



No. 09-035502- -00001-0000

Fecha: 2009-10-19 08:48:05 Dep. 2020 NUECREACION
Tra. 3 MODELO Eve: 1 REGDEPOSITO
Act. 538 PETICION Folios: 2

SEÑORES

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

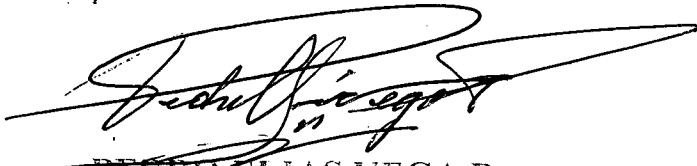
DIVISION DE NUEVAS CREACIONES

L. C.

Referencia: Expediente 09-35502 sobre Tapón y sello de garantía de contenido para cilindros de gas.

Me permito solicitar el Examen de Patentabilidad del expediente de la referencia, para lo cual adjunto el respectivo recibo de pago con el descuento estipulado en la resolución 31980, artículo 2 de 2.004.

Atentamente,


PEDRO ELIAS VEGA P.

CC 5.540.156

Anexo: Recibo de pago

17

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 09 - 78,197

FECHA : OCTUBRE 19 DE 2009

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
ENRIQUE DURAN	CONSIGNACION	BANCO DE BOGOTA	062754387	128441526	16/10/2009	302,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	86 EXAMEN DE PATENTABILIDAD DE MODEL	302,000.00
		TOTAL :	\$ 302,000.00

SON: TRESCIENTOS DOS MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISION DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No 09-35502

EXTRACTO DE LA PRESENTE SOLICITUD DE **MODELO DE UTILIDAD** FUE
PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **606** DE FECHA
31 DE JULIO DE 2009 EL TERMINO HABIL SEÑALADO POR LA LEY EXPIRA
EL 15 DE SEPTIEMBRE DE 2009.

NOTA: Dentro del plazo de los tres (3) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 y en concordancia con el artículo 85 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO _____X_____

United States Patent [19]
Kremer

[11] **Patent Number:** **5,048,554**
 [45] **Date of Patent:** **Sep. 17, 1991**

[54] **VALVE FOR A GAS CYLINDER**
 [75] **Inventor:** **Paul Kremer, Walferdange, Luxembourg**
 [73] **Assignee:** **Ceodeux S.A., Luxembourg, Luxembourg**
 [21] **Appl. No.:** **586,880**
 [22] **Filed:** **Sep. 24, 1990**
 [30] **Foreign Application Priority Data**
 Oct. 5, 1989 [LU] Luxembourg 87601
 [51] **Int. Cl.⁵** **F16K 17/40**
 [52] **U.S. Cl.** **137/69; 137/73**
 [58] **Field of Search** **137/68.1, 69, 73, 74**
 [56] **References Cited**
 U.S. PATENT DOCUMENTS
 2,115,371 4/1938 Mossberg 137/69 X

4,352,365 10/1982 Boccardo et al. 137/74 X
 4,549,565 10/1985 Short, III 137/68.1 X
Primary Examiner—John C. Fox
Attorney, Agent, or Firm—Leydig, Voit & Mayer

[57] **ABSTRACT**
 The valve has an outlet safety channel (20) closed by a burstable diaphragm (26) wedged between the body (10) of the valve and a plug (24) fitted detachably in the body (10) of the valve, the said plug (24) comprising an axial passage (28) in communication with the outside and filled with a fusible material (32) up to where it comes into contact with the diaphragm (26). A rubber seal (30) resistant to temperatures above the melting point of the fusible material obstructs the axial passage (28) towards the outside.

3 Claims, 1 Drawing Sheet

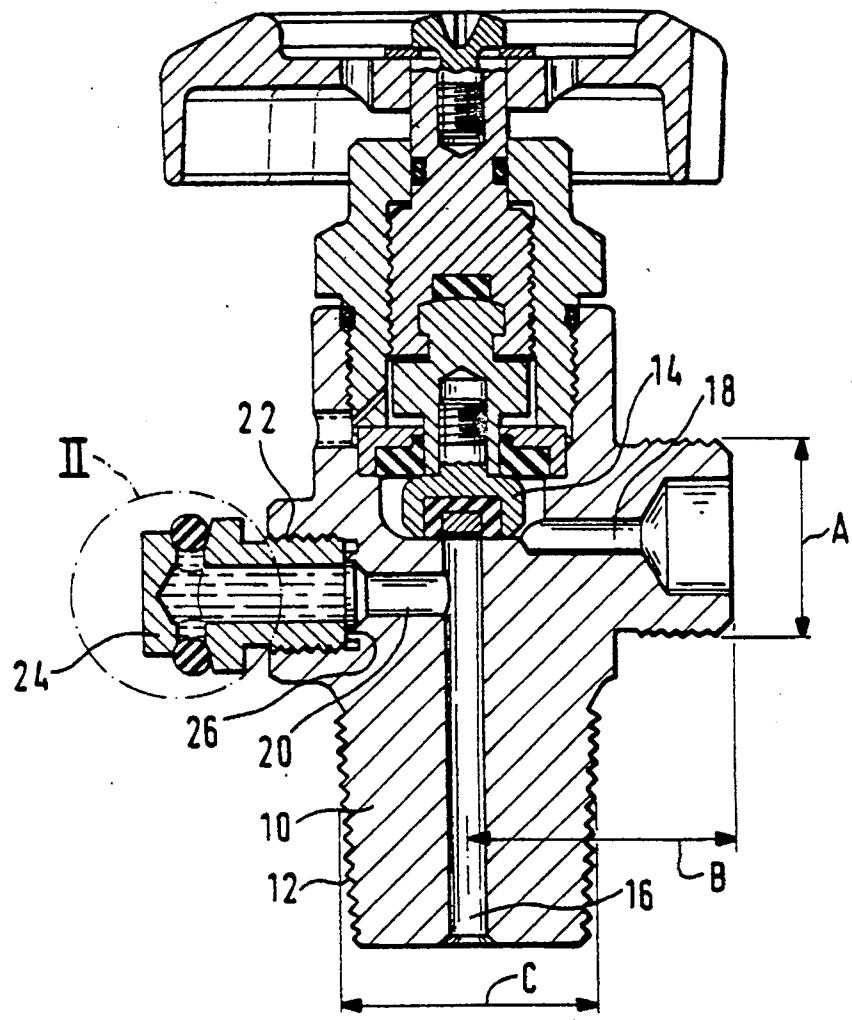


Fig. 1

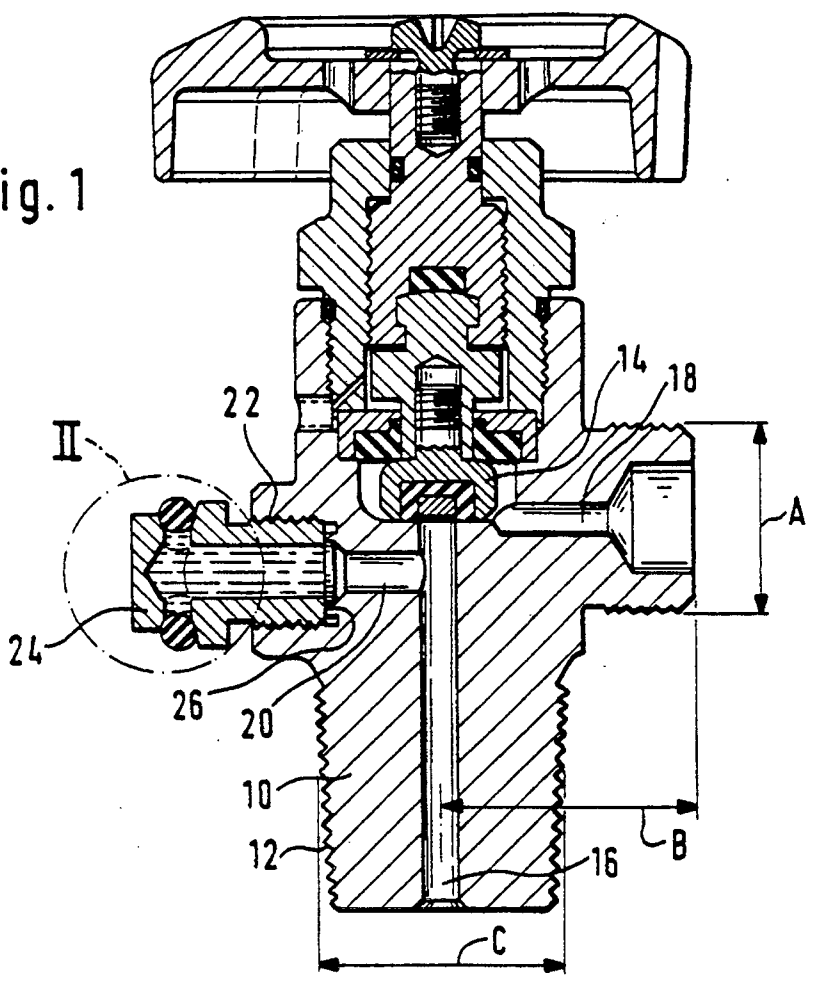
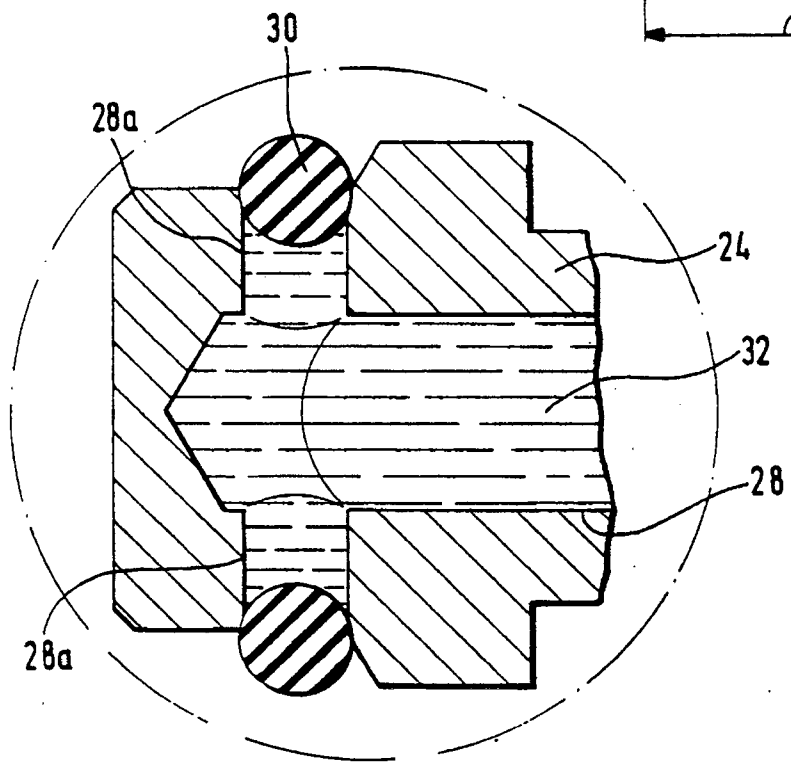


Fig. 2



5,048,554

1

VALVE FOR A GAS CYLINDER

The present invention relates to a valve for a gas cylinder, comprising an outlet safety channel closed by a burstable diaphragm wedged between the body of the valve and a plug fitted detachably in the body of the valve, the said plug comprising an axial passage in communication with the outside and filled with a fusible material up to where it comes into contact with the diaphragm.

This diaphragm withstands the normal filling pressures of the cylinder but is designed in order to burst above a given safety pressure. Such an abnormal elevated pressure in the cylinder may be produced, for example, following exposure of the cylinder to a heat source. In this case, the bursting of the diaphragm frees the gas contained in the cylinder and prevents the latter from exploding.

It has, however, been observed that the diaphragm may also burst when it should not burst, in other words without any elevated pressure or at a slight elevated pressure. This generally occurs when the diaphragms have been in service for a certain period of time and when they are worn or weakened by repeated stresses.

In order to prevent such a premature bursting of the diaphragm, it is known for a fusible plug to be arranged on the side opposite that which is exposed to the pressure of the gas inside the cylinder. The plug is made from a special alloy which melts at a temperature predetermined as a function of the composition of the alloy, for example between 60° and 90°. As long as the plug is solid, the diaphragm cannot burst, given that it bears against this plug. An additional advantage of this plug is that it reduces the mechanical stresses to which the diaphragm is exposed, given that the latter bears permanently against the plug as long as the plug is solid.

However, when the temperature exceeds the critical melting threshold of the plug, the latter melts and its material flows outwards. Consequently, with there no longer being any resistance opposing the diaphragm, the latter is free to burst if the pressure inside the cylinder exceeds the resistance threshold of the diaphragm. The simultaneous presence of two critical parameters are therefore required in order to cause the diaphragm to burst. The temperature must firstly exceed the melting threshold of the plug before a dangerous elevated pressure causes the diaphragm to burst.

However, such a fusible plug is disadvantageous for gas cylinders used in the manufacture of optical fibres or in semi-conductor technology, in particular for doping semi-conductors. These gases must be almost absolutely pure as the slightest impurity, solid, liquid or gas, no matter how microscopic, can disturb the procedure for doping and manufacturing these materials. This is why these cylinders must be absolutely clean and they are to this end heated, before each filling, to a temperature exceeding 100° in order to eliminate any trace of humidity. Now given that this temperature exceeds the melting temperature of the fusible plug, the latter must be removed for the cleaning and cannot be treated in the same way as the cylinder with the result that there is a risk of it not having the same degree of cleanness.

The object of the present invention is to overcome this problem by way of a fusible plug which does not have to be removed for cleaning operations of the cylinder.

2

In order to achieve this object, the invention proposes a valve of the type described in the introduction which is essentially characterized by elastic means obstructing, towards the outside, the axial passage and resistant to temperatures above the melting point of the fusible material.

In a preferred embodiment, the said axial passage communicates with the outside through radial holes opening into an outer peripheral groove, while the said elastic means consist of an O-ring seal housed in the said groove and preventing the fusible material from flowing out when liquid. The O-ring seal is preferably made from rubber.

This O-ring seal consequently enables the fusible plug to undergo the heat treatment of the cylinders as it enables the plug to melt whilst at the same time preventing its liquid material from flowing away after melting. On the other hand, it does not disturb the normal functioning of the plug as the seal is sufficiently elastic in order to yield at an elevated pressure of the plug after the latter has melted and under the influence of the pressure exerted by the diaphragm or under the action of the elevated pressure after the diaphragm has burst.

Other features and characteristics will emerge from the detailed description of an advantageous embodiment given hereinbelow by way of illustration and with reference to the attached drawings, in which:

FIG. 1 shows diagrammatically a valve according to the present invention in axial cross-section, and

FIG. 2 shows an enlarged view of the circled part II of FIG. 1.

FIG. 1 shows a valve whose body 10 has a thread 12 enabling it to be screwed onto a gas cylinder, not shown, containing a compressed gas at a pressure of the order of 2.10⁷ Pa.

A movable sealing element 14, fitted in a manner known per se inside the body 10 and actuated by an operating wheel, enables the communication between the inside of the cylinder and a use system through an axial channel 16 and a radial channel 18 in the body 10 of the valve to be established or interrupted.

The inside of the cylinder is in addition in communication through the axial channel 16 with a radial channel 20 which opens into a housing 22 provided in the body 10 of the valve and into which a plug 24 is screwed or fastened in another detachable manner from the outside. A burstable diaphragm 26 preferably metal, is wedged at the bottom of the housing 22 between the plug 24 and a radial shoulder surrounding the channel 20. This diaphragm 26 is calibrated in order to withstand the normal pressures prevailing in the cylinder, but in order to burst at a given pressure corresponding to a dangerous elevated pressure in the cylinder.

As shown in FIG. 1 and, in more detail, in FIG. 2, the plug 24 has an axial passage 28 which communicates with the outside through 2 or 4 radial holes 28a. This axial passage 28 and the radial holes 28a are filled with an alloy 32 which melts at a given temperature, for example between 60° and 90° depending on the composition of the alloy. As long as this fusible material 32 is solid, it prevents the diaphragm 26 from bursting and reduces the mechanical stresses on it. However, in order to prevent having to remove the plug 24 during the treatment of an empty cylinder by heating to a point above the melting temperature of the fusible material 32, the present invention proposes providing means which permit the fusible material 32 to melt and prevent it from flowing out of the plug 24 after it has melted. In

3

the most simple embodiment, these means consist of an O-ring seal 30, for example made from rubber, which is housed in an outer peripheral groove of the plug 24 and into which open the radial holes 28a. This O-ring seal 30 has a twin function. Firstly, by virtue of its elasticity, it enables the holes 28a to be closed tightly when the material inside the plug is a liquid and when it is not subjected to pressure. On the other hand, when the melted material inside the plug 24 is subjected to pressure, either under the action of the diaphragm 26 or under the action of the elevated pressure inside the cylinder after the diaphragm 26 has burst, the O-ring seal 30, by virtue of its elasticity, yields under the action of this pressure and enables the liquid material 32 to flow out and the gases to escape through the emptied plug 24 in order to prevent the cylinder from exploding as a result of an elevated pressure. The O-ring seal 30 is, of course, designed in order to withstand the temperatures employed for treating empty cylinders.

I claim:

4

- 1. Valve for a gas cylinder, comprising an outlet safety channel (20) closed by a burstable diaphragm (26) wedged between the body (10) of the valve and a plug (24) mounted detachably in the body (10) of the valve, the said plug (24) comprising an axial passage (28) in communication with the outside and filled with a fusible material (32) up to where it comes into contact with the diaphragm (26), characterized by elastic means obstructing, towards the outside, the axial passage (28) and resistant to temperatures above the melting point of the fusible material.
- 2. Valve according to claim 1, characterized in that the said axial passage (28) communicates with the outside through radial holes (28a) opening into an outer peripheral groove of the plug (24) and in that the said elastic means consist of an O-ring seal (30) housed in the said groove and preventing the fusible material from flowing out when liquid.
- 3. Valve according to claim 2, characterized in that the seal (30) is made from rubber.

* * * * *

25

30

35

40

45

50

55

60

65

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIRECCIÓN DE NUEVAS CREACIONES

2020
Bogotá, D.C.

Señor
PEDRO ELÍAS VEGA
Apoderado(a)

ASUNTO	Radicación	09-035502
	Trámite	003
	Evento	001
	Actuación	519
	Oficio	05438
	Folios	07

Patente de Invención	☐	Patente de Modelo de Utilidad	☒
Vía Nacional	☒		
Vía PCT (fase nacional)	☐	Cap. I	☐
		Cap. II	☐
No. Sol. Internacional			
Fecha de Presentación Internal.			

Como resultado del examen de fondo, realizado con fundamento en el artículo 85 y en concordancia con el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

Descripción: Folios: 4-7

Reivindicaciones: Folio: 8

Dibujos: Folios: 9-10

Prioridad: No se presentó prioridad por parte del solicitante.

El peticionario presentó una solicitud de examen de patentabilidad de acuerdo con lo estipulado por el artículo 44 de la Decisión 486. (Folio 16-17)

2. Objeto de la invención

La presente solicitud fue titulada originalmente: "Tapón y sello de garantía de contenido para cilindros de gas" folio 1.

Problema técnico:

- Garantizar al consumidor del producto (GLP) un volumen de llenado integral, sin peligro de eventuales fugas o derrames del contenido, ni de alteraciones o violaciones del mismo durante su transporte.

Solución:

Para solucionar el problema anteriormente citado se propone un dispositivo a manera de tapón y un sello adjunto que se adaptan en la boca de salida del gas sobre el cuerpo de la válvula que lleva el respectivo cilindro contenedor.

IPC: B67B01/00.

3. De la solicitud de Patente

3.1. Reivindicaciones (artículo 30 D. 486)

Se sugiere incluir las características de las reivindicaciones dependientes 3 y 4 en la independiente 1, ya que tal como se encuentra redactada puede ser afectada por documentos presentes en el estado de la técnica.

Se recomienda anexar un nuevo capítulo reivindicatorio con las correcciones hechas totalmente a parte a la respuesta del solicitante.

4. Determinación del Estado de la Técnica

Teniendo en cuenta que la fecha de solicitud es el 2009-04-07 se encontró el siguiente documento relevante:

Nº	Documento	Título	Fecha de Publicación
D1	US5048554 Inventor: Paul Kremer Solicitante: Ceodeux S.A	Valve for gas cylinder (Válvula para cilindro de gas)	1991-09-17

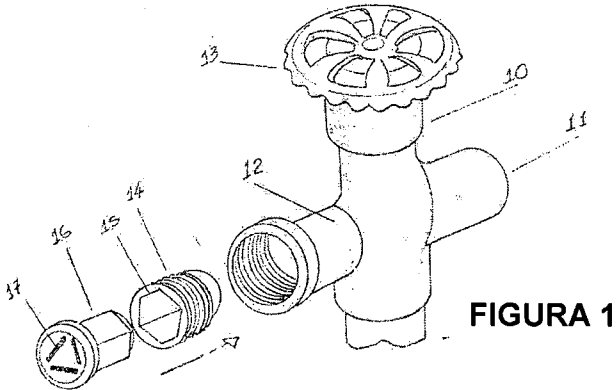
Se anexa las páginas correspondientes a los documentos, ver folios 19-22.

Respecto al estado de la técnica D1 divulga una válvula que tiene un canal de seguridad cerrado por un diafragma acuñado en medio del cuerpo de la válvula y equipado con un conector desmontable en el cuerpo de la válvula, dicho conector comprende un pasaje axial con un material fusible encima de donde viene a entrar en contacto con el diafragma.

5. Análisis de patentabilidad (artículo 14 D486)

5.1 Novedad (artículo 16 D486)

Respecto a la solicitud en estudio se evaluará la reivindicación independiente 1 que se encuentra en el folio 8, y la cual se soporta por medio de la siguiente figura:



Teniendo en cuenta tal y como se plantea la reivindicación 1 y de acuerdo al estado de la técnica establecido en el numeral principal 3, se plantea la siguiente tabla comparativa de elementos característicos dando a entender que las contiene (SI) o que no las contiene (NO).

REIVINDICACION 1	D1
1) Tapón y sello de garantía de contenidos en cilindros contenedores de gas y particularmente gas licuado de petróleo GLP, y para prevenir fugas y derrames del contenido, que se caracteriza por un dispositivo que se adapta a la boca de salida en un cuerpo de válvula (10) de un cilindro contenedor, y que comprende:	SI Tapón y sello de garantía de contenidos en cilindros contenedores de gas y particularmente gas licuado de petróleo GLP, y para prevenir fugas y derrames del contenido, que se caracteriza por un dispositivo que se adapta a la boca de salida en un cuerpo de válvula (10) de un cilindro contenedor, ver figura 1 (folio 20) y descripción (folio 21).
2) Un tapón roscable (14) en la boca también roscada de una salida de gas (12).	SI Un tapón roscable (24) en la boca también roscada de una salida de gas (22). Ver figuras 1-2 (folio 20).
3) Un sello insertable (16) a presión dentro del tapón quedando a ras con el mismo.	SI Un sello insertable (30, 32) a presión dentro del tapón quedando a ras con el mismo. Ver figuras 1-2 (folio 20).

El documento D1 posee cada uno de los elementos característicos 1-3 de dicho dispositivo.

Por tal razón el estudio anterior permite afirmar que la presente solicitud, tal como está redactada, NO es nueva y no cumple con lo estipulado en el artículo 16 de la Decisión 486 de la Comunidad Andina de Naciones correspondiente a novedad de la solicitud.

En cumplimiento del artículo 85 y en concordancia con el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina de Naciones, se le indica que debe dar respuesta dentro del término de treinta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente de modelo de utilidad.



JOSÉ LUIS SALAZAR LÓPEZ
Director de Nuevas Creaciones (C).

24 MAR. 2011

El anterior requerimiento fue notificado por fijación en lista, de fecha

CONCEPTO TÉCNICO No. 684	EXAMINADOR TÉCNICO Código No. 202083
--------------------------	---