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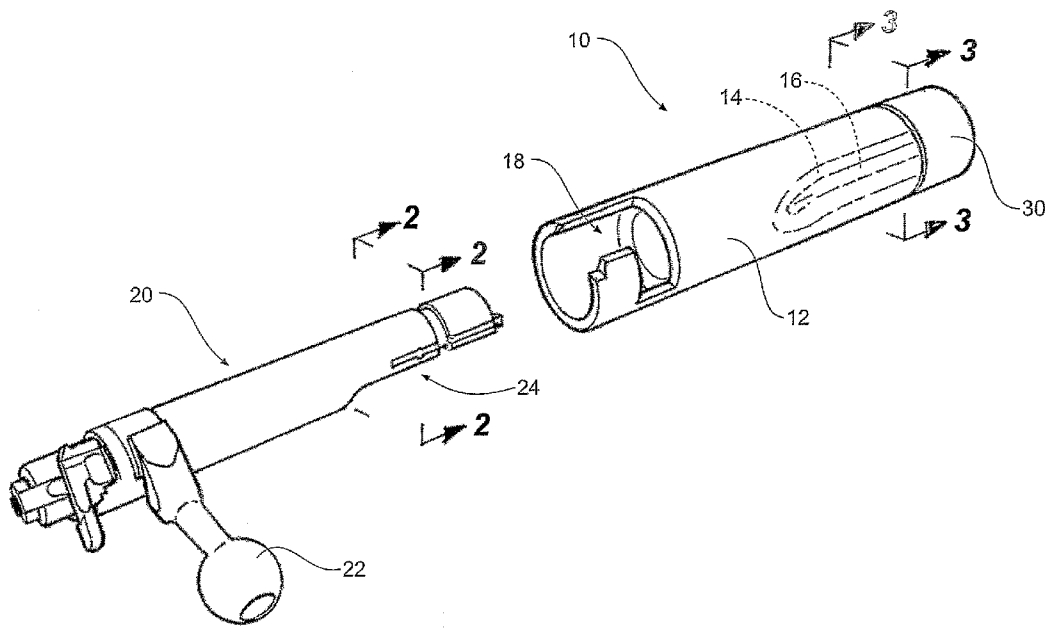
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: BOLT PROTECTOR



(57) **Abstract:** The invention relates to a firearm bolt protector, for a bolt having a handle movable relative to the bolt between a cocked and a decocked position. The protector includes a sleeve for protecting the bolt. The protector holds the bolt to prevent rotational movement of the bolt within the sleeve, such that the handle can be moved between the cocked and decocked positions whilst the bolt is within the sleeve. In the preferred embodiment, this is achieved by a recess inside the sleeve, into which a ridge on the bolt slides when the bolt is inserted into the sleeve.

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BOLT PROTECTOR

FIELD OF THE INVENTION

The present invention relates to the field of bolt action firearms.

BACKGROUND OF THE INVENTION

Bolt action firearms (typically rifles) have a bolt for manually controlling the opening and closing of the breech. The bolt houses the firing mechanism, and also includes lugs at the front or rear which serve to lock the bolt in place when cocked. Manually operated bolts typically include a handle movable between a cocked position (for firing) and decocked position (for insertion of a new shell into the breech). Most commonly, turn-bolt designs are used, wherein movement between the cocked and decocked positions is accomplished by rotation of the handle about the bolt. Alternatives, such as straight pull designs, are known but less commonly used.

During transport, the bolts should be (and in some jurisdictions must be) removed from the firearm, decocked and then transported separately. This raises the potential for damage to occur to the bolt itself. Firstly, the bolt is susceptible to physical knocks, bumps and scratches. Secondly, the manual decocking of the rifle bolt, once removed from the firearm, places unwanted hand oils onto the bolt which detract from the intended lubrication of the bolt. The bolt is also generally susceptible to damage due to dust, grit and grime.

Typically, simple cloth rags are used to protect the bolt; however, these rags far from adequately address the protection issues identified above.

SUMMARY OF THE INVENTION

The present invention accordingly provides a firearm bolt protector, for a bolt having a handle movable relative to the bolt between a cocked and a decocked position, the protector including:

a sleeve for protecting the bolt, and

a formation which cooperates with a corresponding formation on the bolt to prevent rotational movement of the bolt within the sleeve, such that the handle can be moved between the cocked and decocked positions whilst the bolt is within the sleeve.

Preferably, the protector includes means to hold the bolt within the sleeve when the handle is in the decocked position. This is preferably an aperture at an end of the sleeve shaped to allow the bolt to be inserted or removed with the handle in the cocked position, but to hold the bolt within the sleeve when the handle is in the decocked position.

Preferably, the protector has an open state, in which both ends of the sleeve are open. This allows for easier cleaning of the inside of the sleeve. One end of the protector may therefore have a removable end cap, allowing an end of the sleeve to be opened for cleaning and closed during use.

A detailed description of one or more preferred embodiments of the invention is provided below along with accompanying figures that illustrate by way of example the principles of the invention. While the invention is described in connection with such embodiments, it should be understood that the invention is not limited to any embodiment. On the contrary, the invention encompasses numerous alternatives, modifications and equivalents. For the purpose of example, numerous specific details are set forth in the following description in order to provide a thorough understanding of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

An illustrative embodiment of the present invention will be discussed with reference to the accompanying drawings wherein:

FIGURE 1 is a perspective view of a protector according to the present invention with a bolt;

FIGURE 2 is a cutaway view of the protector shown in Figure 1;

FIGURE 3 is a cross-sectional view through section 3-3 of the protector shown in Figure 1;

FIGURE 4 is a cross-sectional view through section 2-2 of the bolt shown in Figure 1;

FIGURE 5 is a perspective view of the bolt and protector shown in Figure 1, with the bolt inserted into the protector with the handle in the cocked position;

FIGURE 6 is a perspective view of the bolt and protector shown in Figure 5, with the handle of the bolt in the decocked position; and

FIGURE 7 is a perspective view of the sleeve and end cap of the protector in a disassembled state.

DESCRIPTION OF PREFERRED EMBODIMENT

Figure 1 shows a firearm bolt protector 10 according to the present invention, for a turn-bolt 20 having a handle 22 movable between a cocked and a decocked position.

The protector 10 includes a sleeve 12 for receiving and protecting the bolt 20. Figure 2 shows a ramp 14 provided on the inside of the sleeve 12. A recess 16 runs along the middle of the ramp 14 (best shown in Figure 3).

Figures 1 and 4 depict the profile of the bolt 20, which includes a receded section 24 and a ridge 26 running along the bolt axis. When the bolt 20 is inserted into the sleeve 12 of the protector 10, the ridge 26 slides into the recess 16. The formations on the sleeve and bolt thereby cooperate to prevent rotation of the bolt within the sleeve.

As shown in Figure 5, the bolt 20 can be inserted into or removed from the sleeve 12 with the handle in the cocked position. Once inserted, the corresponding formations of the bolt and protector cooperate to prevent rotation of the bolt within the sleeve, thereby allowing the handle 22 to be rotated relative to the bolt into the decocked position, as shown in Figure 6. This can be accomplished whilst the bolt 20 is within the sleeve 12, and whilst holding the protector 10 still. It avoids the need to hold the bolt 20 itself by hand, which places unwanted hand oils on the bolt.

A generally L-shaped aperture 18 at an end of the sleeve 12 allows the bolt 20 to be inserted or removed with the handle 22 in the cocked position. However, once the handle 22 is in the decocked position (Figure 6), it is held within the sleeve 12. It must be turned back to the cocked position before the bolt 20 can be removed.

Of course, different types of bolts will have different lengths or thicknesses and different distinguishing formations (i.e. the receded section 24 and ridge 26 of the bolt shown in the figures may be altered or removed in different bolts). Accordingly, protectors may be designed for each type of bolt such that the protector has a formation which cooperates with the corresponding formation on the type of bolt it is intended to protect.

Clearly also, the precise shape of the aperture may be altered to accommodate bolt handles of different shapes or thicknesses, or which move further or in

different ways when moving between the cocked and decocked positions. Furthermore, for some bolts, the shape of the aperture 18 will need to accommodate other bolt features, such as the safety catch.

The end of the sleeve 12 having the aperture 18 is, in this embodiment, always open. The other end includes an end cap 30 which is removable as shown in Figure 7 to move the protector into an open state. The end of the sleeve includes a threaded section 19, onto which the end cap 30 can be screwed or unscrewed. When the end cap 30 is unscrewed, both ends of the sleeve are open which allows for easier cleaning of the inside of the sleeve.

The protector 10 may be formed of any material, but is preferably formed from a solvent resistant plastic such as polypropylene.

Although a preferred embodiment of the present invention has been described in the foregoing detailed description, it will be understood that the invention is not limited to the embodiment disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the scope of the invention. Modifications and variations such as would be apparent to a skilled addressee are deemed within the scope of the present invention.

THE CLAIMS:

1. A firearm bolt protector, for a bolt having a handle movable relative to the bolt between a cocked and a decocked position, the protector including:

a sleeve for protecting the bolt, and

a formation which cooperates with a corresponding formation on the bolt to prevent rotational movement of the bolt within the sleeve, such that the handle can be moved between the cocked and decocked positions whilst the bolt is within the sleeve.

2. A protector as claimed in claim 1, further including means to hold the bolt within the sleeve when the handle is in the decocked position.

3. A protector as claimed in claim 2, wherein the means to hold the bolt within the sleeve is an aperture at an end of the sleeve shaped to allow the bolt to be inserted or removed with the handle in the cocked position, but holding the bolt within the sleeve when the handle is in the decocked position.

4. A protector as claimed in claim 3, for a bolt having a turn-bolt design, wherein the aperture includes a generally L-shaped portion.

5. A protector as claimed in any preceding claim, wherein the protector has an open state, in which both ends of the sleeve are open.

6. A protector as claimed in any preceding claim, wherein at least one end of the protector has a removable end cap, allowing the at least one end of the sleeve to be opened for cleaning and closed during use.

7. A protector as claimed in any preceding claim, wherein the formation comprises a recess within the sleeve, which cooperates with a ridge running along the bolt axis, such that the handle can be moved between the cocked and decocked positions whilst the bolt is within the sleeve.

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8. A firearm bolt protector substantially as hereinbefore described with reference to the accompanying drawings.

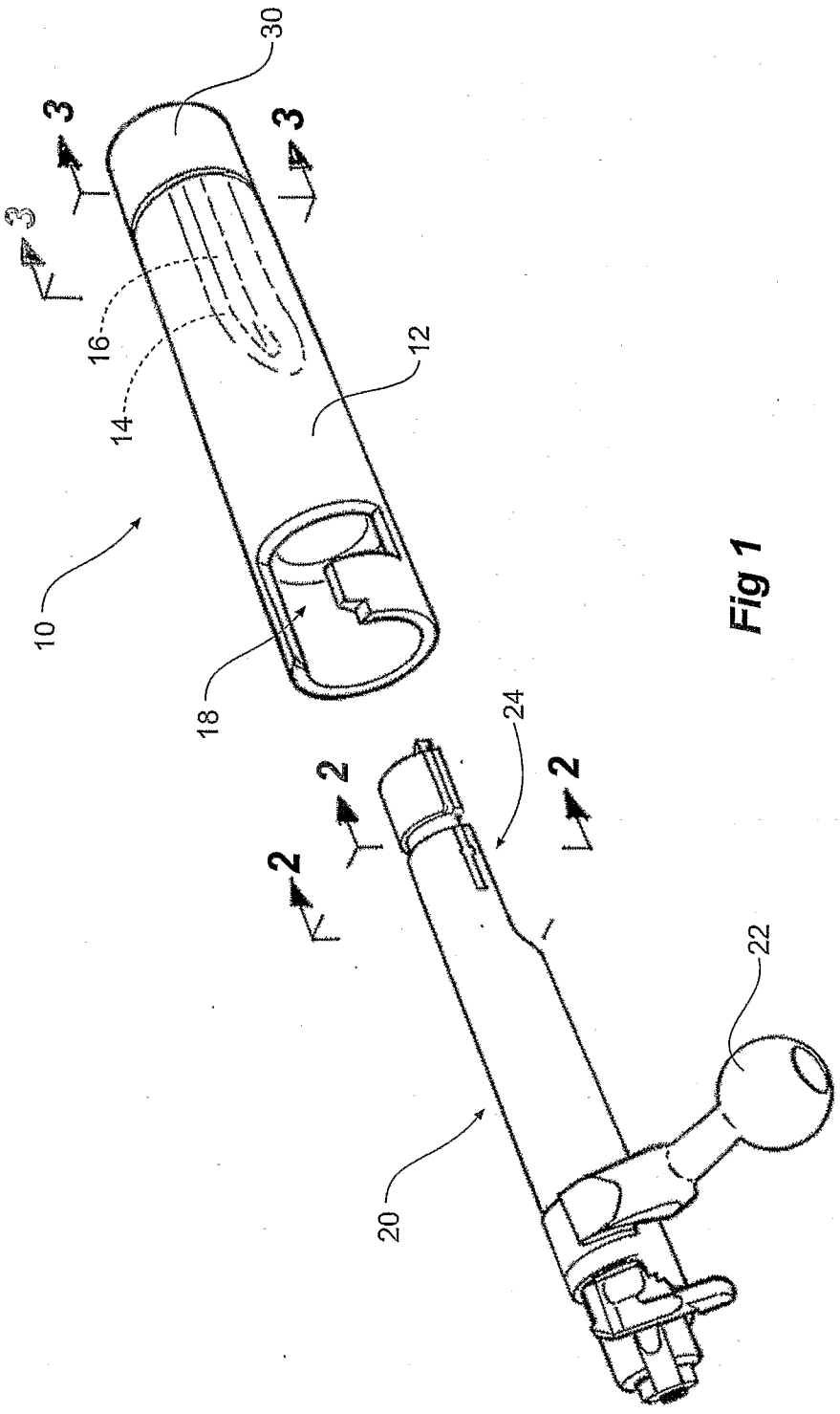

Fig 1

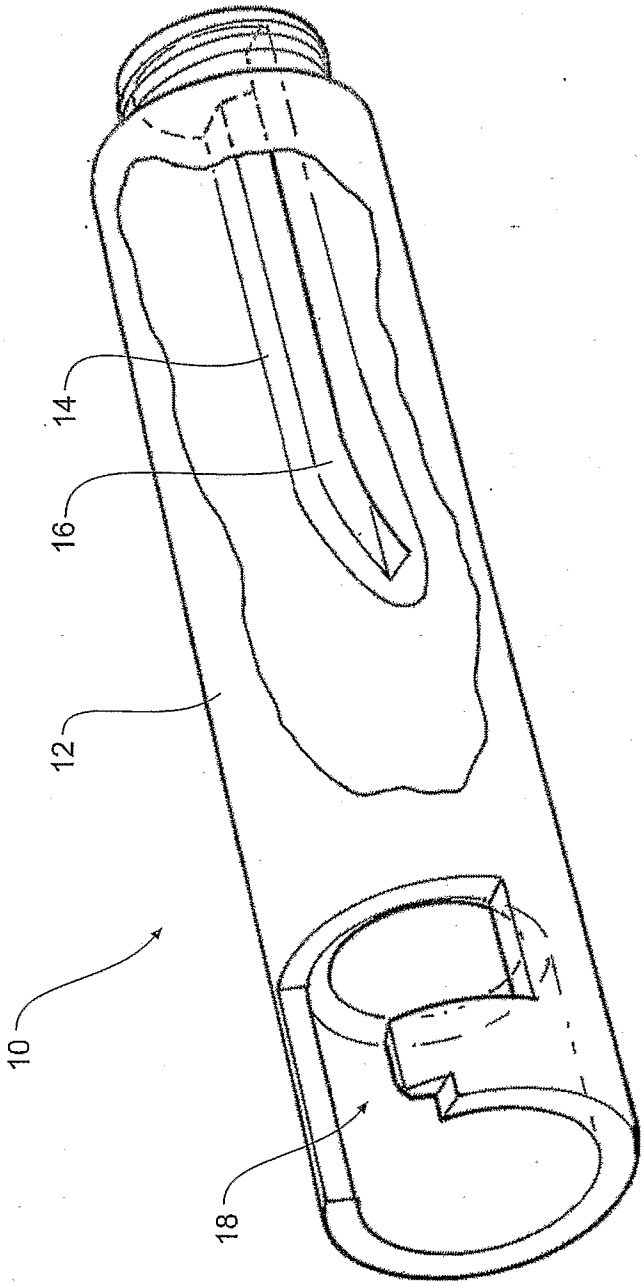

Fig 2

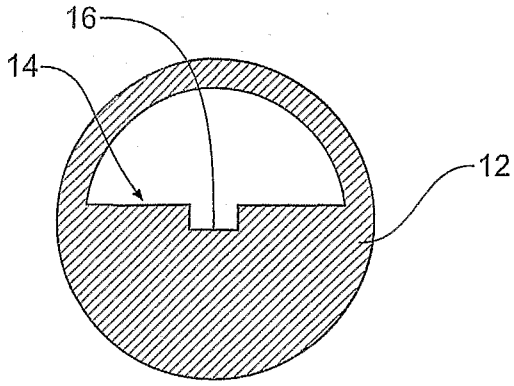

Fig 3

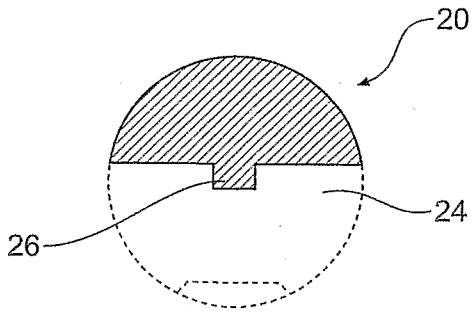

Fig 4

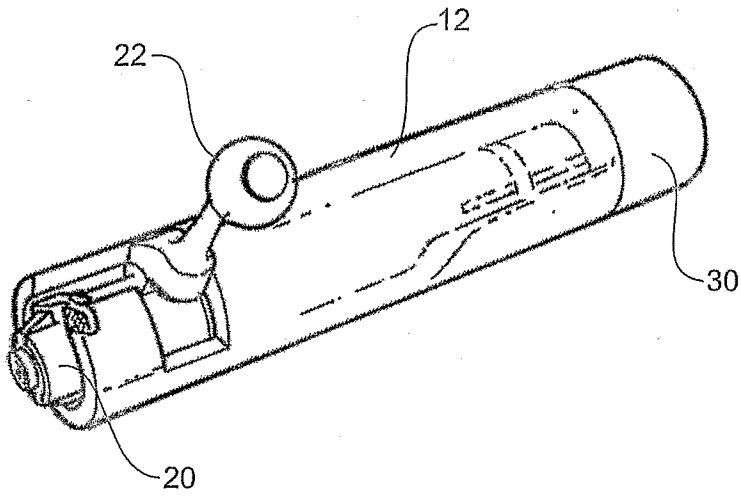

Fig 5

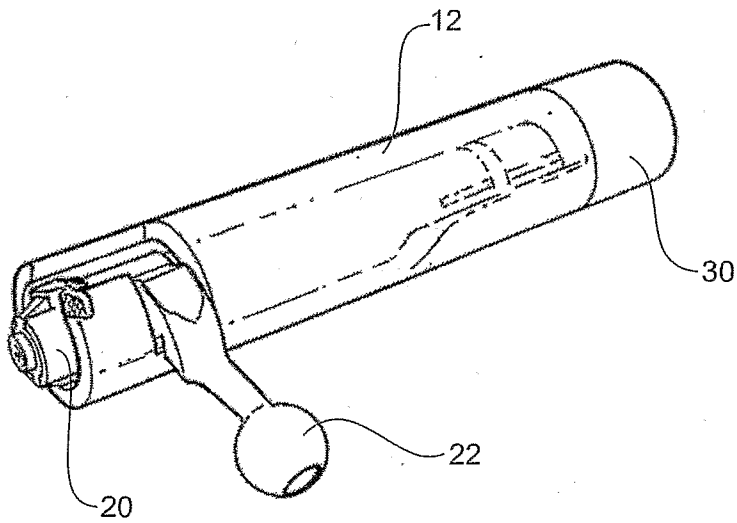

Fig 6

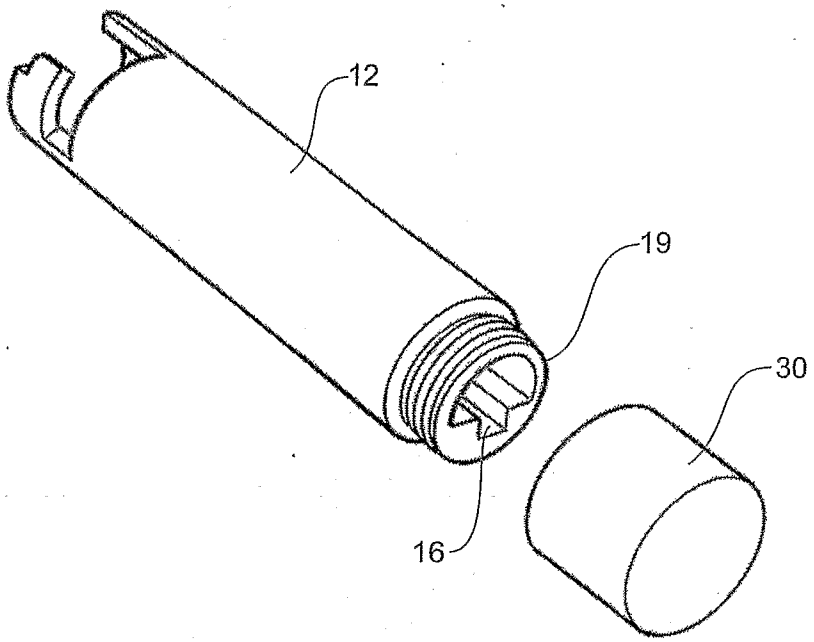

Fig 7

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

F41A 35/00 (2006.01) ***B65D 85/20*** (2006.01) ***F41C 27/00*** (2006.01)
B65D 85/00 (2006.01) ***F41A 3/22*** (2006.01) ***F41C 33/00*** (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)

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 practicable, search terms used)
DWPI –IPC F41A/-, F41C/-, B65D 85/- & keywords rifle, gun, smallarm, bolt, lock, cover, protect, casing, tube, sleeve, jacket, storage, carriage, protect, prevent, guard, avoid, prevent and like terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 1985/005172 A1 (LANO VAPEN OCH FINMEKANIK) 21 November 1985 Whole document	1-5
X	DE 3210427 A (J.G. ANSCHUTZ GMBH) 22 September 1983 Whole document	1-5
A	US 4858361 A (WHITE) 22 August 1989 Whole document	

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 March 2007	15 MAR 2007
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer **D.R. LUM** Telephone No : (02) 6283 2544

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2007/000035

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CH 679423 A5 (SIG SCHWEIZERISCHE INDUSTRIE-GESELLSCHAFT) 14 February 1992 Whole document	
A	US 5918401 A (ROWLANDS) 6 July 1999 Whole document	
A	US 3368298 A (BROWNING) 13 February 1968 Whole document	
A	US 3755947 A (KOON, Jr.) 4 September 1973 Whole document	
A	US 3619926 A (ALDAY) 16 November 1971 Whole document	
A	GB 434245 A (FROMMER) 28 August 1935 Whole document	
A	US 2940201 A (REED) 14 June 1960 Whole document	
A	WO 1997/046847 A1 (PITTMAN) 11 December 1997 Whole document	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU2007/000035

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

Patent Document Cited in Search Report		Patent Family Member					
WO	8505172	EP	0179893	FI	860031	SE	8402425
		US	4698931				
DE	3210427	NONE					
US	4858361	NONE					
CH	679423	NONE					
US	5918401	NONE					
US	3368298	US	3397473				
US	3755947	NONE					
US	3619926	NONE					
GB	434245	BE	405495	FR	779142		
US	2940201	NONE					
WO	9746847	AU	32267/97	US	5699687		

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

END OF ANNEX