido personalmente y tiene capacidad para firmar el

06/01/04
TRADUCCION OFICIAL No. 11077
JUAN PABLO MEDLAHITA AGUIRRE
TRADUCTOR E INTERPRETE OFICIAL
RES. 788 DE MAYO 2003
DEL MIN. INTERIOR Y DE JUSTICIA

22 NOV 2005

5

4) La mencionada persona jurídica con domicilio comercial en ARTARMON NSW, AUSTRALIA, está debidamente constituida, tiene actualmente existencia legal y el fin para el cual se otorga este poder se encuentra dentro de su objeto social.

5) El otorgante tiene en efecto la capacidad referida y su representación es legal y está autorizado para otorgar este poder.

6) Fundamento las certificaciones 3), 4) y 5) en los documentos auténticos que para tal fin me fueron exhibidos.

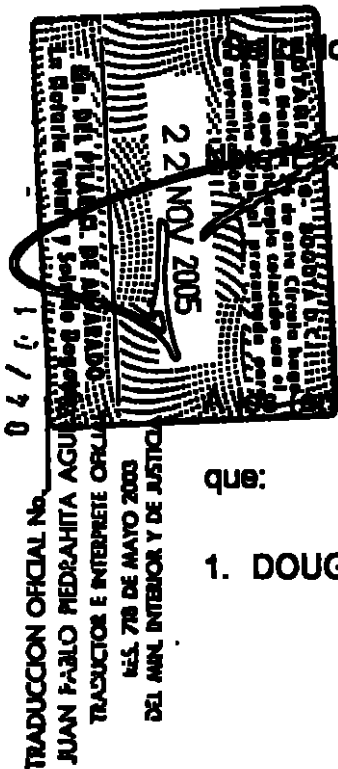
(Seal Notarial en Relieve)

Nota: El Consulado de Colombia debe autenticar la firma del Notario Público.

CERTIFICADO NOTARIAL (Individuos)

A los (en blanco) días del mes (en blanco), el Notario que suscribe DA FE de
que:

- 1. DOUG JONES, (nombre de la persona que firma el poder), mayor de edad y**



domiciliado en PORT MACQUARIE, AUSTRALIA, firmó en su presencia el documento que antecede, que conoce personalmente al otorgante y que está legalmente facultado para suscribir el documento.

(Firmado) Ilegible

Notario Público (Sello Notarial en Relieve)

NOTA: A continuación de lo anterior, el Cónsul de Colombia debe autenticar la firma del Notario público.

Para todos los demás países el Señor Cónsul de Colombia o ante quien se otorgue, debe expedir una certificación dejando constancia de: 1) la existencia legal de la sociedad, 2) que cumple actualmente con su objeto social, y 3) que la persona o personas que otorgan este poder estan facultadas para hacerlo. El Cónsul también certificará que los tuvo a la vista los documentos que prueban y acreditan tales circunstancias.

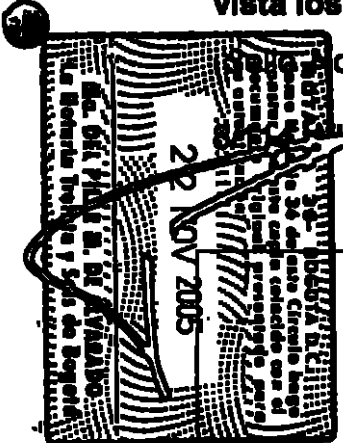
Notarial a Tinta: TERRY CURLEY, ABOGADO Y NOTARIO PÚBLICO,
WILLIAMS ST., PORT MACQUARIE N.S.W. 2444).

(Sello Pre-impreso)

APOSTILLA

(Convención de la Haya de Octubre 5 de 1961)

1. País: Australia
Este documento público
2. Ha sido firmado por TERRY CURLEY
3. Obrando en calidad de Notario Público



0471
TRADUCCION OFICIAL No.
JUAN PABLO PIEDRAHITA AGUILERA
TRADUCTOR E INTERPRETE OFICIAL
RES. 718 DE MAYO 2003
DEL MIN. INTERIOR Y DE JUSTICIA

57

4 Lleva el sello/estampilla de Notario Publico, Port Macquarie New South Wales, Australia

CERTIFICADO

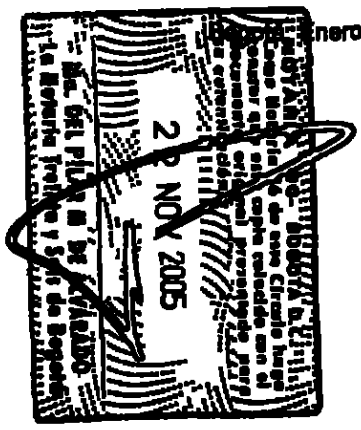
5. En Sydney
- 6 Hoy día Veintitrés de Diciembre Dos Mil Tres
- 7 Por Andrew Richard Sutton Departamento de Relaciones Exteriores y Comercio Exterior, Sydney, New South Wales, Australia
- 8 No T 4185
- 9 Sello/Estampilla (Sello a Tinta del Departamento de Relaciones Exteriores y Comercio Exterior de Sydney)
- 10 Firma (Firmado)

Sello Rojo de Oblea con Cinta Verde

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

1

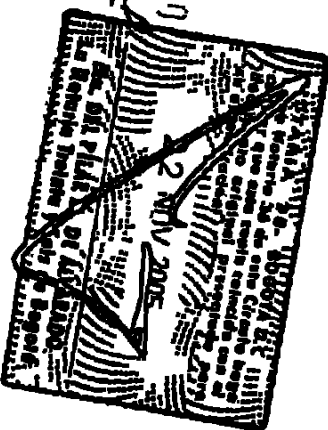
enero 13 2004.



[Signature]
TRADUCCION OFICIAL No. 061014
JUAN PABLO FID. ANITA AGUILERA
TRADUCTOR E INTERPRETE OFICIAL
RES. 718 DE MAYO 2003
DEL MIN. INTERIOR Y DE JUSTICIA

117

613191





APOSTILLE

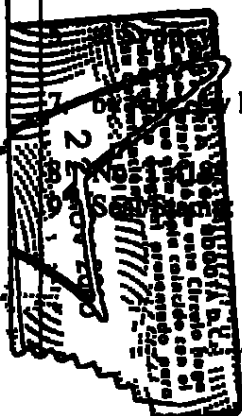
(Convention de La Haye du 5 octobre 1961)

1	Country	Australia
	This public document	
2	has been signed by	Terry Curley
3	acting in the capacity of	Notary Public
4	bears the seal/stamp of	Notary Public, Port Macquarie New South Wales, Australia

Certified

**6 the Twenty-Third day of December
Two thousand and three
Department of Foreign Affairs and Trade,
Sydney, New South Wales, Australia**

10 Signature



Richard Sutton

COLOMBIA

Carrera 11 nº 93-43 Of. 404 Bogotá Colombia Tel (57 1) 6350813 Fax: (57 1) 6350824 Email: clarkemodet@clarkemodet.com.co

PODER

Yo (nosotros), abajo firmante(s)

en mi (nuestro) carácter de representante(s) legales de

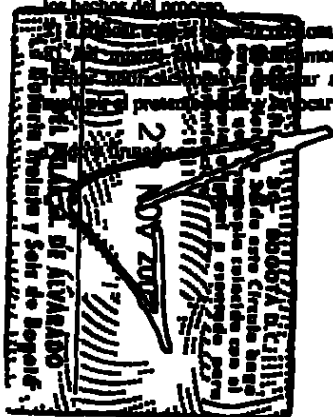
una sociedad organizada y existente de acuerdo con las leyes de

y en actual cumplimiento de su objeto social, con domicilio en

por el presente instrumento confiero (conferimos) poder especial a favor de DILIA MARIA RODRIGUEZ D'ALEMAN con Cédula de Ciudadanía No. 41.654.882 de Bogotá, y tp. 20824 y CLAUDIA LUCIA CARO RAMIREZ, con Cédula de Ciudadanía No. 40.017.374 de Tunja, y tp. 36448, con domicilio en Bogotá, Colombia, para que actuando en su orden en nombre del (de la) otorgante lo (la) representen ante cualquier entidad, autoridad y/o persona, especialmente ante las del orden Administrativo, Contencioso Administrativo, Judicial, Tribunales de Arbitramento y/o cualquier otro en lo referente a los siguientes asuntos:

- 1) Solicitar transmitir obtener y/o registrar cualquiera de las modalidades de Propiedad Industrial tales como: patentes de invención, modelos de utilidad, diseños industriales, variedades vegetales, marcas, lemas, nombres y apellidos comerciales y denominaciones de origen; así como sus renovaciones, prórrogas, transferencias, cambios de nombre y/o domicilio, contratos y licencias.
- 2) Solicitar transmitir obtener y/o registrar derechos de autor en cualquiera de sus presentaciones así como la protección de secretos industriales y know-how
- 3) Solicitar transmitir obtener y/o registrar registros sanitarios, permisos y/o licencias de funcionamiento así como sus renovaciones o prórrogas, transferencias, cambios de nombre y/o domicilio, contratos y licencias.
- 4) Ejercer acciones de oposición, observación, reclamos, reconsideración, reposición, apelación, cancelación administrativa o judicial, nulidad, protección al consumidor, concusión de licencias, protección de secretos industriales y demás acciones y recursos relacionados con derechos derivados de los asuntos arriba indicados y en contra de la competencia dual, acciones derivadas de la obtención o explotación de licencias, acciones de indemnización de perjuicios. También podrá(n) intervenir en juicios civiles, comerciales, penales, contencioso-administrativos, tutela y de policía; en acciones o juicios promovidos por el (la) mandante o en contra el (ella)
- 5) Registrar nombres de dominio ante la entidad competente.
- 6) En el ejercicio de este mandato los mandatarios arriba mencionados quedan facultados para: conciliar, cancelar, transigir, comprometer en árbitros, demandar, recibir y tomar posesión de la cosa objeto de litigio y renunciar o declarar a derechos concedidos o en curso de concesión, admitir los hechos del proceso.

Así mismo, faculto (facultamos) a los mencionados apoderados para que en cualquier momento puedan obtener apoderados judiciales o extrajudiciales, para el presente y para las sustituciones que hicieren.



POWER OF ATTORNEY

I (we), the undersigned

DOUG JONES

legal representative(s) of

Weir Warman Ltd

an organization existing under the laws of

Australia

and in present execution of its business activity domiciled at

1 Marden Street, Artarmon, New South Wales 2064, Australia

do hereby grant POWER OF ATTORNEY to DILIA MARIA RODRIGUEZ D'ALEMAN, identification card No. 41.654.882 of Bogotá, and tp. 20824 and CLAUDIA LUCIA CARO RAMIREZ, tp. 36448, identification card No. 40.017.374 of Tunja, residing in Bogotá, Colombia, to act in the order of their appointments in behalf of grantor before any entity authority and/or natural or juridical person, especially before those Administrative Administrative-Contencioso, Judicial, arbitration courts, and/or any other in all matters concerning the following.

- 1) To apply process, obtain and/or register any of the modalities of Industrial Property such as: Patents of Invention, Utility Models, Designs, plant varieties, Marks, Slogans, Trade Names and emblems and appellations of Origin, as well as their renewals, assignments, changes of name and/or domicile, agreements and licenses.
- 2) To apply process, obtain and/or register copyrights of any kind as well as protection of industrial secrets or know-how
- 3) To apply process, obtain and/or register sanitary regulations, operating authorizations and/or licenses, as well as their renewals or assignments, changes of name and/or domicile, agreements and licenses.
- 4) To bring actions of opposition, observations, claims, reconsideration, appeal or legal remedies, cancellations, nullity protection to the consumer granting of licenses, protection of trade secrets and other actions related with rights derived from the above-mentioned matters and against the unfair competition, actions resulting from the obtaining or exploitation of licenses, recovering damages actions. They can also intervene or participate in Civil, Commercial Criminal or Contencioso-Administrative Trials; the actions for writ mandamus, police actions; in actions, lawsuits or litigations initiated by the grantor or against him.
- 5) To register domain names before the competent entity
- 6) To the effect of this mandate the above-named proxy are empowered to: conciliate, cancel, settle, submit to arbitration, withdraw and to receive and take possession of the litigation related object and waive or renounce the rights granted or in process of granting, admit the facts of the case.
- 7) To ratify or not the efficacious agency
- 8) I (we) hereby appoint the afore mentioned attorneys with powers to receive notifications and to designate judicial and extrajudicial attorneys, substitute this Power of Attorney and to revoke such substitutions.

Granted and signed at Port Melbourne, Australia
on this 16th day of December of 2003


Firma / signature

TRADUCCION OFICIAL No. 1
JUAN PABLO RIED ARIETA AGUILERA
TRADUCCION E INTERPRETE OFICIAL

CERTIFICADO NOTARIAL

(Cuando el solicitante es SOCIEDAD)

(Powers of attorney granted in El Salvador, Estados Unidos, Mexico y Venezuela)

A los _____ días del mes de _____ de _____
el Notario que suscribe DA FE de que

1. _____
(nombre de la persona que firma el poder)

mayor de edad y domiciliado en _____
firmó de su puño
y letra el documento que antecede

2. Conoce al (a) otorgante y que este (a) está legalmente capacitado para el otorgamiento.

3. El otorgante ha firmado el referido documento en su carácter de _____
de la persona jurídica _____

4. La citada persona jurídica con sede en _____
está legalmente

constituida, que tiene actualmente
existencia legal y que el acto para el cual se ha otorgado este poder
está comprendido entre los que constituyen su objeto social

5. El otorgante tiene efectivamente la representación que ostenta, que esta
es legítima y que está facultado para otorgar este poder

6. Las anteriores certificaciones de los puntos 3, 4 y 5, me constan porque
he tenido a la vista los documentos auténticos.

Notario Público

NOTA. A continuación de lo anterior el Cónsul de Colombia debe
autenticar la firma del Notario Público.

CERTIFICADO NOTARIAL (Cuando el solicitante es
INDIVIDUO)

A los _____ días del mes de _____ de _____
el Notario que suscribe DA FE de que:

1. _____
(nombre de la persona que firma el poder)

mayor de edad y domiciliado en _____
firmó en su presencia

el documento que antecede, conoce al otorgante y que este está
legalmente capacitado para el otorgamiento.

Notario Público

NOTA. A continuación de lo anterior el Cónsul de Colombia debe
autenticar la firma del Notario Público.

Para todos los demás países el Señor Cónsul de Colombia o ante quien
se otorgue, debe expedir una certificación dejando constancia 1) de la
autenticidad de la sociedad, 2) de que esta ejerce actualmente su
objeto social, 3) de que la persona o personas que otorgan el poder
están debidamente facultadas para ello, dejando
constancia en la certificación de lo que tuvo a la vista las pruebas que acreditan

LEGALIZACION POR EL CONSUL DE COLOMBIA

TRADUCCION OFICIAL No. _____
JUAN FASURUA AGUILO
TRADUCTOR E INTERPRETE OFICIAL
A 718 LE MAYO 2003
D.L. MIN. INTERIOR Y DE JUSTICIA

NOTARIAL CERTIFICATE

(When the applicant is a CORPORATION)

(Powers of attorney granted in El Salvador, Mexico, U.S.A. and Venezuela)

This 16 TH day of December 2003
the undersigned Notary CERTIFIES that

1. DOUG JONES
(name of the person who signs the power of attorney)

of legal age and domiciled in PORT MACQUARIE, AUSTRALIA as his hand in
the foregoing document

2. The grantor is to him personally known and that he/she has legal capacity to
execute the document.

3. The grantor has executed the foregoing document in his capacity
of MANAGER - WHOLESALE PROPERTY
of the juridical person WHEELOCK LTD

4. The mentioned juridical person with place of business
in AUTERMAN, NSW, AUSTRALIA

is duly organized, has actual legal existence and that the purposes for which
the power of attorney is granted are within the scope of its corporate purposes.

5. The grantor has in fact the referred quality and that he/she representation
is legal and that he/she is empowered to grant this power of attorney

6. I have based the above certifications 3, 4 and 5, on the authentic documents
which for such purposes were exhibited to me.

Notary Public

NOTA. Then the Colombian Consul must legalize the signature of the Notary
Public.

NOTARIAL CERTIFICATE (When the applicant is an INDIVIDUAL)

On this _____ day of _____
the undersigned Notary CERTIFIES that.

1. DOUG JONES
(name of the person who signs the Power of Attorney)

of legal age and domiciled at PORT MACQUARIE, AUSTRALIA
signed in his presence the foregoing
document, the grantor is to him personally known and that he/she has legal
capacity to execute the document

Notary Public

NOTA. Then the Colombian Consul must legalize the signature of the Notary
Public.

For all other countries the Colombian Consul or before who it is granted
must issue a certification stating 1) the legal existence of the corporation, 2)
that the corporate purposes are actually being accomplished 3) that the
person or persons who grant this Power of Attorney are empowered to do
it. The Consul will certify also that the documents evidencing those
circumstances were exhibited to him.

LEGALIZATION BY THE COLOMBIAN CONSUL OR BY
APOSTILLE

TERRY CURLEY
SOLICITOR AND NOTARY PUBLIC
8/114 WILLIAM ST
PORT MACQUARIE NSW 2444