

Castillo Grau & Asociados

ABOGADOS

Señora Jefe
DIVISIÓN DE NUEVAS CREACIONES
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
Bogotá, D.C.

7
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

No. 08-022332-00005-0000

Fecha: 2009-09-02 12:30:46 Dep. 2020 NUECREACION
Tra. 3 MODELO Eve: 1 REGDEPOSITO
Act. 538 PETICION Folios: 2

Re.: Expediente No. 08 22.332
Solicitud de Patente de Modelo de Utilidad
a nombre de
POLY MEDICURE LTD.
Código 03 - 01 - 538

En relación con la solicitud contenida en el Expediente de la referencia y, en particular, con la publicación del extracto de la misma en la Gaceta de la Propiedad Industrial No. 605 de 30 de Junio de 2009, por medio del presente escrito muy respetuosamente me permito solicitarle se sirva proceder a efectuar el **EXAMEN DE PATENTABILIDAD** de la solicitud aquí contenida.

Para tal efecto, acompaño el comprobante de pago por concepto de la tasa respectiva, Recibo No. 65,109

De Usted Atentamente,


LUIS FELIPE CASTILLO GIBSON
T.P. # 68.995 del C.S.J.

75

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2



RECIBO OFICIAL DE CAJA : 09 - 65,109
FECHA : SEPTIEMBRE 2 DE 2009

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CASTILLO GRAU Y ASOCIADOS	CONSIGNACION	BANCO DE BOGOTA	062754387	54990880	02/09/2009	3,014,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	
		113 PTC CAP-I EXAMEN DE PATENTIBILIDA	302,000.00
		TOTAL :	\$ 302,000.00

SON: TRESCIENTOS DOS MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

76

DIVISION DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No 08-22332

EXTRACTO DE LA PRESENTE SOLICITUD DE **MODELO DE UTILIDAD** FUE
PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **605** DE FECHA
30 DE JUNIO DEL 2009 EL TERMINO HABIL SEÑALADO POR LA LEY EXPIRA
EL 13 DE AGOSTO 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_____

**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIRECCIÓN DE NUEVAS CREACIONES**

Radicación n.º 08 – 22 332 MU

Clasificación Internacional (IPC): A61M 5/32

Concepto Técnico n.º 3651

Como resultado del examen definitivo de la solicitud, realizado con fundamento en lo dispuesto por el artículo 48, en concordancia con lo dispuesto por el artículo 85 de la Decisión 486 de la Comisión de la Comunidad Andina, se comunica lo siguiente:

1. Documentos estudiados

<u>Descripción:</u>	Folios 5 a 13 como se radicó inicialmente
<u>Reivindicaciones:</u>	Folio 14 a 18 como se radicó inicialmente
<u>Dibujos:</u>	Folios 20 a 25, 65 y 27 como se radicó inicialmente
<u>Prioridad:</u>	Folios 44 a 72; 2007-07-17, DE, 20 2007 009 977 U

2. Objeto del modelo de utilidad

Título de la solicitud: *Dispositivo de seguridad de la aguja de un aparato de catéter intravenoso y el aparato que lo incorpora*, tal como aparece en el folio 1 y corregido de acuerdo con lo que se establece en el apartado 3, adelante.

El objeto de la presente solicitud de patente de modelo de utilidad consiste en suministrar un dispositivo de seguridad para agujas de catéter, que comprende un par de mordazas que están abiertas cuando se ha insertado una aguja entre ellas y que están cerradas cuando se saca la aguja, quedando montadas permanentemente sobre ella en esta posición, además, el dispositivo comprende una articulación entre las mordazas, a cierta distancia de la base. También se revela el aparato de catéter que incorpora a dicho dispositivo.

El problema planteado en esta solicitud es lograr un catéter con un dispositivo capaz de asegurar que, cuando se retire la aguja, se impida que la punta de la aguja quede expuesta y pueda causar una herida por accidente.

Para solucionar este problema técnico la solicitud en estudio proporciona un dispositivo que se monta sobre un aparato de catéter, donde el dispositivo tiene un par de mordazas unidas en sus brazos mediante una articulación. Las mordazas se cierran cuando se extrae la aguja del catéter, impidiendo así que la punta de la aguja quede expuesta.

Clasificación Internacional de Patentes (IPC): A61M 5/32

3. De la solicitud de Patente de Modelo de Utilidad

Descripción (artículo 28 D. 486)

El capítulo descriptivo, en general, cumple con los requisitos de claridad y divulgación en la descripción. En otras palabras, en la descripción no aparecen incoherencias ni ambigüedades y es inteligible.

No obstante lo anterior, se hicieron algunas correcciones de oficio, entre las cuales se consideran dignas de mención las siguientes:

- 1) En el título o nombre del modelo de utilidad se añade la expresión: *y el aparato que lo incorpora* porque este aparato es reclamado en las reivindicaciones 13 a 27.
- 2) Se deben tener en cuenta las figuras 11 y 12 que aparecen en el folio 65 [correspondientes a la copia de la solicitud sobre la cual se reclama prioridad], porque las que se encuentran en el folio 26 están parcialmente borradas.
- 3) En la página 6, folio 9, se sustituye la expresión *línea 9-9 de la figura 10* por la expresión *línea 10-10 de la figura 11* como se desprende de la comparación de las figuras 11 y 12, folio 65.
- 4) Dentro de la solicitud, se sustituyó el término *contactar* que aparece, por ejemplo, en la página 9, folio 12, por la expresión *poner en contacto*.

La descripción sí cumple con los requisitos de claridad y comprensión de acuerdo al Art. 28 de la Decisión 486.

Reivindicaciones (artículo 30 D 486)

El capítulo reivindicatorio, en general, tiene claridad, concisión y está sustentado por la descripción, requisitos exigidos para las reivindicaciones.

Sin embargo, se señala que en la reivindicación 1, folio 14, se sustituyó la expresión *siendo las mordazas capaces de ser afectadas por la aguja* por la expresión *donde las mordazas son desplazadas por la aguja* porque este es el sentido que se desprende de la divulgación en el capítulo descriptivo y porque la expresión objetada carece de definición, no contribuye a precisar los alcances de la protección que desea el solicitante.

Las reivindicaciones sí cumplen con los requisitos de claridad, concisión y sustento por la descripción de acuerdo al Art. 30 de la Decisión 486.

4. Unidad de concepto inventivo (artículo 25 D 486)

Dado que el capítulo reivindicatorio únicamente tiene una reivindicación independiente para el dispositivo y una reivindicación independiente para el aparato, que definen satisfactoriamente los alcances de la protección que desea el solicitante, la solicitud sí cumple con el requisito de unidad de concepto inventivo.

5. Determinación del Estado de la Técnica

La fecha que se ha tenido en cuenta para determinar el Estado de la Técnica es la

Fecha de presentación de la solicitud prioritaria 2007-07-17

Se realizó la búsqueda en el estado de la técnica de documentos relacionados con la solicitud teniendo en cuenta la fecha indicada, y durante la búsqueda de anterioridades se encontraron los siguientes documentos, que forman parte de la

familia de patentes de la presente solicitud: Publicación DE 20 2007 009 977 U1 del 2007-12-13; publicación ES 1 067 206 U del 2008-05-01; y, publicación GB 2 451 153 A del 2009-01-21. Se anexa la copia de las primeras páginas de estos documentos junto con la copia del Informe de Búsqueda GB. También se encontraron los siguientes documentos que forman parte del estado de la técnica más cercano al objeto de la solicitud:

n.º	Documento	Título	Fecha de publicación
*D1	Patente US 5 132 504, cuyo inventor es Donald J. McLees	«Needle tip guard»(Un protector para punta de aguja)	1992-08-04
D2	Patente US 5 215 525, cuyo inventor es Warren M. Sturman	«Safety casing for intravenous catheter needle»(Una carcasa de seguridad para una aguja de catéter intravenoso)	1993-06-01
*D3	Patente US 6 117 108, cuyos inventores son Kevin Woehr, Manfred Orth, Mark Wynkoop y Matthew Kohler	«Spring clip safety catheter»(Un catéter que tien un clip de seguridad cargado a resorte)	2000-09-12
D4	Patente US 6 689 103 B2, cuyo inventor es Elliot S. Green, quien le cedió sus derechos a la Albany Medical College	«Safety intravenous catheter assembly»(Un montaje de catéter intravenoso de seguridad)	2004-02-10
D5	Patente US 7 186 239 B2, cuyo inventor es Kevin Woehr, quien le cedió sus derechos a la B. Braun Melsungen AG	«Short catheter»(Un catéter corto)	2007-03-06

* Los documentos D1 y D3 fueron citados por el solicitante en la página 2, folio 5.

Se anexa la copia de algunas páginas pertinentes de estos documentos

Se hizo la búsqueda de documentos relevantes en el Estado de la Técnica y no se encontraron anterioridades que afecten negativamente la patentabilidad del objeto de la presente solicitud. Concretamente, ninguno de los documentos mencionados arriba revela integralmente un dispositivo de seguridad que tenga unas mordazas unidas mediante una articulación a cierta distancia de la base; tampoco revelan, por supuesto, un aparato de catéter que incorpore dicho dispositivo.

6. Análisis de la patentabilidad (artículo 14 D486)

Las reivindicaciones que se analizaron son las numeradas 1 a 27, que, en resumen, reclaman: un dispositivo de seguridad para una aguja de un catéter intravenoso [o un aparato de catéter que lo incorpora] que tiene un par de mordazas con una articulación ubicada a cierta distancia de la base.

Novedad (artículo 16 D486)

De acuerdo con lo establecido en el numeral 5, arriba, no se encontró dentro del estado de la técnica ningún documento que evidenciara la existencia previa del modelo de utilidad.

Lo reclamado en las reivindicaciones 1 a 27 es novedoso de acuerdo a lo estipulado en el Art. 16 de la Decisión 486 de la Comisión de la Comunidad Andina.

Sobre el mejor o diferente funcionamiento, la utilización o fabricación del objeto, o sobre la utilidad, ventaja o efecto técnico (Artículo 81 D486)

Lo reclamado en las reivindicaciones 1 a 27, resumidas arriba, no tiene ninguna objeción respecto a este requisito, porque, claramente, al ser novedoso, necesariamente es diferente de lo conocido.

Sobre la aplicación industrial (artículo 18 D 486)

El modelo de utilidad sí tiene aplicación Industrial porque tanto el dispositivo como el aparato que se reclaman en la presente solicitud se pueden fabricar en cantidades industriales.

8. Conclusión:

En consecuencia y por todo lo expuesto anteriormente, se recomienda **Conceder** el modelo de utilidad reclamado en las reivindicaciones 1 a 27, folios 14 a 18.

Bogotá, D.C., 15 de octubre de 2010

CONCEPTO TÉCNICO n.º 3651	EXAMINADOR TÉCNICO Código No. 202009
---------------------------	---



(19)
Bundesrepublik Deutschland
Deutsches Patent- und Markenamt

(10) **DE 20 2007 009 977 U1** 2007.12.13

(12)

Gebrauchsmusterschrift

(21) Aktenzeichen: **20 2007 009 977.0**
(22) Anmeldetag: **17.07.2007**
(47) Eintragungstag: **08.11.2007**
(43) Bekanntmachung im Patentblatt: **13.12.2007**

(51) Int Cl.⁸: **A61M 5/158** (2006.01)
A61M 5/32 (2006.01)

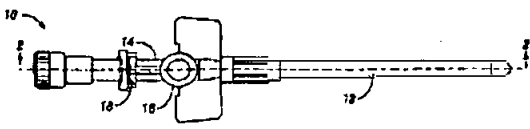
(73) Name und Wohnsitz des Inhabers:
Poly Medicure Ltd., New Delhi, IN

(74) Name und Wohnsitz des Vertreters:
Manitz, Finsterwald & Partner GbR, 80336 München

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

(54) Bezeichnung: **Nadel-Sicherungseinrichtung für eine intravenöse Kathetervorrichtung**

(57) Hauptanspruch: Nadel-Sicherungseinrichtung für eine intravenöse Kathetervorrichtung, wobei die Nadel-Sicherungseinrichtung umfasst:
eine Basis, die in der Lage ist, eine Nadel aufzunehmen;
zwei gegenüberliegende Backen, die an der Basis angebracht sind und durch zumindest ein Verbindungsstück in einem Abstand von der Basis miteinander verbunden sind, wobei die Backen durch die Nadel beeinflussbar sind;
wobei die Backen zwischen einer erweiterten Stellung, in welcher der effektive Außendurchmesser der Backen vergrößert ist, wenn sich eine Nadel durch die Backen hindurchstreckt, und einer zusammengefallenen Stellung, wenn sich die Nadel nicht durch die Backen hindurchstreckt, beweglich sind;
wobei die Backen eine relative Bewegung der Nadel in Bezug auf die Basis erlauben, wenn sie erweitert sind, und sich um eine Nadelspitze herum schließen und eine relative Bewegung der Nadel in Bezug auf die Basis verhindern, wenn sie zusammengefallen sind.



(19)

OFICINA ESPAÑOLA DE
PATENTES Y MARCAS

ESPAÑA

(11) Número de publicación: **1 067 206**

(21) Número de solicitud: U 200701888

(51) Int. Cl.:

A61M 5/158 (2006.01)**A61M 5/32** (2006.01)

(12)

SOLICITUD DE MODELO DE UTILIDAD

U

(22) Fecha de presentación: **14.09.2007**(71) Solicitante/s: **Poly Medicure Ltd.**
12, Sant Nagar, East of Kailash
Nueva Delhi 110 065, IN(30) Prioridad: **17.07.2007 DE 20 2007 009 997 U**(72) Inventor/es: **Baid, Rishi**(43) Fecha de publicación de la solicitud: **01.05.2008**(74) Agente: **Carpintero López, Francisco**(54) Título: **Dispositivo de seguridad de la aguja de un aparato de catéter intravenoso.**

ES 1 067 206 U

(12) **UK Patent Application** (19) **GB** (11) **2 451 153** (13) **A**

(43) Date of A Publication 21.01.2009

(21) Application No: 0803326.8

(22) Date of Filing: 25.02.2008

(30) Priority Data:
(31) 202007009977 (32) 17.07.2007 (33) DE

(71) Applicant(s):
Poly Medicure Ltd
12 Sant Nagar, East of Kailash,
New Delhi 110 065, India

(72) Inventor(s):
Rishi Bald

(74) Agent and/or Address for Service:
James G Morgan
31 Carlton Hill, LONDON, NW8 0JX,
United Kingdom

(51) INT CL:
A61M 25/06 (2008.01)

(56) Documents Cited:
WO 2005/079881 A1 **US 6203527 B1**
US 5215525 A **US 20070181776 A1**
US 20050277879 A1

(58) Field of Search:
INT CL **A61M**
Other: **EPODOC, WPL**

(54) Abstract Title: **A catheter needle safety device**

(57) A needle safety device 40 for an intravenous catheter apparatus that includes a base 42 capable of receiving a needle 20 between opposing jaws 48 attached to the base and capable of being influenced by the needle 20. The jaws have a link 49 connecting the jaws arranged a distance from the base 42. The jaws may move between an expanded position in which they interact with an obstruction within a wing housing of the intravenous catheter apparatus. The jaws 48 permit relative movement of the needle 20 with the base when expanded, close around a needle tip as it passes the jaws, and prevent relative movement of the needle 20 with the base when the jaws are collapsed. The needle 20 of the intravenous catheter apparatus may then be safely disposed with the needle tip within the needle safety device.

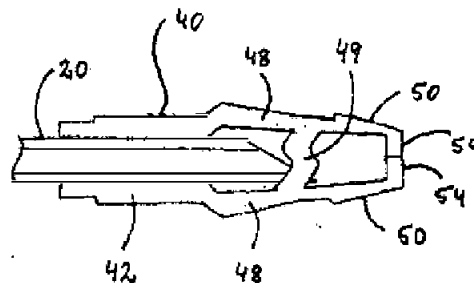
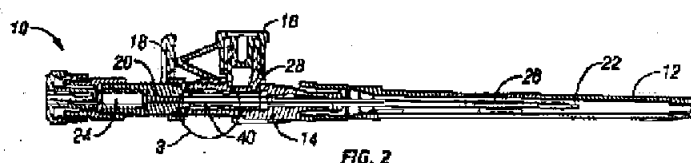


Fig. 13

GB 2 451 153 A

84

15

Application No: GB0803326.8 **Examiner:** Alex Robinson
Claims searched: 1 to 12 **Date of search:** 28 May 2008

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	US 2005/0277879 A1 (Daga)
A	-	WO 2005/079891 A1 (Medex Inc.)
A	-	US 6203527 B1 (Zadini et al.)
A	-	US 5215525 A (Sturman)
A	-	US 2007/0191776 A1 (Bialecki et al.)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	F	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

Worldwide search of patent documents classified in the following areas of the IPC'
A61M
The following online and other databases have been used in the preparation of this search report
EPODOC, WPI.

International Classification:

Subclass	Subgroup	Valid From
A61M	0025/06	01/01/2006

85



US005135504A

United States Patent [19]
McLees

[11] **Patent Number:** **5,135,504**
[45] **Date of Patent:** **Aug. 4, 1992**

cit. la
p. 2 f. 5

D1

[54] **NEEDLE TIP GUARD**
[76] **Inventor:** Donald J. McLees, 2623 Virginia Ave., Everett, Wash. 98201
[21] **Appl. No.:** 381,093
[22] **Filed:** Jul. 17, 1989
[51] **Int. Cl.³** A61M 5/178
[52] **U.S. Cl.** 604/164; 604/263
[58] **Field of Search** 604/110, 162, 164, 166, 604/167, 168, 198, 263, 52, 53; 128/919

4,850,961	7/1989	Wanderer et al.	604/53
4,911,694	3/1990	Dolan	604/198
4,929,241	5/1990	Kulli	604/263
4,932,945	6/1990	Braginetz et al.	604/195
4,935,012	6/1990	Magre et al.	604/192
4,944,728	7/1990	Carrell et al.	604/164
4,952,207	8/1990	Lemieux	604/164
4,964,854	10/1990	Luther	604/166
4,966,587	10/1990	Baumgart	604/164
4,973,317	11/1990	Bobrove	604/198
4,995,866	2/1991	Amplatz et al.	604/53

[56] **References Cited**
U.S. PATENT DOCUMENTS
3,904,033 9/1975 Haerr 604/263 X
4,573,981 3/1986 McFarlane 604/263
4,610,671 9/1986 Luther 604/168
4,762,516 8/1988 Luther et al. 604/164
4,781,692 11/1988 Jagger et al. 604/164
4,846,805 7/1989 Sitar 604/165

Primary Examiner—C. Fred Rosenbaum
Assistant Examiner—Mark O. Polutta

[57] **ABSTRACT**
A guard for the tip of an intravenous needle which operates automatically when the needle is withdrawn from an intravenous catheter.

1 Claim, 2 Drawing Sheets

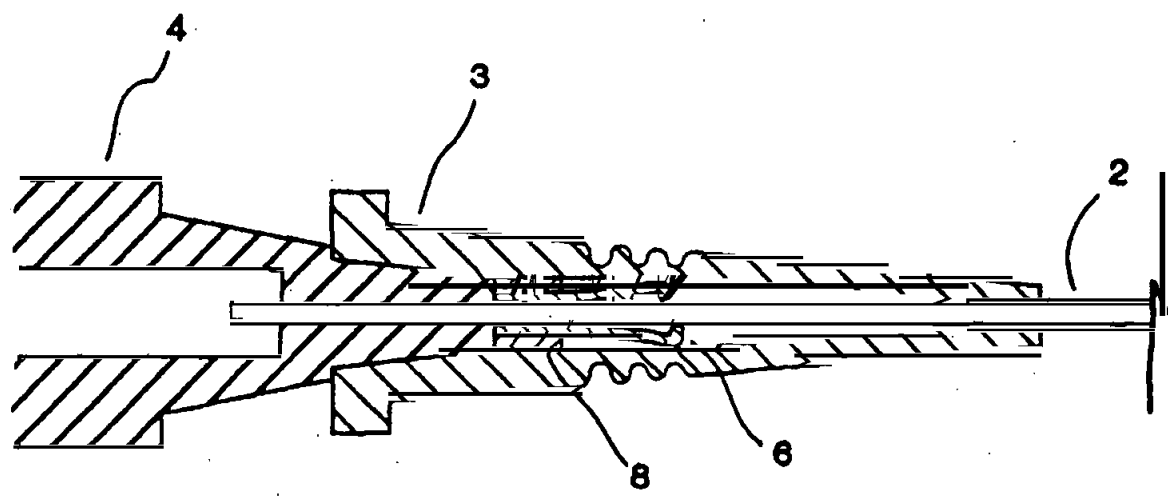
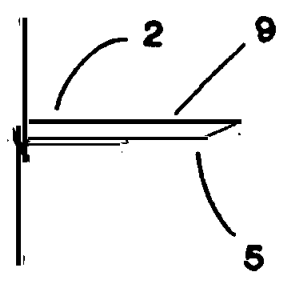


Fig. 3



86

D1

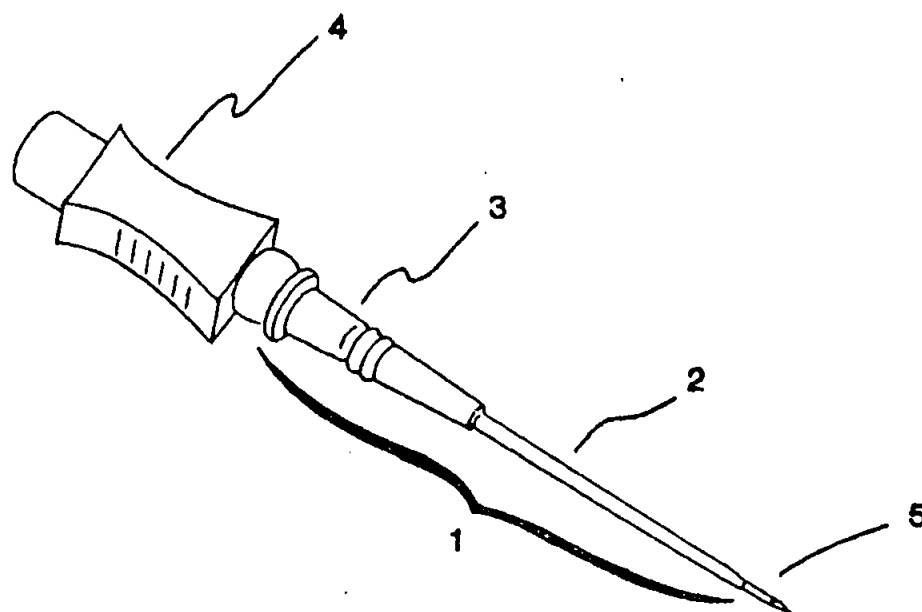


FIG. 1

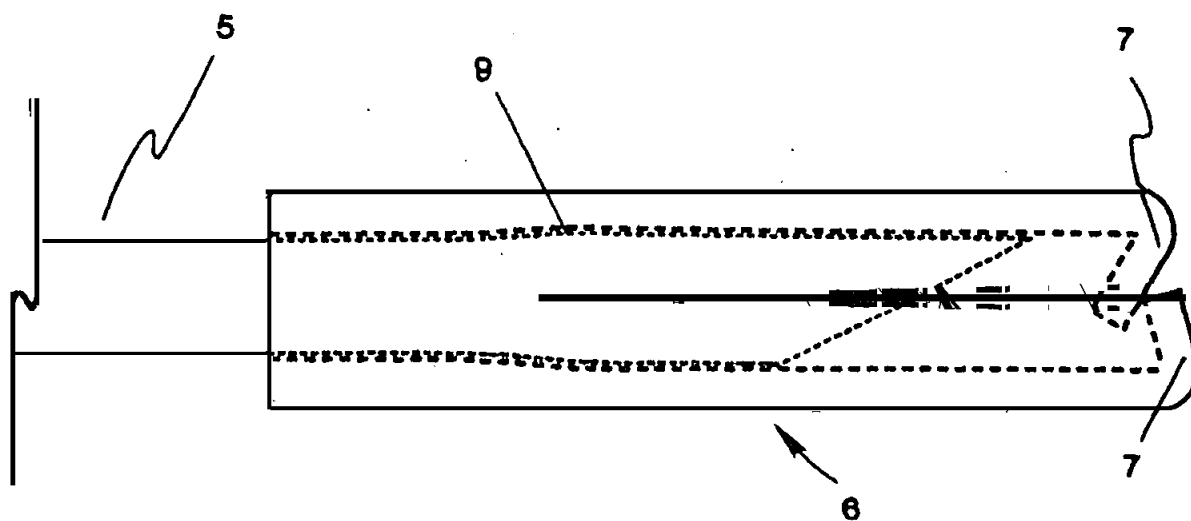


FIG. 2

NEEDLE TIP GUARD

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to medical instruments. It applies specifically to medical needles used for placing an intravenous catheter into a vein. In the U.S. Patent Office it would be found in a classification for needle tip guards which protect health care workers from accidental needle sticks.

2. Description of the Prior Art

To help prevent health care workers from becoming infected by hepatitis or AIDS or the like from an accidental needle prick, it would be desirable to have a guard which covers the tip of an intravenous needle after use. Many such guards have been previously disclosed for hypodermic needles and syringes in general, but no guard has yet been manufactured specifically when the needle is withdrawn from the catheter.

Generally one of the first steps of an emergency medical procedure or a surgical operation is to insert a catheter into the patient's vein so that plasma, anesthetics, or other medications may be conveniently administered. Typically, this involves first inserting a needle and plastic catheter combination and then removing the needle to leave only the plastic catheter in the vein. The possibly contaminated needle must then be further handled and disposed of. Obviously it would be desirable to have a guard automatically enclose the sharp end of the needle when it is withdrawn from the catheter, thus preventing the possibility of infection from an accidental needle prick during subsequent handling.

Vaillancourt (U.S. Pat. No. 4,725,267) shows some needle guards which protect the end of a needle after use, but they are not entirely automatic since a mechanism must be pushed or turned to initiate their operation. Also, they are not intended for use with a catheter.

Jagger, Pearson, and Guyenet (U.S. Pat. No. 4,781,692) show a novel solution to the intravenous needle problem. In their invention the needle is withdrawn from the end of the catheter which is in the vein, but remains inside the catheter tubing. Thus the possibly infected needle need not be dealt with and is simply thrown away with the rest of the catheter apparatus after use. However, relative to a simple plastic catheter and fitting, this leaves a more complex and bulky apparatus attached to the patient which can be very uncomfortable and more difficult to handle. The needle left inside can restrict flow of the fluid to the patient.

SYMMARY OF THE INVENTION

It is an object of this invention to provide a very simple and inexpensive guard for the tip of an intravenous catheter needle which does not significantly increase the size of the catheter or affect its ease of operation. It is a further object of this invention to provide such a guard which operates entirely automatically and thus requires no further action from the operator beyond the normal insertion and withdrawal of the needle.

In order to satisfy the objects of the invention and improve upon the prior art, a simple needle tip guard has been devised which in its initial position resides entirely inside the hub of a standard catheter. The needle initially passes completely through the guard. The presence of the needle keeps the end of the guard flared out and thereby retained inside the hub until the needle

87

is withdrawn from the catheter. At that time a slightly widened portion of the needle tip catches the guard, forcing the end of the guard to close over the tip and pulling the guard from the hub.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows the needle and catheter together.

FIG. 2 is an enlarged side view of the preferred embodiment of the guard.

FIG. 3 is a side view cross sectional drawing of the needle, catheter and guard together.

FIG. 4 shows the needle with the guard in place at the tip after removal from the catheter.

DETAILED DESCRIPTION OF THE DRAWINGS

In FIG. 1 the combined needle and catheter assembly is shown as it would normally appear before use. The plastic portion 1 remains with the patient after the needle is withdrawn and comprises a then flexible catheter tube 2 and its attached fluid fitting 3. The plastic handle 4 is attached to the needle 5. The distal end of the needle 5 can be seen protruding from the catheter 2 which includes a tapered end to ease insertion. The handle and the attached needle are pulled out of the catheter and its fitting after insertion into a vein, leaving the fitting protruding outwardly from the patient.

The preferred embodiment of the guard 6 is shown in FIG. 2. Here the guard is seen in its position over the end of the needle 5 as it would appear after the needle has been withdrawn. In this embodiment the guard is a hollow cylinder with a split end and slanted overlapping end caps 7. The guard can be made of any suitable material such as metal or plastic which is strong enough to contain the sharp metal needle tip and has memory such that it can spring back substantially to its original shape after the end has been flared open by the shaft of the needle prior to insertion. Also to be seen in this view is that the needle end has a larger diameter forming a shoulder 9.

The operating mechanism of the guard can be seen in the cross section of FIG. 3. Here the guard 6 appears in its position prior to needle withdrawal. A retaining ring 8 is held tightly by a friction fit with the catheter fluid fitting 3. The outside diameter of the guard is less than the inside diameter of the ring 8 so that normally the guard can easily slide through the ring. The needle shaft flares out the end of the guard displacing the end caps outward into the larger internal diameter portion of the hub and the guard is therefore prevented from moving by the retaining ring as the needle is withdrawn. The distal end of the needle 5 is flared out and is slightly larger in diameter than the inside diameter of the guard. When the needle is withdrawn and the tip goes inside the guard, the guard end caps are free to close. The flared out needle tip shoulder 9 pulls the guard through the retaining ring thus forcing the flared end of the guard closed.

It can be noted that the slightly flared needle tip does not hinder insertion into the vein. As a matter of fact positioning the catheter end just behind the shoulder 9 can help eliminate the usual catheter bulge.

The needle 5 and guard 6 are shown after needle withdrawal from the catheter fitting in FIG. 4. The guard has been activated automatically by the withdrawal of the needle and cannot be pulled off the end of the needle because of the shoulder and the guard cannot

DI

<



US005215525A

United States Patent [19]
Sturman

[11] Patent Number: 5,215,525
[45] Date of Patent: Jun. 1, 1993

- [54] SAFETY CASING FOR INTRAVENOUS CATHETER NEEDLE
- [76] Inventor: Warren M. Sturman, 801 Ponce De Leon Dr., Ft. Lauderdale, Fla. 33316
- [21] Appl. No.: 953,560
- [22] Filed: Sep. 29, 1992
- [51] Int. Cl.⁵ A61M 5/178
- [52] U.S. Cl. 604/164; 604/198
- [58] Field of Search 604/195, 198, 192, 263, 604/264, 164-170, 110

[56] References Cited

 U.S. PATENT DOCUMENTS

3,595,230	7/1971	Suyeoka et al.	128/214.4
3,709,223	1/1973	Macalalad et al.	128/214.4
4,834,718	5/1989	McDonald 604/195	
4,850,591	7/1989	Wanderer et al.	604/53
4,909,793	3/1990	Vining et al.	604/164
4,917,669	4/1990	Bonaldo 604/164	
4,917,671	4/1990	Chang 604/168	
4,944,725	7/1990	McDonald 604/164	
4,944,728	7/1990	Carrell et al.	604/164
4,950,252	8/1990	Luther et al.	604/198
5,019,049	5/1991	Haining 604/165	
5,026,351	6/1991	Dizon 604/264 X	
5,041,097	8/1991	Johnson 604/167	
5,135,504	8/1992	McLees 604/164	

Primary Examiner—John D. Yasko
Attorney, Agent, or Firm—Robert C. Kain, Jr.

[57] ABSTRACT

The safety casing for an intravenous catheter needle is used in conjunction with an elongated, hollow tube catheter having a catheter hub. The catheter hub has an interior catch rib therein. The safety casing includes an elongated needle case which is longer than the length of the needle. The case has a longitudinal slot there-through. A movable slide control, attached to a proximal end of the needle, is disposed within the case and includes an operator tab protruding through the longitudinal slot. The needle case includes a distal end cap that is sized to fit within the proximal open end of the catheter hub. The end cap has a needle passage there-through such that in all positions other than the fully retracted position, the needle is disposed within the needle passage. The end cap also includes a pair of needle jaws formed as flexible pincers within the needle passage. The pincers are biased towards the axial center line of the needle such that upon full retraction of the needle, by longitudinal movement of the slide control and operator tab through the slot of the needle casing, the pointed distal end of the needle moves axially in-board towards said needle case and both pincers snap towards the axial center line thereby effecting at least partial closure of the needle passage. This partial closure prohibits outboard longitudinal movement of the pointed distal end of the needle.

Dz

17 Claims, 6 Drawing Sheets

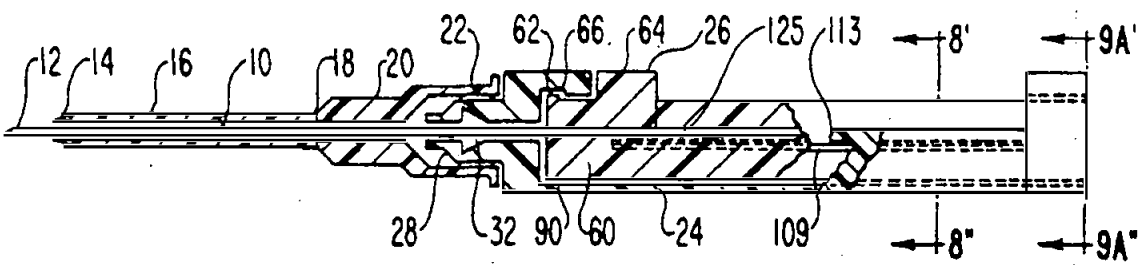


FIG. 4

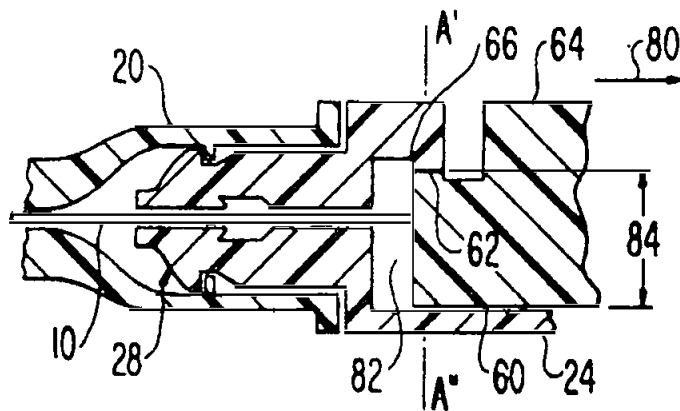


FIG. 5

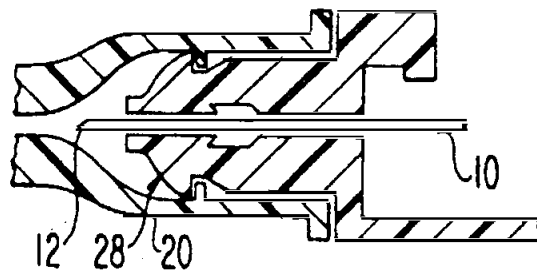
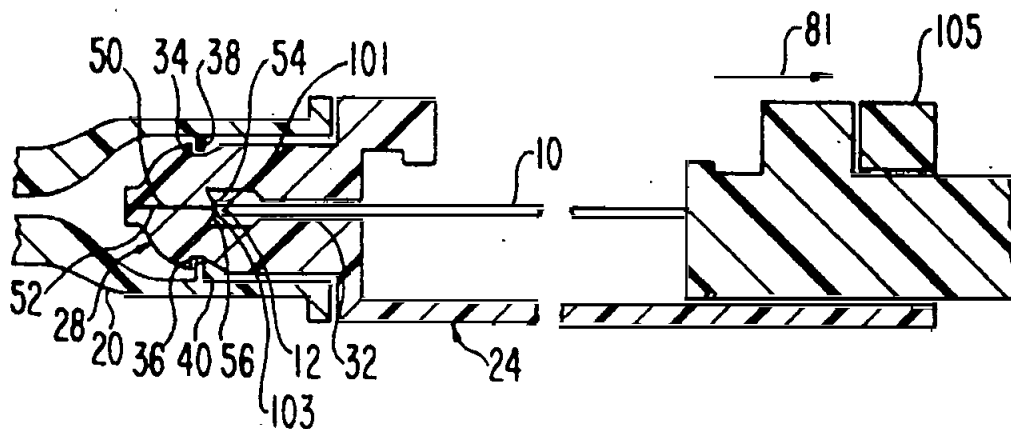


FIG. 6



90

DZ

FIG. 20

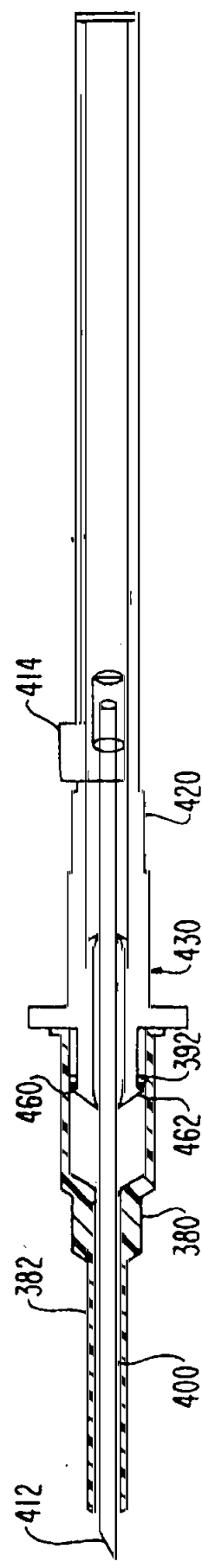
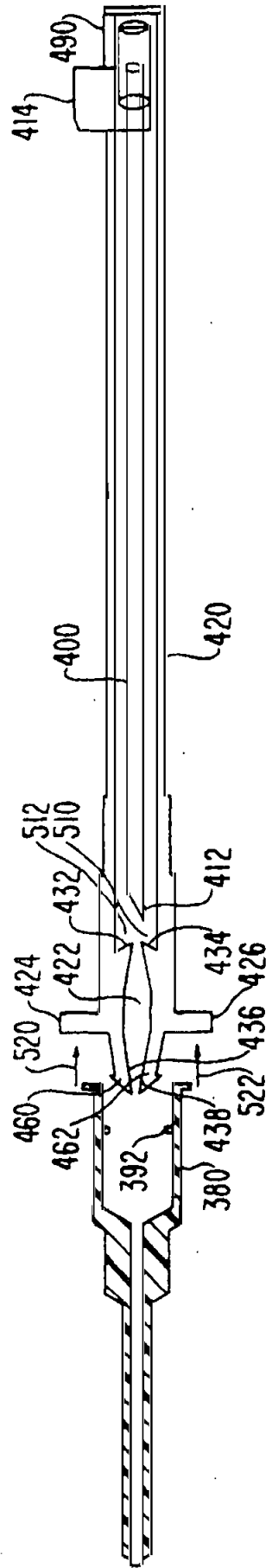


FIG. 21



than the length of needle 10. See FIG. 1. A movable slide control 26 is movably disposed within needle case 24.

An end cap 28 is formed at the distal end of needle case 24. In this embodiment, the end cap performs two functions. The first function is to trap pointed distal end 12 of needle 10 within the body of needle case 24 upon full retraction of the needle. The second function of end cap 28 is to detach the needle case from catheter hub 20 upon full retraction of needle 10. In general, end cap 28 has an outer distal end surface 30 that has a complementary size and shape which fits within proximal open end 22 of catheter 20. Distal end cap 28 also includes a needle passage 32 therethrough such that needle 10 can slidably pass through the distal end cap. Outer surface 30 of end cap 28 includes at least one, and preferably a pair of ribs or flange latches 34 and 36 which cooperate with the distal surface portions of at least one, and preferably a pair of interior catch ribs 38 and 40 in hub 20. These catch ribs depend transversely or towards the axial center line of needle 10 into the interior space of catheter hub open end 22. As discussed later with respect to FIGS. 11 and 12, the interior catch ribs on the catheter hub may be channels, in which case the proximal surfaces of the channels operate as catch ribs.

End cap 28 also includes a pair of needle jaws 50 and 52 which are formed as flexible pincers within needle passage 32. These figures are diagrammatic but, in fact, the needle jaws closely grip the stem of needle 10. The transverse force applied by needle jaws 50, 52 does not prohibit the needle from moving longitudinally within needle passage 32.

Needle jaws 50, 52 more particularly include pincers which are biased towards the axial center line of the needle. These pincer teeth are shown in FIG. 2 as teeth 54 and 56.

In the preferred embodiment, slide control 26 (FIG. 1) includes a slide body 60. Slide body 60 includes a slide channel latch 62 near an operator tab 64. Needle case 24 includes a complementary casing channel latch 66. The slide channel latch and casing channel latch define a means for latching. The casing channel latch is complementary to slide channel latch 62 such that when both are transversely aligned and when needle 10 is in a full forward position, slide body 60 cannot be longitudinally moved in the absence of transverse force applied on operator tab 64 concurrent with longitudinal movement by the operator causing slide body 60 to move inboard within needle case 24. In a preferred embodiment, slide channel latch 62 and casing channel latch 66 are disposed near a longitudinal slot formed by needle case 24. Longitudinal slot 70 is best shown in FIG. 8 and is described later.

FIG. 3 diagrammatically illustrates the outer contours of end cap 28. In this embodiment, end cap 28 has a distal end that is axially split and divided by keyway 72. A stress relief cut-out 74 permits upper and lower end portions 76 and 78 to flex when needle 10 resides within needle passage 32. Flange latches 34 and 36 are transversely biased away from the axial center line of needle 10 by the presence of the needle in needle passageway 32. As described above, latch flanges 34 and 36 cooperate with internally disposed catch ribs 38 and 40 on the interior of catheter hub 20.

FIG. 4 diagrammatically illustrates a cross-sectional view of catheter hub 20, needle 10, end cap 28, and portions of needle case 24 and slide body 60. In FIG. 4, the operator has transversely depressed operator tab 64

and has moved slide body 60 in the direction shown by arrow 80, that is, moving needle 10 longitudinally inboard towards the proximal end of needle case 24. Needle case 24 defines a slide track 82 therein which has a transverse, cross-sectional height dimension 84 slightly greater than the cross-sectional height dimension of slide body 60 plus a depth of the shallower one of slide channel latch 62 or casing channel latch 66. As shown in FIG. 1, when slide channel latch 62 is latched with casing channel latch 66, there is an interspace 90 between the lower portions of slide body 60 and the inboard surface of needle case 24. This permits the operator to transversely depress operator tab 64 and move needle 10 longitudinally inboard into needle case 24 such that latches 62 and 66 become uncoupled. The critical dimension is the cross-sectional height of slide channel dimension 84 coplanar with the locked channel latches generally along plane A'-A' in FIG. 4.

FIG. 5 diagrammatically illustrates the safety casing immediately before pointed distal end 12 of needle 10 is withdrawn from the needle passage of end cap 28.

FIG. 6 diagrammatically illustrates needle 10 in a fully retracted position. Pointed distal end 12 of needle 10 has been longitudinally removed from needle passage 32 such that needle jaws 50, 52 and particularly flexible pincers 54, 56 have snapped towards the axial center line of needle 10. An important feature of the present invention is at least the partial closure of the distal portion of needle passage 32. In the illustrated embodiment, needle passage 32 has been completely substantially closed by the mating of contact surfaces of each pincer. In the fully retracted position, pointed distal end 12 of needle 10 cannot be moved, either deliberately or accidentally, longitudinally forward or outboard of needle casing 24. Pincer teeth 54, 56 form an inboard pointing, arrowhead shape when the respective contact surface mate. Also, upper and lower forward pointing, arrowhead shaped needle entrapment regions 101 and 103 are formed in the mid-region of needle passage 32. These needle entrapment regions entrap the pointed distal end 12 of needle 10 and provide a safety feature such that even if the distal forward region of needle passage 32 is not fully closed, the distal pointed end 12 of needle 10 will be trapped by these forward pointing, arrowhead shaped entrapment regions 101, 103.

Since the distal surface portion of end cap 28 is biased transversely outward due to the presence of the body of needle 10 in the needle passage, when the pointed distal end 12 is removed from the needle passage, the distal surface portion of end cap 28 moves transversely and closes the distal portion of needle passage 32. This transverse movement unlatches latch flanges 34 and 36 from catheter ribs 38 and 40. Accordingly, needle casing 24 is unlatched or uncoupled from catheter hub 20.

Needle case 24 also includes a rear or proximal end stop 105 that blocks further longitudinal movement in direction 81 of slide body 60.

FIG. 7 diagrammatically illustrates the outer portion of end cap 28 when pointed distal end 12 of needle 10 is fully retracted beyond the distal region of needle passage 32. The closure of needle jaws 50 and 52 is illustrated in FIG. 7.

FIG. 8 diagrammatically illustrates a cross-sectional view of needle case 24 and the mid-region section 107 of slide body 60 from the perspective of section line 8'-8Δ in FIG. 1. In the illustrated embodiment, slide body 60 is generally cylindrical in shape. However, a square or

91

D2

rectangular shape would work equally well. Slide body 60 includes radially outboard extending body ribs 109, 111. These ribs provide entrapment of slide body 60 within needle case 24 due to a pair of facing, longitudinal case lips 113, 115. Of course, a specifically defined track could be provided by two pair of case lips, each pair defining a certain track for body ribs 109, 111. Body rib 109 and case lip 113 are illustrated in the partial broken away view in FIG. 1.

FIG. 9A diagrammatically illustrates an end view of the safety casing from the perspective of section line 9A-9A" in FIG. 1. Case end stop 105 limits further longitudinal outboard movement of slide body 60 due to operator tab 64. Body ribs 109, 111 slide longitudinally outboard of case end stop 105 due to case end cut-outs 117 and 119.

As an additional safety feature, FIG. 9B shows a rear end latch configuration between case end stop 105 and the proximal end surface of slide control 26. Particularly, the proximal end surface of operator tab 64 may include a tab channel latch 121 which locks within end stop channel latch 123 upon full retraction of the needle case 24.

Since it is sometimes appropriate to withdraw a minimal amount of blood or body fluid after insertion of the needle in the vein, slide body 60 may include a longitudinal fluid passage 125 (see FIG. 1) therethrough. Fluid passage 125 is in fluid communication with the lumen of needle 10. In order to gather or contain this blood or body fluid, slide body 60 includes a fluid communication port interface 127 (FIG. 10) at its rear or distal end body surface 129. Standard blood or fluid collection devices can be coupled to interface 127.

FIGS. 11 and 12 diagrammatically illustrate a different embodiment of the needle jaws formed as flexible pincers. Catheter hub 20 includes an interior catch rib that is formed as an interior hub channel 202 on the inboard surface of the hub. The proximal channel wall 204 acts as an interior catch rib for end cap latch flanges 206 and 208.

Distal end cap 210 includes a pair of needle jaws 212 and 214 which have flexible pincers 216, 218 with contact surfaces 220, 222 formed as intermeshing, complementary, saw-tooth surfaces. Included in the saw-tooth surfaces are latch locks 224 and 226 that lock needle jaws 212, 214 together when needle 10 is fully withdrawn from needle passageway 228.

FIG. 12 diagrammatically illustrates the locked and intermeshed saw-tooth surfaces 220, 222 when the pointed distal end 12 of needle 10 has been fully withdrawn from the distal portion of needle passage 228. Latch locks 224, 228 snap together and lock the intermeshed, saw-tooth surfaces.

FIG. 12 also shows the transverse retraction of latch flanges 206 and 208 from hub channel 202. Since the interior of catheter hub 20 defines a circular cavity, hub channel 202 is a circumferential internal channel. The transverse retraction of latch flanges 206, 208 permits the uncoupling end cap 210 from catheter hub 20.

FIG. 13 shows an alternate embodiment of the slide body. Needle case 310 defines a slide track 312 within which slides slide body 314. Slide body 314 includes upper operator tab 316 and lower operator tab 318. FIG. 16 shows lower operator tab 318 protruding through a lower longitudinal slot 320 in needle case 310. The upper longitudinal slot 322 is defined by needle case 310. Also in FIG. 13, slide body 316 does not have

an elongated shape but is truncated essentially at proximal end 330.

Case channel latch 340 is defined by the needle case near the distal end of upper longitudinal slot 322. Case channel latch 340 cooperates with latch 342 provided on the distal side of operator tab 316.

FIGS. 14 and 15 diagrammatically illustrate two types of latches. In FIG. 14, slide body latch 342 is configured as a flexible arm 350 riding atop a ridge 352. Upon depression of operator tab 316 in the direction shown by arrow 360, slide control 314 is uncoupled from needle case 310. In FIG. 15, case latch 340 cooperates with ridge 370 defined at the distal end of slide body 314 near upper longitudinal slot 322. Upon transverse movement by the operator in the direction of arrow 361, slide control 314 is uncoupled from needle case 310.

FIG. 17 diagrammatically illustrates a cross-sectional view of catheter hub 380 which is at the proximal end of catheter 382. Catheter hub 380 includes an enlarged proximal open end 390 and an interior catch rib 392.

FIG. 18 illustrates needle 400 having a pointed distal end 412 and a slide body control 414 attached to the proximal end 416 of needle 400. FIG. 19 illustrates needle casing 420. Needle channel 422 is provided at the distal end of needle case 420. Upper and lower operator tabs 424 and 426 are provided on the end cap such that the operator can transversely compress tabs 424 and 426. Needle case 420 also includes a distal end cap 430. The distal end cap includes needle jaws 432 and 434 which form rearward or inboard facing pincers about needle passage 422. A forward or distal pair of pincers 436 and 438 are also formed about needle passage 422. In order to latch needle case 420 on catheter hub 380, the means for latching is formed as flexible, forward depending arms 450 and 452. Arms 450, 452 extend from end cap 430. Arms 450 and 452 include latch surfaces 460 and 462. Latch surfaces 460, 462 cooperate with catheter rib 392 shown in FIG. 17.

In FIG. 20, needle 400 is disposed within catheter 382 and catheter hub 380, and needle case 420 has been removably attached to hub 380 due to the latching action of latch ledges 460 and 462 on hub rib 392. Slide control 414 is in a full forward position such that the pointed distal end 412 of needle 400 protrudes from the distal end of catheter 382.

In FIG. 21, the pointed distal end 412 of needle 400 is in a fully retracted position such that slide control 414 is positioned near rear stop 490 of needle case 420. Rearward pincer jaws 432 and 434 have snapped to partially close needle passage 422 and provide upper and lower forward pointing, arrowhead shaped needle entrapment areas 510 and 512. The other pair of needle jaw pincers 436 and 438 also partially close needle passage 422. Due to the transverse compression of operator tabs 424 and 426, latches 460 and 462 have been uncoupled from internal rib 392. The operator has moved needle case 420 away from catheter hub 380 as shown by arrows 520 and 522.

Although the present invention has been illustrated as having at least one pair of needle jaws formed as flexible pincers, the needle jaws can be configured in a set of three, four or other multiples sufficient to at least partially close the needle passage upon full retraction of the pointed distal end of the needle. In addition to partial closure of the needle passage, it is important that the needle jaw pincers form needle entrapment areas such that if the pointed distal end of the needle is accidentally

93



US006117108A

United States Patent [19]
Woehr et al.

[11] **Patent Number:** **6,117,108**
 [45] **Date of Patent:** ***Sep. 12, 2000**

cf. Fado
p. 2 f. 5

D3

[54] **SPRING CLIP SAFETY IV CATHETER.**

[76] **Inventors:** Kevin Woehr, Danziger Strasse No. 2, Felsberg; Manfred Orth, Falkensteinstr. 63, Kassel, both of Germany; Mark Wynkoop, 3319 Lanark Rd., Coopersberg, Pa. 18036; Matthew Kohler, 4097 E. Mill Hill Rd., E. Greenville, Pa. 18041

[*] **Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] **Appl. No.:** 09/097,170
 [22] **Filed:** Jun. 12, 1998

Related U.S. Application Data

[63] **Continuation-in-part of application No. 08/915,148, Aug. 20, 1997, abandoned.**
 [51] **Int. Cl.⁷** **A61M 5/00**
 [52] **U.S. Cl.** **604/110, 604/263**
 [58] **Field of Search** **604/110, 263**

References Cited

U.S. PATENT DOCUMENTS

3,610,240 10/1971 Harautuncian .
 3,904,033 9/1975 Huerr .
 4,160,450 7/1979 Doherty .
 4,725,267 2/1988 Vaillancourt .
 4,735,618 4/1988 Hagen .
 4,747,831 5/1988 Kulli .
 4,795,432 1/1989 Karczmer .
 4,846,809 7/1989 Sims .
 4,929,241 5/1990 Kulli 604/263
 4,944,725 7/1990 McDonald .
 4,952,207 8/1990 Lemieux .
 4,964,854 10/1990 Luther .
 4,978,344 12/1990 Dombrowski et al. .
 4,994,041 2/1991 Dombrowski et al. .
 5,049,136 9/1991 Johnson .
 5,051,109 9/1991 Simon .

5,053,017 10/1991 Chanuel 604/192
 5,085,648 2/1992 Purdy et al. .
 5,126,090 6/1992 Egolf et al. .
 5,135,504 8/1992 McLees 604/164
 5,147,327 9/1992 Johnson .
 5,171,229 12/1992 McNeil et al. .
 5,183,468 2/1993 McLees .
 5,215,528 6/1993 Purdy et al. .
 5,279,591 1/1994 Simon 604/263
 5,300,045 4/1994 Plassche, Jr. 604/263
 5,322,517 6/1994 Sircom et al. .
 5,328,482 7/1994 Sircom et al. .
 5,334,158 8/1994 McLees .
 5,344,408 9/1994 Panika 604/192
 5,370,623 12/1994 Kreamer .
 5,423,766 6/1995 Di Cesare .
 5,501,675 3/1996 Erskine .
 5,558,651 9/1996 Crawford et al. .
 5,584,809 12/1996 Guba .
 5,584,810 12/1996 Brimhall .

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

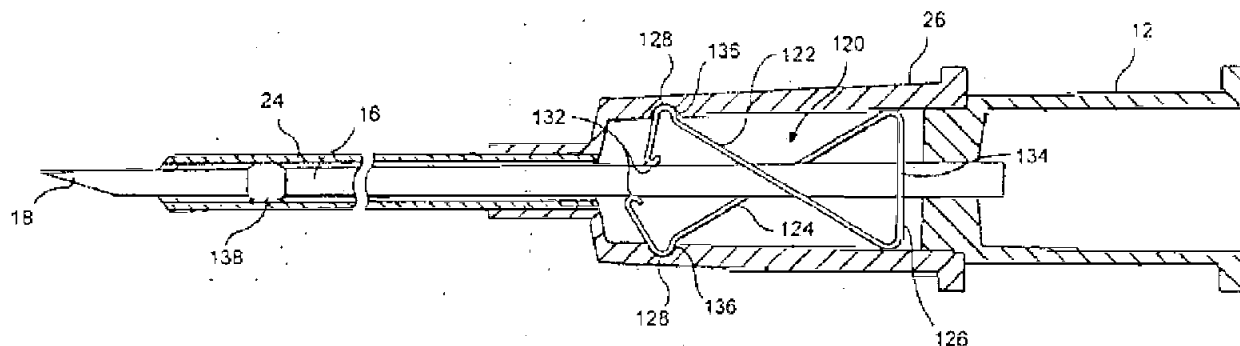
WO9742989A 11/1997 WIPO .

Primary Examiner—Corrine McDermott
Attorney, Agent, or Firm—Marvin N. Gordon

[57] **ABSTRACT**

A safety IV catheter includes a unitary, resilient needle guard received in a catheter hub. The needle guard includes a proximal arm or wall that includes an opening through which a needle passes for axial movement. When the needle is retracted from the catheter it releases the force that had previously prevented movement of the needle guard within the catheter hub. This in turn causes the needle guard to snap into a position in which it is clamped onto the needle shaft and in which its distal wall blocks access to the needle tip. In this condition, the spring needle guard and needle can be removed from the catheter hub. A slot or bulge may be formed in the needle shaft that engages with the needle guard after the protected needle and needle guard are removed from the catheter hub, thereby to prevent removal of the protected needle from the needle guard.

25 Claims, 13 Drawing Sheets



84



US006689102B2

(12) **United States Patent**
Greene

(10) **Patent No.:** **US 6,689,102 B2**
(45) **Date of Patent:** **Feb. 10, 2004**

(54) **SAFETY INTRAVENOUS CATHETER ASSEMBLY**

(75) **Inventor:** Elliott S. Greene, Altamont, NY (US)

(73) **Assignee:** Albany Medical College, Albany, NY (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 45 days.

5,419,766 A	5/1995	Chang et al.	604/110
5,458,658 A	10/1995	Sircom	604/192
5,549,558 A	8/1996	Martin	604/110
5,558,651 A	9/1996	Crawford et al.	604/263
5,599,310 A	2/1997	Rogert	604/164
5,688,249 A	11/1997	Chang et al.	604/198
5,700,250 A	12/1997	Erskine	604/263
5,910,132 A	6/1999	Schultz	604/162
5,935,109 A	8/1999	Donnan	604/164
5,935,110 A	8/1999	Brimhall	604/167
5,951,515 A	9/1999	Osterlind	604/110
6,117,108 A	9/2000	Woehr et al.	604/110

DA

(21) **Appl. No.:** 10/120,005

(22) **Filed:** Apr. 10, 2002

(65) **Prior Publication Data**

US 2002/0165497 A1 Nov. 7, 2002

OTHER PUBLICATIONS

Greene et al., pending U.S. Patent application, Ser. No. 09/840,699, filed Apr. 23, 2001, entitled "Safety Intravenous Catheter Assembly and Method For Use With A Needle" (Attorney Docket No. 0410.006A).

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/840,699, filed on Apr. 23, 2001, which is a continuation of application No. 09/127,374, filed on Jul. 31, 1998, now Pat. No. 6,221,047.

(51) **Int. Cl.** ⁷ A61M 5/178

(52) **U.S. Cl.** 604/164.08; 604/164.07; 604/165.01; 604/198; 604/263

(58) **Field of Search** 604/93, 162, 167, 604/171, 192, 198, 263, 195, 197, 164.01, 164.02, 164.03, 164.04, 164.05, 164.06, 164.07, 164.08, 164.09, 164.1, 164.11, 164.12, 164.13, 165.01, 165.02, 165.03, 165.04, 166.01-170.03

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,944,725 A	7/1990	McDonald	604/164.08
4,952,207 A	8/1990	Lemicux	604/164
4,964,854 A	10/1990	Luther	604/166
4,978,344 A	12/1990	Dombrowski et al.	604/198
5,135,504 A	8/1992	McLees	604/164
5,215,525 A	6/1993	Sturman	604/164
5,300,045 A	4/1994	Plassche, Jr.	604/263
5,366,447 A	11/1994	Gurley	604/192

* cited by examiner

Primary Examiner—Michael J. Hayes

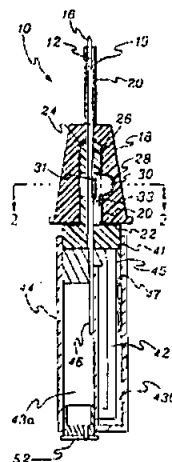
Assistant Examiner—Jennifer Maynard

(74) **Attorney, Agent, or Firm**—Heslin Rothenberg Farley & Mesiti P.C.

(57) ABSTRACT

A safety intravenous catheter assembly includes a catheter hub, a needle cover attachable to and releasably lockable with the catheter hub, and a needle which extends through and is withdrawn into the needle cover. In one embodiment, the safety intravenous catheter assembly is configured so that the fixedly connected catheter hub and needle cover may rotate around the needle. A stop assembly is attached to the needle and to the needle cover for maintaining a tip of the needle within the needle cover after catheter insertion. The stop assembly may include a first locking position whereby the catheter hub cannot disengage from the needle cover, and a second locking position whereby the catheter hub can disengage from the needle cover. The needle cover includes a notch clip which may be integrally formed as one-piece.

21 Claims, 8 Drawing Sheets



3

needle cover and with the stop bar in a stopped position within the needle case thereby maintaining a tip of the needle within the needle cover.

FIG. 9 is a cross-sectional side view of another embodiment of a needle cover and a stop bar in accordance with the present invention which allows the catheter hub and needle cover together as a unit to rotate around the needle when inserting the catheter cannula into a patient.

FIG. 10 is a cross-sectional side view of another embodiment of a needle cover and a stop bar in accordance with the present invention which allows the catheter hub and needle cover together as a unit to rotate around the needle when inserting the catheter cannula into a patient.

FIG. 11 is a cross-sectional side view of another embodiment of a needle cover and a stop bar in accordance with the present invention which allows the catheter hub and needle cover together as a unit to rotate around the needle when inserting the catheter cannula into a patient.

FIG. 12 is an enlarged sectional view taken along line 12—12 in FIG. 11.

FIG. 13 is a perspective view of another embodiment of a needle case in accordance with the present invention which allows a catheter hub and a needle cover together as a unit (not shown) to rotate around the needle when inserting the catheter cannula into a patient.

FIG. 14 is a cross-sectional side view of another embodiment of a safety intravenous catheter assembly in accordance with the present invention, showing a ring-like stop of a needle cover engaging a stop notch of a needle for limiting withdrawal of the needle from the needle cover and where a catheter hub is disengaged from the needle cover.

FIG. 15 is a cross-sectional side view of another embodiment of a safety intravenous catheter assembly in accordance with the present invention, showing a ball bearing type of notch clip and with a needle fully inserted into a needle cover and a stop bar fully inserted into a needle case.

FIG. 16 is a cross-sectional side view of yet another embodiment of a safety intravenous catheter assembly in accordance with the present invention which is similar to the assembly of FIG. 1, except with the elimination of a notch in the needle cover.

FIG. 17 is a cross-sectional side view of yet another embodiment of a safety intravenous catheter assembly in accordance with the present invention which is similar to the assembly of FIG. 1, except including an optional needle cover finger rest.

FIG. 18 is an exploded perspective view of another embodiment of a safety intravenous catheter assembly in accordance with the present invention.

FIG. 19 is another embodiment of a needle cover and a stop assembly in accordance with the present invention for use in a safety intravenous catheter assembly.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 illustrates a safety intravenous catheter assembly 10 in accordance with the present invention for use with a needle 12. Generally, safety intravenous catheter assembly 10 includes a catheter hub 18, a catheter cannula 19, a needle cover 22, a stop bar 42, and a needle case 44. The various embodiments of the present invention, as described in greater detail below, result in the safety intravenous catheter assemblies which after inserting the catheter cannula into a patient and removing the needle from the catheter cannula and catheter hub, automatically provides a non-removable

4

protective cover over a tip of the needle thereby reducing the risk of needlestick injuries to health workers.

Safety intravenous catheter assembly 10 is configured so that catheter hub 18 is inhibited from rotating relative to needle cover 22. In the embodiment shown in FIGS. 1–8, the fixedly connected catheter hub 18 and needle cover 22 does not rotate around needle 12. In another aspect of the present invention, as explained in greater detail below in connection with FIGS. 9–13, a fixedly connected catheter hub and needle cover may, however, be made to rotate around the needle.

With reference again to FIG. 1, catheter cannula 19 is attached to catheter hub 18 and includes a first axial bore 20 extending through catheter cannula 19 and catheter hub 18. Needle cover 22 has a first upper end 24 insertable in axial bore 20 of catheter hub 18. A second axial bore 26 extends through needle cover 22 and may be co-axial with axial bore 20 when assembled.

The components of the assembly may be constructed from materials similar to those for pre-existing IV catheters and related parts. For example, sterile grade rigid plastic can be used to form catheter hub 18, needle cover 22, stop bar 42 and needle case 44. Stop bar 42 may alternatively be sterile grade stainless steel. Needle 12 may comprise a sterile grade stainless steel.

With reference to FIGS. 1 and 2, catheter hub 18 includes a notch 28 extending outwardly from axial bore 20 of catheter hub 18. A notch clip 30 is joined via a resilient arm 33 with needle cover 22 and positionable to engage notch 28 of catheter hub 18. This enables catheter hub 18 to be fixedly connected so that catheter hub 18 does not rotate relative to needle cover 22 when the two are fully engaged.

An inner surface of notch clip 30 may be substantially parallel to second axial bore 26. Notch clip 30 in a rest position may be spaced from or in a non-forceful contact with needle 12, so that notch clip 30 at most rests against needle 12 as in side-by-side non-forceful contact. For example, an annular space 31 may be provided adjacent notch clip 30 and second axial bore 26. In addition, appropriately sizing the notch clip may result in the notch clip being spaced from the needle and spaced from the notch in the catheter hub.

In this configuration, the assembly reduces and limits the frictional drag between notch clip 30 and needle 12 when needle 12 is inserted into and withdrawn from needle cover 22. The notch clip and the needle cover may be monolithic and integrally formed as one-piece. Alternatively, the notch clip could be an independent piece configured for a snap fit or bonded or glued relationship with the needle cover. As described above, the radially inward side or inner surface of the notch clip may be in or adjacent to the annular space 31, e.g., not continuously contacting, and at most co-planar with a second surface 27 (FIG. 3) defined by an outer circumference of the second axial bore when the notch clip is at rest.

Notch clip 30 and arm 33 are preferably made of a resilient type material having a characteristic which enables it to flex radially inward with minimal force. This force is provided by notch 28 and a bottom portion of the catheter hub 18 as the catheter hub disengages from the needle cover. This disengagement preferably only occurs when a needle tip 16 (FIG. 1) is located below or away from an upper distal portion of the notch clip, i.e., when removing the protected needle from the catheter hub, as explained in greater detail below.

With reference particularly to FIG. 1, embodiments of the present invention may include additional safety features

D4

96



US007186239B2

D5

(12) **United States Patent**
Woehr

(10) **Patent No.:** **US 7,186,239 B2**
(45) **Date of Patent:** ***Mar. 6, 2007**

(54) **SHORT CATHETER**

(56)

References Cited

(75) **Inventor:** **Kevin Woehr, Felsberg (DE)**
(73) **Assignee:** **B. Braun Melsungen AG, Melsungen (DE)**
(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 335 days.

U.S. PATENT DOCUMENTS
4,250,881 A 2/1981 Smith
4,790,528 A 12/1988 Dombrowski et al.
4,929,241 A 5/1990 Kulli
4,944,725 A 7/1990 McDonald
4,952,207 A 8/1990 Lemieux
4,978,344 A 12/1990 Dombrowski et al.
4,994,041 A 2/1991 Dombrowski et al.
5,049,136 A 9/1991 Johnson

(Continued)

FOREIGN PATENT DOCUMENTS

EP 1 106 199 B1 6/2001

(Continued)

OTHER PUBLICATIONS

Office Action dated Jul. 28, 2005, Application No. 10/468,923, filed Feb. 2, 2004, (22 pages).

(Continued)

Primary Examiner—Nicholas Lucchesi
Assistant Examiner—Theodore J. Stigell
(74) *Attorney, Agent, or Firm*—Christie, Parker & Hale, LLP

This patent is subject to a terminal disclaimer.

(21) **Appl. No.:** **10/779,370**

(22) **Filed:** **Feb. 13, 2004**

(65) **Prior Publication Data**
US 2004/0162522 A1 Aug. 19, 2004

Related U.S. Application Data

(63) Continuation of application No. 09/727,747, filed on Dec. 1, 2000, now Pat. No. 6,709,419.

(30) **Foreign Application Priority Data**
Dec. 1, 1999 (DE) 299 21 084 U

(51) **Int. Cl.**
A61M 5/178 (2006.01)

(52) **U.S. Cl.** 604/164.07; 604/110; 604/198; 604/164.08

(58) **Field of Classification Search** 604/192, 604/198, 171, 110, 263, 164, 243
See application file for complete search history.

(57)

ABSTRACT

A catheter assembly is provided which provides a flexible catheter tube having one end provided with a catheter hub. A hollow needle having a needle hub on its end is installed in the catheter tube with its sharp end extending out from one end of the catheter tube and a portion of the needle extending through the catheter hub. A needle shield, which is on the needle within the interior of the catheter hub, is biased axially within the catheter hub with its ends being fixed to prevent axial expansion.

30 Claims, 2 Drawing Sheets

