A connector for use with a drawstring is described which allows a user to attach one or more drawstrings together. A first end of the connector mounts a first end of the flexible elongate closure means. A second end of the connector opposite the first end mounts a second end of either the same or another flexible elongate closure means. A swivel means may be situated between the first and second ends for rotating the ends and assist in fastening the connector to the drawstring. The connector may be a permanent fixture to a drawstring or a releasable attachment. The connector may be used in a method of replacing a drawstring of a product with a second drawstring. An end of a first drawstring is connected to an end of the second drawstring via the connector. The first drawstring is pulled until the connected second drawstring has replaced a position of the first drawstring on the product, then the drawstrings are disconnected at the connector.
DRAWSTRING CONNECTOR AND METHODS OF USE

Field of the Invention

The present invention generally relates to a product and method for replacing drawstrings as used in clothing and drawstring-closed items.

Background of the Invention

Many types of apparel and products employ the use of drawstrings (including laces, ties, pull cords, elastic cords and other similar product closure devices) as a closure device and/or decorative feature. For instance products such as sweat pants, hoodies, jackets, boots, rain wear, gloves, tents, sleeping bags, school bags often use some form of drawstring to secure the product around its intended target. Typically with such products, the drawstrings are manufactured separately from the product and then installed in the product before the product is sold. Most often, the drawstring is passed through a narrow tubular enclosure (often referred to as a drawstring channel) provided on the product to contain the drawstring. Eyelets provide entrance and exit openings to the drawstring channel. Plastic fittings or aglets at either end of the drawstring help prevent fraying of the drawstring and make feeding the drawstring through the tubular enclosure easier.

The purchaser of the product has little choice but to use the drawstring that has been chosen and provided by the manufacturer in such products since removal and replacement of the lace is cumbersome. Oftentimes, the drawstrings that are provided with the product pull out, wear out, or just plain do not match the outfit the customer has purchased, and the unfortunate reality is that changing or replacing these drawstrings through the enclosure can be a time consuming and frustrating ordeal.

Devices exist to assist in inserting replacement drawstrings into a drawstring channel. Most devices, for instance U.S. Patent No. 4,671,437 to Sauger et al. [Sauger], are pusher-type devices. In Sauger, an end portion of a drawstring to be inserted is folded over a leading end of a pusher device. A cap is placed atop the folded over drawstring on the leading end of the pusher device and the pusher device is fed through the drawstring channel, pulling the replacement drawstring with it. One
drawback with this type of device is that sometimes the channel cannot easily accommodate the combined widths of the cap, the pusher and the drawstring.

Pull-type devices, such as US Patent No. 5,447,260 to Beddow [Beddow] also exist. In Beddow, a long pulling member releasably captures an aglet of a drawstring to be inserted at the trailing end of the pulling member. In one embodiment, the aglet is screwed into a female connector of the pulling member. The female connector may contain a tapered threaded insert into which the aglet is screwed. With the replacement drawstring so attached, the leading end of the pulling member is inserted into and fed into and through the drawstring channel, pulling the replacement drawstring into the channel. Beddow overcomes the problem of width through the channel discussed above in Sauger, but adds the inconvenience of working with a long pulling member, which is recommended to be at least as long as the drawstring channel it is being used for.

The present invention allows someone to easily change a first drawstring within a drawstring channel of a product by joining one end of the first drawstring to an end of a second drawstring that will be pulled into the enclosure as the first drawstring is pulled out of the enclosure.

As a secondary benefit the present invention can also allow opposite ends of a drawstring to be secured together to lessen movement of the drawstring.

Further, the present invention can allow multiple drawstrings to be fastened end-to-end and/or in combination with decorative charms and the like.

Summary of the Invention

In one aspect of the invention, a closure means for a product is described. The closure means includes a flexible elongate body such as a lace, drawstring, elastic, string, rope, wire, tie and strap. At least one connector is positioned on at least one end of the flexible elongate body. A fastener of the connector releasably attaches the connector to a corresponding fastener of another connector. A receiver opposite the fastener mounts the connector to the end of the flexible elongate body. A swivel means allows the fastener to rotate relative to the receiver.

In another embodiment of the invention, a connector for use with a flexible elongate closure means is described. A receiver of the connector mounts an end of the
flexible elongate closure means. A fastener opposite the receiver releasably attaches the connector to a corresponding fastener of another connector. Optionally, a swivel means between the receiver and the fastener allows the fastener to rotate relative to the receiver.

In yet another embodiment of the invention a connector for use with at least one flexible elongate closure means is described. A first receiver mounts on a first end of a flexible elongate closure means. A second receiver mounts on a second end of the flexible elongate closure means or on an end of a second elongate closure means, where the first receiver is connectable to the second receiver by a coupling means such that the first receiver is opposite the second receiver when the first and second receivers are connected. Optionally, at least one a swivel means between the coupling means and the first and second allows the first and second receivers to rotate relative to the coupling means.

In another aspect of the invention, a method of replacing a first closure means of a product with a second closure means is described. A first end of the first closure means is connected to a first end of the second closure means. The first closure means is pulled until the second closure means has replaced a position of the first closure means on the product. The first closure means is unattached from the second closure means.

**Brief Description of the Drawings**

Figure 1 is a segmented view of the closure means of the present invention.

Figure 2 is a cross-sectional view of complimentary first and second barrel clasp connectors.

Figure 3 is a cross-sectional view of complimentary first and second barrel clasp connectors having swivel means.

Figure 4 is a perspective view of the closure means of the present invention in use in a product.

Figure 5 is a cross-sectional view of an exemplary connector where the receiver is a female receptacle.

Figure 6 is a cross-sectional view of an exemplary connector where the receiver is a clip, in combination with the closure means of the present invention.
Figure 7 is a side view of a double-ended connector where the first and second receivers are clips and the coupling means is a screw fitting.

Figure 8 is a side view of a double-ended connector where the first and second receivers are clips and the coupling means is an elongated bridge.

Figure 9 is a cross-sectional view of a double-ended connector where the first and second receivers are female receptacles and the coupling means is swivellable.

**Description**

The present invention facilitates an easy removal and/or replacement of drawstrings from drawstring channels in the products that use them. For the present purposes, drawstring includes any flexible elongated closure means such as laces, ties, strings, elastic cords, pull cords and other like product closure means. As best shown in figure 1, in one embodiment, the drawstring 10 according to the invention includes a connector 12 affixed at a first end 14 and a second end 16 of an elongated, flexible drawstring body 3. The connector 12 at each end preferably consists of at least two parts: a receptor 18 and a fastener 20, 22.

The receptor 18 is for mounting the connector 12 to an end of the flexible elongate body 3. In a preferred embodiment, the receptor includes a cavity of a diameter appropriate for receiving an aglet 9 of the flexible elongate body. This cavity may be 4mm in depth, but other depths are possible as required. One of the aglets 9 is inserted into the cavity and glued or otherwise permanently fixed in place, thus bonding the connector 12 to the drawstring body 3.

The fasteners 20, 22 are each preferably one half of a barrel or torpedo clasp. Other types of fasteners are possible. The fastener is coupled to the receptor 18 and is for attaching to a complimentary fastener of another connector, either on the same drawstring or on a second drawstring. In a preferred embodiment, the fastener of a first end 14 of the drawstring 10 complements the fastener of the second end 16 of the drawstring 10. For instance, the fastener of the first end 14 of the drawstring 10 may be configured as a female fastener 20 and the fastener of a second end 16 of the drawstring 10 may be configured as a male fastener 22.

The complimentary fasteners at first and second ends of the drawstring may be fastened together to lessen the movement of the portion of the drawstring that is outside...
the drawstring channel. Ribbing 5 on the circumference of the connector may be added
to assist in gripping the connector.

Preferably, the receptor and fastener are manufactured as one unit and may be
designed in many different shapes, sizes and materials. The connector may be made of
metals or precious metals such as but not limited to gold, silver, bronze and copper
plating, and may also be made of hard plastic, for example.

Figure 2 shows a close up of an exemplary connector where the fastener is a
barrel clasp. In this embodiment, the female fastener 20 includes a threaded cavity 21
and the male fastener 22 includes a threaded insert 23 that compliments the threaded
cavity such that the male fastener 22 may be screwed into the female fastener 20.

In a preferred embodiment, a swivel means is incorporated into the connector to
allow the fastener to rotate in either direction relative to the receiver and the drawstring.
Such rotatability of the fasteners facilitates easier connection by eliminating the need to
turn the whole drawstring to fasten the connectors. The rotatability also lessens curling
and twisting of the drawstring.

In one embodiment shown in Figure 3, the swivel means is a T-shaped swivel dial 30
and swivel arm 31. The swivel dial 30 is positioned on the inner side of a base 26 of
the fastener. The swivel arm 31 extends from the swivel dial 30, through the base 26,
and attaches to the receptor 18. The swivel arm 31 may be molded as part of the
receptor 18.

Ball bearings 32 may be further added to the swivel means at the rubbing
surface between the swivel dial 30 and the base 26. This adds longevity to the swivel
by lessening the amount of friction between the swivel and the base.

The connectors, whether with or without a swivel means, may be fastened to
other similarly configured drawstrings. So for instance in Figure 4, a first drawstring
10 having connectors 12 described above at first 14 and second 16 ends is secured to a
product 2 in a drawstring channel 4, where both the first and second ends of the first
drawstring are outside of the channel. A second similarly configured drawstring 10a
may be fastened to the second end 16 of the first drawstring 10 through the use of the
complimentary fasteners. The faster 20a of the second drawstring 10a compliments
and can attach to the fastener 22 of the first drawstring 10. Once fastened, the first
drawstring 10 may be pulled through and entirely out of the drawstring channel 4.
leading with the first end 14 of the first drawstring 10. This simultaneously pulls the second drawstring 10a into the drawstring channel 4. After the second drawstring 10a has replaced the former position of the first drawstring 10 in the drawstring channel 4, the two drawstrings may be unfastened at the connectors. In this way, the first drawstring 10 is replaced in the product 2 by the second drawstring 10a.

This invention thereby allows for easy replacement of drawstrings configured according to the invention that are present in products, as may be desired for reasons including wear, breakage or fashion statement. Different sizes, types, lengths and colours of drawstrings may be exchanged by this invention, so consumers will be able to accessorize and customize the products concerned as they see fit.

The invention is not limited to replacing drawstrings. In further accordance with the present invention, two or more drawstrings may be attached in series, end to end, using the connectors. This allows a user to connect drawstrings to vary the length of the overall drawstring and to combine different colours or styles of drawstrings.

When worn on apparel having a drawstring and drawstring channel such as a hoodie, for instance, different styles of drawstrings could appear from each end of the drawstring channel, with the connector being hidden inside the channel.

The fasteners are not limited to the preferred barrel or torpedo clasps mentioned above and shown in the drawings. Any type of fastener that is practical in nature and size for use on the first and second ends of a drawstring that has sufficient hold and can easily fit through a drawstring channel would suffice. For example, the fasteners may include magnetic, loop, snap, Velcro™ and latch forms of attachments.

The present invention also contemplates the more common situation where the drawstring in a product does not include the connectors described above, but is a conventional drawstring. A stand-alone connector, also referred to as a coupler 40, may be used to facilitate the replacement of a conventional drawstring with either another conventional drawstring, or a drawstring with the connector described above.

In an exemplary embodiment shown in figure 5, the coupler 40 has a coupler receiver 42 and a coupler fastener 44. The receiver is for releasably mounting an end of a conventional drawstring. In figure 5, the end is a finished aglet 46 of a conventional drawstring. The coupler receiver 42 functions much like the receiver 18
of the attachment means described above, but it may not be affixed to the aglet of the drawstring.

The coupler receiver may include a helical female receptacle means such as a threaded cavity for screwing onto the aglet 46. In a preferred embodiment, the threaded cavity is inwardly tapered (i.e. widest at the opening of the cavity, and tapers as it deepens) and has a depth of about 10mm, though other depths are possible depending on the size of the aglets being considered. The tapered shape accommodates various sizes of aglets, and enables the aglet to be fastened securely to the receiving portion. The threading secures the coupler 40 to the aglet 46.

To further accommodate different sizes of aglets, differently sized couplers may be used. The table below presents suggested tapered cavity diameters of several sizes of couplers. These ranges accommodate most conventional aglets. It should be appreciated that the cavities may be made in other sizes if needed to accommodate aglets not within the ranges provided below.

<table>
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<th>Coupler Size</th>
<th>Widest diameter (at opening)</th>
<th>Narrowest diameter (at bottom of cavity)</th>
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<tr>
<td>Small</td>
<td>3.0 mm</td>
<td>2.8 mm</td>
</tr>
<tr>
<td>Medium</td>
<td>3.1 mm</td>
<td>3.4 mm</td>
</tr>
<tr>
<td>Large</td>
<td>3.7 mm</td>
<td>3.4 mm</td>
</tr>
</tbody>
</table>

The coupler fastener 44 may include a threaded male insert 50, configured to fasten to the threaded female connector 21 of the fastener 20 of a drawstring 10 of the present invention. The coupler fastener 44 is not limited to barrel-type screw fasteners, but may include magnetic, loop, snap, Velcro™ and latch forms of fasteners.

As shown in figure 6, the receiver 42 of the coupler 40 may alternatively be a clip. One benefit of the clip configuration is that it can more easily be releasably attached to drawstrings that do not have finished aglets. In a preferred embodiment, the clip may be a conventional roach clip, but other designs and mechanisms for
holding means known in the art are possible. In the embodiment of figure 6, the clip includes a jaw 58 formed by first and second holding means connected by a pivot 56. The jaw 58 may include a lock and grip mechanism 60 such as teeth, hooks, barbs, studs and the like. A lever 62 may be used to open the jaw 58. A closing mechanism (not shown), such as a spring, magnet, elastic or coil, keeps the jaw in a closed position unless the lever 62 is pressed. In use, the jaw is opened and releasably attached to an end of a drawstring. Optimally, the clip is streamline to prevent catching in the drawstring channel. As such, the lever 62 should not protrude from the clip in the closed position.

As an added feature of the clip, best shown in Figure 7, a portion of one or both of the first and second holding means proximal to the fastener 44 (this portion is referred to as the throat) may have an oval cavity 16 to accommodate an aglet 46. Each oval cavity 16 is sized for receiving an aglet. In one embodiment, the oval cavity may be approximately, 5 mm in depth and the width of an aglet. This allows one to push the aglet of the drawstring to the back of the throat, lessening the side to side shifting of the aglet end of the drawstring. The oval cavity 16 may also allow teeth 20 of the holding means 2, 4 to reach beyond the aglet, and instead lock into the drawstring body.

Use of a coupler allows a user to attach a conventional drawstring to a drawstring of the present invention. The receiver or the coupler releasably attaches to an end of a conventional drawstring, Typically in a drawstring channel of a product. A drawstring of the present invention is connected to the fastener of the coupler via the complimentary fasteners. Once linked, the conventional drawstring may be pulled through and entirely out of the drawstring channel, leading with the free end opposite the coupler. This simultaneously pulls the coupler and drawstring of the present invention. Once the drawstring of the present invention has replaced the conventional drawstring in the drawstring channel 44, the two drawstrings may be unfastened and the coupler removed. In this way, a conventional drawstring is replaced in the product by a drawstring of the present invention.

The present invention also contemplates the situation where both the drawstring in the product and the replacement drawstring are conventional drawstrings. A first coupler 40a may be connected via a coupling portion 47 to a second coupler 40b substantially opposite the first coupler 40a to provide a double-ended coupler 80. In
one embodiment shown in Figure 7, the fasteners 44a, 44b of the first and second couplers make up the coupling portion 47, where the fastener of the first coupler 44a includes a male threaded portion and the fastener of the second coupler 44b includes a female threaded cavity. The male threaded portion is capable of screwing into the female threaded cavity for connecting the first and second couplers such that the receiving portion of the first coupler 42a is substantially opposite the receiving portion of the second coupler 42b.

Use of a double-ended coupler allows a user to connect a first conventional drawstring to a second conventional drawstring by releasably attaching the receiver of the first coupler 42a to an end of the first drawstring, and releasably attaching the receiver of the second coupler 42b to an end of the second drawstring.

Where the first drawstring is secured in a product through a drawstring channel, after the aforementioned attachments have been made, the first drawstring may be pulled through and entirely out of the drawstring channel. In so doing, the double coupler and the second drawstring are simultaneously pulled into the channel. Since the double coupler passes through the channel, it should have a streamline profile so as to allow movement through the channel. Once the first drawstring is pulled out of the channel and the second drawstring has replaced it in the channel, the two drawstrings may be disconnected by unfastening the ends from the first and second couplers.

In an alternative embodiment shown in figure 8, the coupling portion between the first and second couplers 40a, 40b may a flexible bridge 82, for example, a rubber band, chain, linked beads, a cord, spring, or other flexible bridge. This provides separation between the first and second couplers and to allow the double coupler to be more bendable, so that it may bend and correspond with the design of the drawstring channel through which it must pass. A preferred length of the bridge is approximately 4-10 mm, therefore allowing enough room between the first and second couplers for maneuverability.

In an exemplary embodiment, at least one of the first and second couplers can swivel relative to the coupling portion. Preferably, both the first and second couplers can swivel independently of each other about the coupling portion. In the embodiment shown in Figure 9, a first swivel arm 72a attaches to the first coupler 40a at a first end and extends through a first side 76 of the coupling portion 47 to a first swivel dial 74a.
at a second end. This enables the first coupler 40a to rotate relative to the coupling portion 47. Ball bearings (not shown) may be included on the rubbing surface between the first swivel dial 74a and the first side 76 of the coupling portion.

To allow rotation of the second coupler 40b relative to the coupling portion, a second swivel arm 72b may be included which attaches to the second coupler 40b at a first end and extends through a second side 78 of the coupling portion 47 to a second swivel dial 74b at a second end. The coupling portion and/or the first and second couplers may include circumferential ribbing (not shown) to assist in gripping and rotating the double coupler for easier fastening.

Although the invention has been explained in relation to its preferred embodiments, it is to be understood that other possible modifications and variations can be made without departing from the scope of the invention. It is therefore contemplated that the appended claims will cover such modifications and variations that fall within the true scope of the invention.
WHAT IS CLAIMED IS:

1. A closure means for a product, comprising:
   - a flexible elongate body, where the flexible elongate body is selected from the group consisting of lace, drawstring, cord, elastic, string, rope, wire, tie and strap; and
   - at least one connector positioned on at least one end of the flexible elongate body,
   where the connector includes:
   - a fastener for selective releasable attachment of the connector to a corresponding fastener of another connector;
   - a receiver opposite the fastener for mounting the connector to the at least one end of the flexible elongate body, and;
   - a swivel means for rotating the fastener relative to the receiver.

2. The closure means of claim 1 where a first connector having a fastener is positioned on a first end of the flexible elongate body and a second connector having a second fastener is positioned on a second end of the flexible elongate body.

3. The closure means of claim 1 where the receiver is affixed to the flexible elongate body.

4. The closure means of claim 1 where the fastener is selected from the group consisting of barrel clasp, screw, threading, magnetic fitting, clamp, clip, Velcro™ and snap fitting.

5. The closure means of claim 1 where the swivel means includes a swivel arm extending from the receiver at a first swivel arm end through a base of the fastener to a swivel dial at a second swivel arm end.
6. The closure means of claim 5 where the swivel means further includes ball bearings between the base of the fastener and the swivel dial.

7. A connector for use with a flexible elongate closure means comprising:

   a receiver for mounting an end of the flexible elongate closure means;
   a fastener opposite the receiver for selective releasable attachment of the connector to a corresponding fastener of another connector; and
   a swivel means for rotating the receiver relative to the fastener.

8. The connector of claim 7 where the receiver is a cavity shaped to receive a finished aglet of the flexible elongate closure means and wherein the cavity is affixed to the finished aglet of the flexible elongate closure means.

9. The connector claim 7 where the fastener is selected from the group consisting of barrel clasp, screw, threading, magnetic fitting, clamp, clip, Velcro™ and snap fitting.

10. The connector of claim 7 where the swivel means includes a swivel arm extending from the receiver at a first swivel arm end through a base of the fastener to a swivel dial at a second swivel arm end.

11. The connector of claim 10 where the swivel means further includes ball bearings between the base of the fastener and the swivel dial.

12. The connector of claim 7 where the receiver is a releasable clip or a releasable clamp.

13. The connector of claim 7 where the receiver is a helical female receptacle for releasably capturing a finished aglet of the flexible elongate closure means

14. The connector of claim 13 where the female receptacle is a threaded cavity.

15.
15. The connector of claim 13 where the female receptacle is inwardly tapered.

16. A method of replacing a first closure means of a product with a second closure means, wherein the first closure means is at least partially slidably positioned in an enclosure of the product, and wherein each of the first and second closure means include a flexible elongate body and a connector positioned on at least one end of the flexible elongate body, and further wherein the connector includes a fastener for selective releasable attachment of the connector to a corresponding fastener of at least a second connector, the method comprising the steps of:

- attaching the fastener of the first closure means to the fastener of the second closure means;
- pulling on the first closure means until the second closure means has replaced a position of the first closure means on the product; and
- detaching the fastener of the first closure means from the fastener of the second closure means.

17. A method of replacing a first elongated flexible closure means of a product with a second elongated flexible closure means, wherein one of the first or second closure means is at least partially slidably positioned in an enclosure of the product, and wherein the first closure means includes a connector positioned on an end of the first elongated flexible closure means, and further wherein the connector includes a fastener for selective releasable attachment of the connector to a coupler fastener of a coupler, wherein the coupler further includes a coupler receiver opposite the coupler fastener for selective releasable attachment of the coupler to an end of the second closure means, the method comprising the steps of:

- attaching the coupler receiver to the end of the second closure means;
- attaching the fastener to the coupler fastener;
- pulling on the first closure means until the second closure means has replaced a position of the first closure means on the product; and
- detaching the first and second closure means.
18. A connector for use with at least one flexible elongate closure means comprising opposing first and second receivers joined by a coupling means, wherein the first receiver is for mounting on a first end of a flexible elongate closure means and the second receiver for mounting on a second end of the flexible elongate closure means or on an end of a second elongate closure means.

19. The connector of claim 18 where the first and second receivers are independently selected from the group consisting of clamp, clip, and helical female receptacle means.

20. The connector of claim 18 where the coupling means includes a threaded male insert on the first receiver, connectable to a complimentary threaded female cavity on the second receiver.

21. The connector of claim 18 where the coupling means includes a flexible elongated bridge selected from the group of rubber band, chain, linked beads, cord and spring.

22. The connector of claim 18 where the coupling portion further includes at least one swivel means for rotating at least one of the first and second receiver relative to the coupling portion.

23. The connector of claim 22 where the first receiver further includes a first swivel arm extending from the first receiver at a first swivel arm end, through a first side of the coupling portion to a first swivel dial at a second swivel arm end for rotating the first receiver relative to the coupling portion and independent from the second receiving portion.

24. The attachment of claim 22 where the second receiver further includes a second swivel arm extending from the second receiver at a first swivel arm end, through a second side of the coupling portion to a second swivel dial at a second swivel arm end
for rotating the second receiver relative to the coupling portion and independent from the first receiving portion.

25. A method of replacing a first elongated flexible closure means of a product with a second elongated flexible closure means, wherein the first closure means is at least partially slidably positioned in an enclosure of the product, the method comprising the steps of:

   releasably attaching a first end of the first closure means to a first receiver of a connector,

releasably attaching a first end of the second closure means to a second receiver of the connector, wherein the first receiver is opposite the second receiver,

   pulling on the first closure means until the second closure means has replaced a position of the first closure means on the product; and

   detaching the first closure means from the first receiver and unattaching the second closure means from the second receiver.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC: F16G 11/00 (2006.01) , A41F 9/00 (2006.01) , A41H 43/00 (2006.01) , B65J 33/28 (2006.01) , 1/041) 11/00 (2006.01) , D05B 91/02 (2006.01)

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)

IPC: F16G 11/00, A41F 9/00, A41H 43/00, B65J 33/28, D04D 11/00, D05B 91/02

USPC: 24/514, 24/525, 24/569, 24/694, 24/All

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X ] See patent family annex.

[ ] Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search
10 January 2012 (10-01-2012)

Date of mailing of the international search report
20 January 2012 (20-01-2012)

Form PCT/ISA/210 (second sheet) (July 2009)
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