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(54) Title: RECEIVER FOR CATHETER

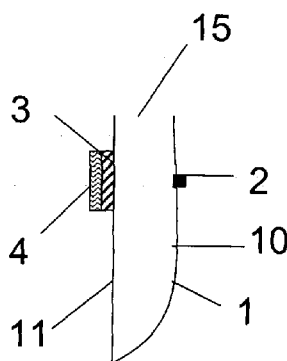


Fig. 2

(57) Abstract: The present invention relates to the use of receivers that are used in combination with surgical drapes during medical examinations whereby a catheter is introduced in a vein or artery. More in particular the invention relates to a longitudinal receiver suitable for the storage of guiding threads and/or catheters used during a surgical examination, at least partly folded in the longitudinal direction, comprising a front- (10) and rearside (11), the bottom part (12) and side parts (13,14) whereof are waterproof connected to each other, the rear part whereof comprises means (3) for the attachment of the receiver to a surgical drape, the upper part whereof comprises an opening (15), characterised in that the length of the receiver obtained by at least partly unfolding is sufficient to store the said guiding threads and/or catheters through said opening in non- folded form.



## RECEIVER FOR CATHETER

### Field of the invention

The present invention relates to the use of receivers in combination with surgical drapes. More in particular, the invention relates to receivers that are used in combination with surgical drapes during medical procedures, whereby a catheter is introduced in a vein or artery.

### Background of the invention

Angiography is an examination whereby a contrastmedium is introduced in the veins. Therefore a catheter is inserted in the artery of the groin. As soon as the catheter is positioned, the radiologist administers the contrast medium. Thereafter the blood vessels can be visualised on a monitor by means of medical imaging techniques.

An angiographic examination requires the use of guiding threads and catheters. The catheters that are used during such examinations, sometimes are removed temporarily out of the body of the patient by the physician so as to be reintroduced in the patient's body in a later phase of the examination. The catheters that are removed out of the patient's body by the physician, are put by an assistant or by the physician in a receiver containing a physiological solution containing heparin. In such a way the receiver remains moist. The catheter can also be washed through with the solution to remove the blood remaining in the lumen of the catheter. Usually a bowl is used as receiver. Examples of such bowls are described in a.o. WO 9856687 and US 6691946.

In practice it happens that more than one catheters and guiding threads are put in the receiver. Each time a physician wishes to reintroduce a catheter in a patient's body, the selected catheter needs to be taken out of the receiver by the physician or the assistant.

During surgical procedures drapes are used to shield an environment in a sterile way. These drapes constitute during surgical procedures a barrier against blood and other body fluids.

During an angiographic examination a patient is covered with a surgical drape wherein at the position of the groin two openings are made. At the position of these openings, a physician introduces guiding threads and/or catheters in a vein or artery of a patient. A technique often used during such angiographic procedures is the so-called technique of Seldinger.

The Seldinger-technique comprises the following basic steps :

- 1) the selected blood vessel is lanced by means of a hollow needle
- 2) through the hollow needle a guiding thread is inserted through the selected blood vessel in the body of the patient
- 3) the hollow needle is removed
- 4) a catheter is positioned over the guiding thread
- 5) the guiding thread is removed

In US 5074316 a basic pouch for instruments is described that during an angiographic examination can be attached to a surgical drape at or around the place where a catheter is inserted in the body of a patient. The instrument pouch is made from a transparent material

and can be positioned over the catheter line to ease the manipulation of catheters. The instrument pouch is not used to store the catheters or to temporarily hold same.

EP 1113970 describes a method to temporarily store guiding threads. The storage takes place in a flexible hollow tube that is closed at one end with a mouthpiece wherein more than one opening is made. The flexible hollow tube can be attached to the surgical drape whereby the end that comprises the mouthpiece with the openings, can be positioned in the immediate vicinity of an opening in the surgical drape at or around the groin area of the patient. More than one guiding thread can be stored simultaneously. The ends of the various guiding threads differ in shape. This simplifies the selection of the appropriate guiding thread by the physician for re-insertion in the patient. The method described in EP 1113970 is directed to guiding threads. In practice guiding threads are fine metal threads. Catheters have a larger diameter compared to guiding threads. Quite some catheters are manufactured from plastics and comprise a special coating. To the surface of catheters a coating can be foreseen that prevents the quick clotting of blood. When the method described in EP 1113970 would be used for the temporary storage of catheters, the coating at the surface of the catheters could be damaged.

US 6802323 describes a construction to temporarily store guiding threads and catheters. It deals with a rather voluminous and stiff construction that comprises a drainage system. The construction can be attached to the pending side of a surgical drape. This construction fills the space between the physician and the table supporting the patient. The method provides the temporary storage of guiding threads and catheters by locking the guiding threads and catheters parallel one to the other. The stored guiding threads and catheters can be moistened with a saline solution containing heparin. By frequently locking of a catheter the coating of the catheter can be damaged.

US 2005/0279366 A1, published December 22, 2005, describes a receiver for the storage of a.o. catheters, as used during surgical procedures such as a heart-catherisation. The receiver or envelope comprises an open upper side and closed side parts and bottom parts. In such a receiver a catheter can indeed be stored, as illustrated on figure 5 of this patent application. From this figure and description it is apparant that the catheter in this envelope can only be stored in a folded manner. This causes problems as well during the introduction of the catheter in the envelope, as well as by the removal out of the catheter from the envelope. On top hereof, in case more that one guiding thread and/or catheter should be stored in such envelope concomitantly, these are in contact with each other frequently, leading to damage, en causing further difficulty for manipulation.

WO2004/060184 A1, published July 22, 2004, describes a receiver for the storage of surgical instruments. The receiver can be attached to the surgical drape, and can even be permanently affixed to it. From the description and the drawings it is clear that such a receiver is not suitable for the storage of guiding threads and/or catheters. The complete upper side of the receiver is open, and the dimensions of the receiver do not allow to hold a guiding thread and/or catheter, unless in a quite folded position. In view of the stiffness of such elements, this is excluded in practise. The likelihood that a guiding thread or catheter placed in such a receiver puts out or juts out is quite high. As a result the guiding thread/catheter should loose its sterile character and so become unsuitable for further use. This holds true in particular when one wishes to store not one but several guiding threads and/or catheters in such receiver.

WO2011/025439 A1, published on March 3, 2011, describes also a receiver for the storage of guiding threads and/or catheters. The dimensions of this receiver are so large that these elements can be stored therein in non-folded or partly folded position. The disadvantage of this type of receiver is on the one hand that its dimensions render its use in practice quite difficult. On the other hand, this receiver comprises a very large opening at its upper side, as a result whereof it is difficult to include a solution hererin, such as e.g. a saline solution comprising heparin, without such solution 'leaking' from the receiver, and at the same time moisturing the stored guiding thread and/or catheter over its entire length.

For the above reasons there remains a need for a combination of a surgical drape and a receiver wherein guiding threads and catheters temporarily can be stored in a userfriendly way.

## SUMMARY OF THE INVENTION

The present invention relates to an elongated synthetic receiver that is open or can be opened only at the elongated upper side. The synthetic receiver comprises at the elongated side a sticky strip enabling the attachment of the synthetic receiver to the surgical drape. Guiding threads and catheters that are removed out of the body of a patient during an angiographic examination can be stored quickly and easily in the synthetic receiver. A fluid can be included in the synthetic receiver so as to moisten the guiding threads and catheters.

More in particular the invention comprises the products and methods as set forth in the enclosed claims.

## SHORT DESCRIPTION OF THE DRAWINGS

Figure 1 is a front view of a receiver.

Figure 2 is a side view of a receiver.

Figure 3 is a front view of a receiver, that comprises various sticky strips.

Figure 4 is a front view of a receiver, that comprises supplementary compartments.

Figure 5 is a side view of a receiver, that comprises supplementary compartments.

Figure 6 is a front view of a receiver, that comprises a reclosable closing mechanism.

Figure 7 is a side view of a receiver, that comprises a reclosable closing mechanism.

## DEFINITIONS

The term "flexible" relates to the possibility of a material of being transformed by the exertion of an external force, without being immediately damaged.

The term "transformable element" relates to an element that can be transformed manually and that is capable to retain more or less the newly adopted form.

## DESCRIPTION OF THE INVENTION

The invention relates predominantly to a longitudinal receiver. This element is suitable for the storage of guiding threads and/or catheters used during a surgical procedure and is at least partly folded along its longitudinal axis. The receiver comprises a front- (10) and rearside (11), the bottom part (12) and side parts whereof are waterproof connected to each other, and the rearside whereof comprises means (3) for the attachment of the receiver to a surgical drape, and the upper part whereof comprises an opening (15). The receiver according to the invention is characterized in that the length of the receiver obtained by at least partly unfolding the receiver is sufficient to store the said guiding threads and/or catheters in unfolded position through said opening (15).

Such a receiver according to the invention presents numerous advantages in practice. During a surgical procedure the guiding threads and/or catheters can be easily inserted, stored and taken back out. Because the guiding threads and/or catheters are stored in non-folded and hence stretched position, manipulation not only is easier and more handy, but the risk for being damaged during manipulation is also virtually non-existent. The possibility that more of these stored elements become entangled with each other is practically excluded. In view of the dimensions of the receiver, the guiding threads and/or catheters can also be stored humidly.

By judiciously and according to size unfolding of the pre-folded receiver it is possible to adapt the length of the receiver to conform to the guiding threads and/or catheters that are used in any type of surgical procedure. Depending upon the kind of surgical procedure, the type and in particular the length of the guiding threads and/or catheters differ. The receiver according to the invention allows that one sole type of receiver in at least partly folded position can be used for the creation of a receiver suitable for each type of surgical procedure by unfolding 'according to size'. In this way one can avoid the production of a large portfolio of receivers, each suitable for a particular kind of surgical procedure, or the production of one single type of receiver that is too short for being used in some procedures, and too long in other cases. When the receiver is too short, then the guiding threads and/or catheters can only be stored in folded position, resulting in the disadvantages described above. When the receiver is too long, it takes unnecessary place on the surgical table, resulting in difficulties in practice.

The length of the receiver in at least partly folded position amounts to between 40 cm and 240 cm. Preferably the length of the receiver amounts to between 60 cm and 150 cm, preferably at least minimum 100 cm.

The height of the receiver amounts to between 2 cm and 25 cm. Preferably the height of the receiver amounts to between 3 cm and 15 cm, preferably at least minimum 5 cm, still more preferably minimum 10 cm.

The receiver can be manufactured from various kinds of fluid-impermeable material. Preferably the receiver is manufactured from a flexible kind of synthetic material such as polyethylene. To ease the selection of guiding threads or catheters that are contained in the receiver, the receiver is preferably manufactured from a transparent material.

The receiver is preferably made from a sterilisable material.

To the rear side of the receiver a double sided sticky strip can be attached. Suitable double sided sticky strips like e.g. "3M Transparent Polyethylene, 4.9 mil Double Coated Tape 9889,

60 "Liner" are commercially available from 3M. After affixing this sticky strip, this sticky strip is preferably covered by a release-foil. The sticky strip can be affixed over the entire length of the receiver. Also plural sticky strips, spread over the entire rear side of the receiver, can be affixed. After removal of the release foil the sticky side is available for use. By means of this sticky strip or strips the receiver can be attached to the surgical drape that covers the patient.

The receiver according to the invention can easily be unfolded so as to conform to the size suitable for the storage of guiding threads and/or catheters in unfolded or stretched position, used in case of specific surgical procedures.

Upon its manufacture, the receiver according to the invention is folded in a way that enables the partial unfolding of the receiver when used in practice.

The receiver can be attached to the surgical drape at the inner side of the leg of the patient.

The receiver can be attached to the surgical drape at the outer side of the leg of the patient.

It is possible to attach a receiver as well at the inner side of the leg of the patient, as well as at the outer side of the leg of the patient.

The receiver can be attached to the pending side of the surgical drape.

In case an elongated receiver is used, the receiver can be attached by means of the sticky strip and by making one or more corners around the feet of the patient.

Depending upon the length of the guiding threads or catheters used, it is possible to attach a receiver fully or partially to the surgical drape.

In case one wishes not to use the full length of the longitudinal receiver, part of the longitudinal receiver can be folded back. The folded part of the longitudinal receiver can be attached to the surgical drape by means of a sticky strip.

In the receiver that stores temporarily the guiding threads and catheters, a fluid can be present so as to moisten the stored guiding threads and catheters. To this end a saline solution containing heparin can be used.

So as to remove possible remaining blood rests in the catheters, the catheters stored in the receiver can be washed through in the receiver by means of a solution containing heparin. This can be accomplished by taking one end of the catheter out of the receiver and by inserting a solution containing heparin in the catheter. The solution that flows out of the catheter at its other end can e.g. be received in the receiver.

So as to keep the opening of the receiver easily accessible for the temporary storage of a guiding thread or a catheter, a deformable element with a predefined stiffness can be incorporated at or around the open end of the receiver. Such a deformable element can be deformed manually and can also be useful to prevent that the receiver containing the solution falls completely open. The deformable element can also be used to temporarily clip a surgical instrument, such as a syringe, during a surgical procedure.

The deformable element can e.g. be made by one or more metal threads surrounded by a deformable synthetic material. An example of such a deformable element is commercially available under the brand Flexform (available from 3M).

In a preferred embodiment the dimensions, in particular the height of the rear side of the receiver, are at least equal to the dimensions, in particular the height of the front side of the receiver. In a more preferred embodiment the dimensions of the front- and rearside of the receiver are equal.

Preferably the dimensions of the front- and rearside are selected such that the ratio of the width of the opening (15) over the height of the front-, resp. rearside of the receiver, is minimum 1 over 2, more preferably 1 over 3, still more preferably 1 over 5. These ratios can be accomplished in practice by a judicious use of the deformable element as described above. These ratios should not be identical over the entire length of the opening (15). It is clear that close to the side parts of the receiver the opening may be minimal, and that the opening widens further away from the side parts. The deformable element as described above can be used advantageously to steer the width of the opening over the entire length of the receiver.

Figures 1 and 2 represent the front resp. the side view of the receiver. The receiver comprises a layer of synthetic material (1). To the rear side of the receiver a sticky strip (3) is affixed. The sticky strip is covered by means of a release foil (4). To the front side of the receiver a deformable element (2) with a predefined stiffness is affixed.

Figure 3 represents the front view of a receiver that comprises various sticky strips at its rear side (5).

At or around the open end of the receiver, a reclosable closing mechanism can be foreseen at the inner side of the receiver. By means of such closing mechanism some parts of the opening of the receiver can be temporarily closed. Examples of such reclosable closing mechanisms are known in the art and are described e.g. in US 5138750, US 7137736 and US20060104548. The judicious use of such a reclosable closing mechanism can reduce the risk of undesirable opening of the receiver.

In case the reclosable closing mechanism is characterized by a sufficient degree of stiffness, the presence of such reclosable closing mechanism can make the presence of a deformable element superfluous.

Figures 6 and 7 represent resp. the front view and side view of a receiver, that comprises a reclosable closing mechanism (7).

To avoid damage to catheters, sufficient space should be foreseen in the receiver. This is to avoid that pressure should be exerted on the catheters for storage. The provision of sufficient space in the receiver is also desirable to take back the selected catheter out of the receiver.

It is possible to include in the receiver another smaller additional receiver to avoid contact between the various catheters or between catheters and guiding threads. This smaller receiver can – if desired – comprise a deformable element.

Figures 4 and 5 represent respectively the front view and the side view of a receiver, that comprises a smaller additional receiver (6). The use of a receiver comprising such additional compartment can help with the easy retrieval of the desired guiding thread or catheter.

The receiver is used during examinations wherein a guiding thread or catheter is inserted in a vein or artery. When the practising physician removes a guiding thread or catheter temporarily out of the body of a patient, this guiding thread or catheter can be put back in the receiver in one smooth movement.

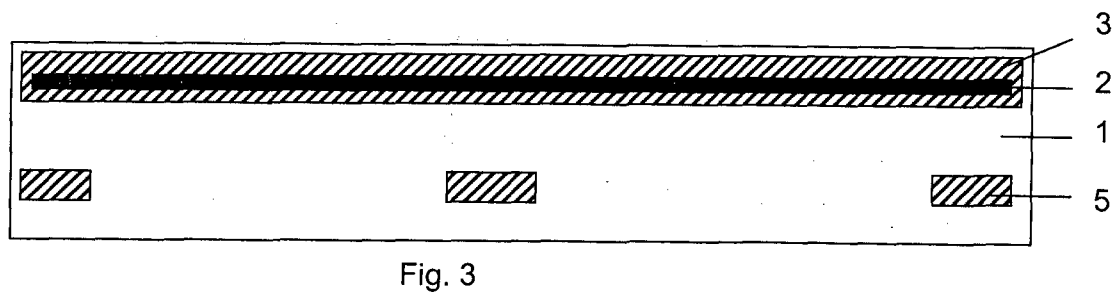
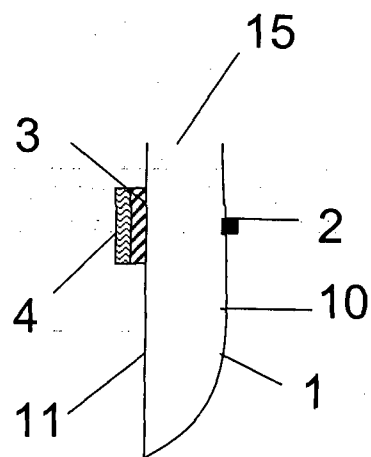
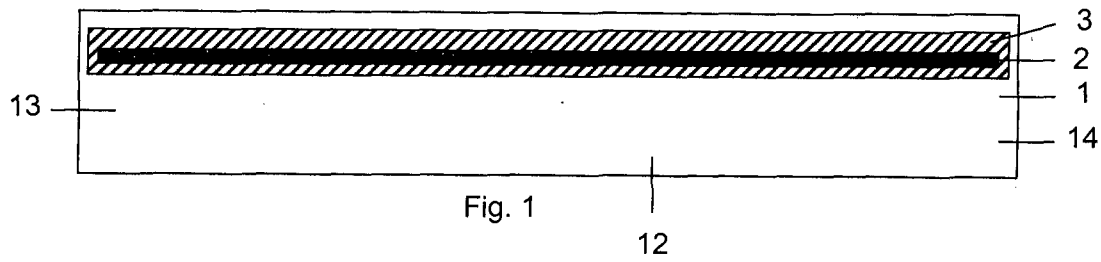
An advantage for the receiver according to the invention is the fact that catheters in case of removal out of the body of the patient can be put directly in one smooth movement in the receiver whilst the practising physician keeps an eye on the patient. Because of the smaller number of manipulations that should be practised with the guiding thread or the catheter, the risk that the guiding thread or catheter touches one or the other part of the drape or the instrument table is smaller compared to the present still practised procedures whereby the practising physician should turn away from the patient to put the guiding thread or catheter away, or whereby the physician hands over the guiding thread or catheter to an assistant who subsequently stores the guiding thread or catheter. Each and every contact between the fragile catheter and another object can have an inferior effect on the coating covering the catheter.

By application of the present invention the number of manipulations that should be performed with the catheter during an angiographic examination can be reduced to a minimum.

## CLAIMS

1. Longitudinal receiver suitable for the storage of guiding threads and/or catheters used during a surgical examination, at least partly folded in the longitudinal direction, comprising a front- (10) and rearside (11), the bottom part (12) and side parts (13,14) whereof are waterproof connected to each other, the rear part whereof comprises means (3) for the attachment of the receiver to a surgical drape, the upper part whereof comprises an opening (15), characterised in that the length of the receiver obtained by at least partly unfolding is sufficient to store the said guiding threads and/or catheters through said opening in non-folded form.
2. Receiver according to claim 1 characterized in that the receiver is manufactured from a flexible material, preferably transparant.
3. Receiver according to claim 1 or 2, characterised in that the means for attachment comprises sticky substances, preferably a two-sided sticky strip.
4. Receiver according to one of the preceding claims characterized in that the receiver is filled at least partly with a fluid.
5. Receiver according to claim 4, characterised in that the fluid is a saline solution, preferably containing heparin.
6. Receiver according to one of the previous claims, characterised in that the front side comprises a deformable element.
7. Receiver according to claim 6, characterised in that the deformable element comprises a metal thread, covered by a deformable synthetic material.
8. Receiver according to one of the previous claims, characterized in that it comprises compartments for the storage of catheters.
9. Receiver according to one of the previous claims, characterized in that the length of the receiver in at least partly unfolded position amounts to minimum 50 cm, preferably 100 cm, resp. 150 cm.

DRAWINGS



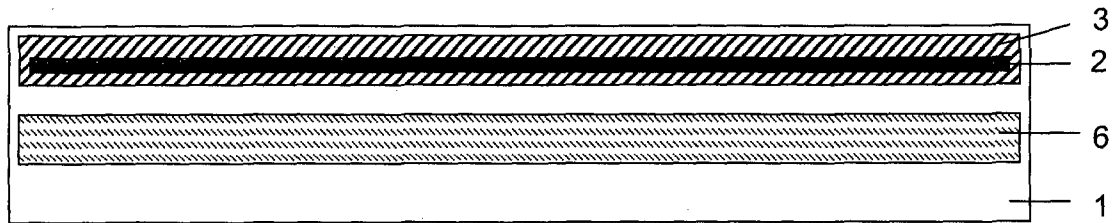


Fig. 4

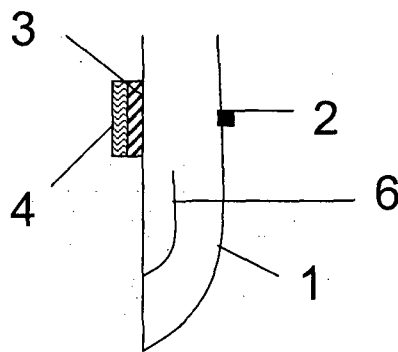


Fig. 5

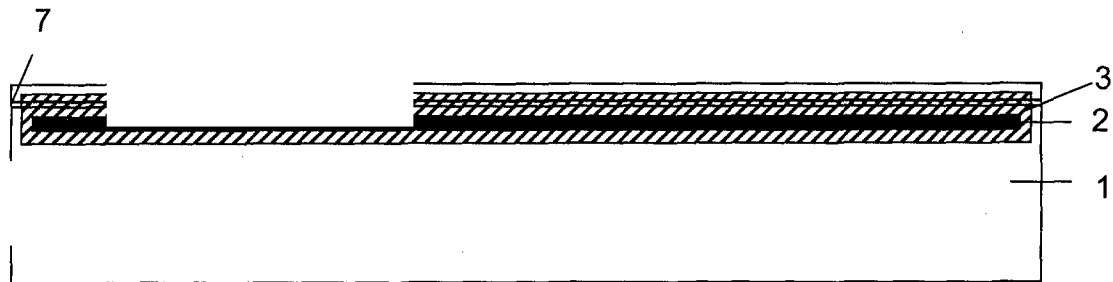


Fig. 6

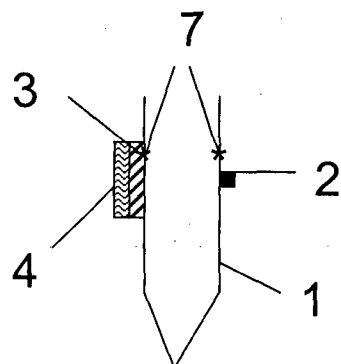


Fig. 7

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/BE2011/000034

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61M25/00 A61B19/10  
ADD.

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)  
A61M A61B

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

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

EP0-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                     | Relevant to claim No. |
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|           | -----<br>-/--                                                                                                                          |                       |

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

13 October 2011

Date of mailing of the international search report

20/10/2011

Name and mailing address of the ISA/

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Fax: (+31-70) 340-3016

Authorized officer

Kousouretas, Ioannis

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/BE2011/000034

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/BE2011/000034

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