



- (51) **International Patent Classification:**
G09F 13/00 (2006.01) *G09F 13/20* (2006.01)
G09F 13/18 (2006.01)
- (21) **International Application Number:**
PCT/AU2016/051245
- (22) **International Filing Date:**
16 December 2016 (16.12.2016)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
2015905274 18 December 2015 (18.12.2015) AU
- (71) **Applicant:** X TEC PTY LTD [AU/AU]; C/- Level 32,
239 George Street, Brisbane, Queensland 4000 (AU).
- (72) **Inventors:** MACDONALD, Brian; C/- Level 32, 239
George Street, Brisbane, Queensland 4000 (AU).
O'NEILL, Chris; C/- Level 32, 239 George Street, Bris-
bane, Queensland 4000 (AU). SEALE, Dallyn; C/- Level

32, 239 George Street, Brisbane, Queensland 4000 (AU).
CLARK, Mark; C/- Level 32, 239 George Street, Bris-
bane, Queensland 4000 (AU).

- (74) **Agent:** CULLENS; Level 32, 239 George Street, Bris-
bane, Queensland 4000 (AU).

(81) **Designated States** (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN,
KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA,
MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG,
NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS,
RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY,
TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,
ZA, ZM, ZW.

(84) **Designated States** (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ,

[Continued on next page]

(54) Title: A SIGN

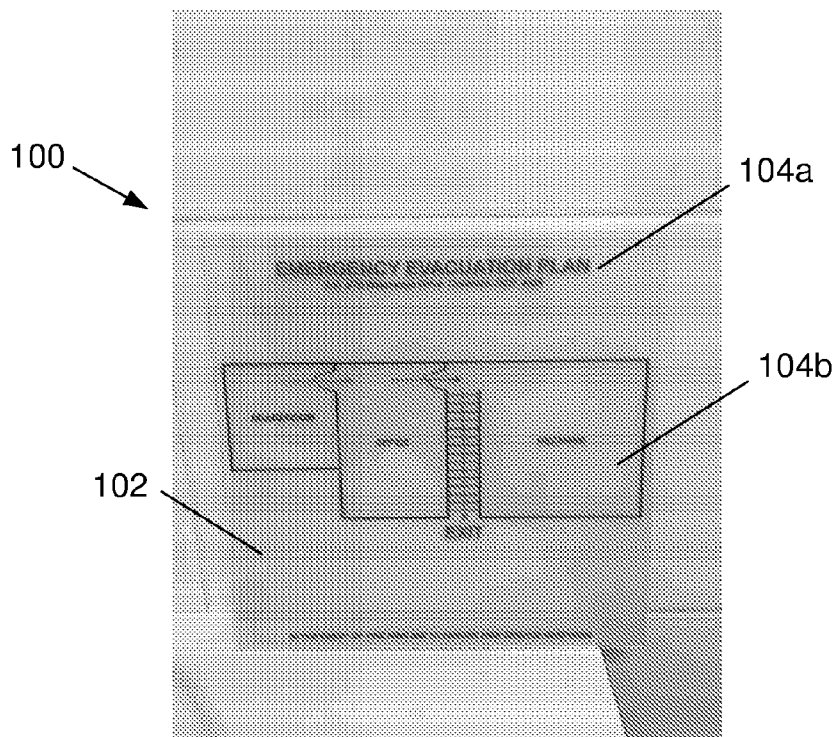


Figure 1a

[Continued on next page]



TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(57) Abstract: The present invention relates to a sign. The sign includes a polymeric portion, and photoluminescence within the portion. Advantageously, the sign provides passive illumination by virtue of the photoluminescence which is charged by a light source (e.g. a fluorescent building light) and passively discharges in the dark. The illuminated sign may be safer whereby detection in low lighting conditions, and particularly at night, is assured in the event of mains power failure to a building containing the sign.

A SIGN**TECHNICAL FIELD**

[0001] The present invention generally relates to a sign. The present invention has particular, although not exclusive application to emergency signs in buildings.

BACKGROUND

[0002] The reference to any prior art in this specification is not, and should not be taken as an acknowledgement or any form of suggestion that the prior art forms part of the common general knowledge.

[0003] Buildings signs are commonly used in to inform viewers of important points of interest relating to a building. For example, such signs can include evacuation maps to direct the viewer to the nearest exit in the event of an emergency. Other signs can be used to indicate the location of fire hydrants.

[0004] A common type of emergency exit sign includes a translucent plastic panel marked with the word "EXIT"; and a light located behind the panel so that the word can be readily discerned in low lighting conditions. To cater for a mains-power failure, a backup battery is provided which powers the light for sufficient time to enable evacuation of the building.

[0005] In the event of a backup battery failure, the sign is faulty and will not work as intended. Accordingly, the building owner must arrange for costly routine inspections of the emergency exit sign with a view of detecting any battery fault and ensuring that the sign is in sound working condition. Major retailing chains can spend millions of dollars per annum conducting inspections and maintenance on emergency exit signs.

[0006] The preferred embodiment provides a safer emergency exit sign with less onerous inspection requirements.

SUMMARY OF THE INVENTION

[0007] According to one aspect of the present invention, there is provided a sign including:

a polymeric portion; and
photoluminescence within the portion.

[0008] Advantageously, the sign provides passive illumination by virtue of the photoluminescence which is charged by a light source (e.g. a fluorescent building light) and passively discharges in the dark. The illuminated sign may be safer whereby detection in low lighting conditions, and particularly at night, is assured in the event of mains power failure to a building containing the sign.

[0009] The sign may not include a battery or other backup power source thereby obviating the need for routine inspections.

[00010] The portion may be a backing panel. The sign may further include one or more contrasting indicators applied to the backing panel. The indicators may be opaque. The indicators may be printed on the backing panel. The indicators may include an image, icon, map or word.

[00011] According to another aspect of the present invention, there is provided a sign assembly including the sign, and a mains-power light for lighting the sign which is particularly useful in dimly lit locations such as hallways where insufficient charging light is present. The assembly may include a frame for fastening to the sign. The light may be contained in the frame. The light can be located so as to emit light toward the edge of the sign. The assembly can further include a diffuser for diffusing emitted light before it is incident with the sign. The diffuser may surround the sign.

[00012] The sign assembly may further include an electronic module such as a smoke alarm, heat source sensor, or video monitor.

[00013] The light may include a light emitting diode (LED) to efficiently light the sign. The light may emit bright white light, or comparatively softer ultra-violet (UV) light to efficiently charge the photoluminescence with minimal impact on the viewer. The assembly may further include a timing circuit for intermittently actuating the light to charge the photoluminescence.

[00014] The sign of the preferred embodiment has a composition specially formulated to meet building code standards including ASTM International Designation E2073 – 10 and building code specification E4.8 in compliance with Australian standard AS 2293.1.

[00015] Preferably, the photoluminescence is not a coating but is dispersed throughout the portion. The photoluminescence may be mixed throughout the portion. The sign may include an overall photoluminescence between 0.25% and 20%.

[00016] The photoluminescence may take the form of a photoluminescent luminous pigment “master batch”, which may contain between 5% and 65% photoluminescent compound. The master batch may be incorporated within a plastic carrier which matches the intended base material forming the portion.

[00017] The portion may include polyethylene (PE), polypropylene (PP), polyamide (PA), polyethylene terephthalate (PET), polyvinyl chloride (PVC), or other like hard polymeric material. The portion may be molded. The portion may be injection molded. The sign may be A3 in dimension.

[00018] According to another aspect of the present invention, there is provided a portion for a sign, the portion including:

- a panel; and
- photoluminescence within the panel.

[00019] According to another aspect of the present invention, there is provided a sign including photoluminescence.

[00020] According to another aspect of the present invention, there is provided a method for manufacturing a sign, the method including:

- adding photoluminescence within a polymer.

[00021] The step of adding may involve dispersing the photoluminescence throughout the polymer. The dispersing may involve mixing the photoluminescence throughout the polymer. The mixing may occur prior to forming (e.g. molding) of a portion containing the photoluminescence. Alternatively, the adding may occur during forming of a portion containing the photoluminescence.

[00022] The method may include the step of heating the polymer and/or photoluminescence. A portion of the sign may be injection molded with the polymer and/or photoluminescence heated to between 200 to 250°C.

[00023] The method may involve cooling the polymer and/or photoluminescence. The cooling may be controlled.

[00024] Any of the features described herein can be combined in any combination with any one or more of the other features described herein within the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[00025] Preferred features, embodiments and variations of the invention may be discerned from the following Detailed Description which provides sufficient information for those skilled in the art to perform the invention. The Detailed Description is not to be regarded as limiting the scope of the preceding Summary of the Invention in any way. The Detailed Description will make reference to a number of drawings as follows:

[00026] Figure 1a shows an emergency evacuation sign under florescent light in accordance with a first embodiment of the present invention;

[00027] Figure 1b shows the passively illuminated emergency evacuation sign of Figure 1b in the dark;

[00028] Figure 2a shows an emergency exit sign assembly including a sign of similar composition to the sign of Figure 1 and under florescent light;

[00029] Figure 2b shows the passively illuminated emergency exit sign of Figure 2a in the dark;

[00030] Figure 3 shows another emergency exit sign assembly in accordance with an embodiment of the present invention;

[00031] Figure 4 shows various frames, in side view and section, for the assembly of Figure 3; and

[00032] Figures 5a to 5e show various passively illuminated building signs in the dark and in accordance with further embodiments.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[00033] According to an embodiment of the present invention, there is provided an emergency evacuation sign 100 as shown in Figure 1a. The sign 100 includes a polymeric backing panel 102 (i.e. portion) and photoluminescence evenly dispersed within the panel 102.

[00034] Advantageously, the sign 100 provides passive illumination as shown in Figure 1b by virtue of the photoluminescence which is charged by a light source (e.g. a fluorescent building light) and passively discharges in the dark. The illuminated sign 100 is safer than alternatives whereby detection in low lighting conditions, and particularly at night, is assured in the event of mains-power failure to a building containing the sign 100. The sign 100 does not include a battery or other auxiliary power source thereby obviating the need for routine safety inspections.

[00035] The sign 100 further includes contrasting opaque indicators 104 overlaying the backing panel 102. As can best be seen in Figure 1b, the passive illumination is effectively emitted from the backing panel 102, but not through the visual indicators 104. The indicators 104 are printed on the formed backing panel 102 and include words 104a and a map 104b in this embodiment.

[00036] Figure 2 shows an emergency exit sign assembly 200 including a sign 100' of similar composition to the sign 100 of Figure 1. The assembly 200 further includes a mains-powered light 202 for lighting the sign 100' which is particularly useful in dimly lit locations such as hallways where insufficient charging light is present.

[00037] Turning to Figure 3, the assembly 200 includes a rectangular frame 300 for fastening to the sign 100'. The flat sign 100' form a plate which can be inserted into the frame 300. The assembly 200 further includes a rectangular acrylic diffuser 302 located within the frame 300, and for diffusing emitted light before it is incident with the edge of the sign 100'. The diffuser may surround the sign.

[00038] Turning to Figure 4, the frame 300 contains the light 202. The light 202 is located so as to emit light toward the edge of the sign 100' snugly received in a throat 302 of the frame 300. Different frame dimensions are available to suit particular needs, and a hemispherical holder 304 can be provided to releasably hold an electronic module 306 such as a smoke alarm, heat source sensor, video monitor, etc. The light 202 typically includes a strip of light emitting diodes (LEDs) surrounding the sign 100' to efficiently light it. The LED light emitted can be bright white light, or comparatively softer ultra-violet (UV) light to still efficiently charge the photoluminescence with minimal negative impact on the viewer. The assembly 200 may further include a timing circuit for intermittently actuating the light to charge the photoluminescence.

[00039] Each sign 100 has a composition specially formulated to meet building code standards including ASTM International Designation E2073 – 10 and building code specification E4.8 in compliance with Australian standard AS 2293.1, as explained in detail below.

[00040] The photoluminescence in the backing panel 102 is not a coating, but is dispersed and mixed throughout that portion 102. Each panel 102 includes an overall photoluminescence between 0.25% and 20% which can be varied to alter the illumination intensity and the cost of the sign 100, in turn, dependent upon the comparatively high cost of the photoluminescence. The photoluminescence can take the form of material disclosed in US8801967.

[00041] The photoluminescence can take the form of a photoluminescent luminous pigment "master batch", which may contain between 5% and 65% photoluminescent compound. The master batch may be incorporated within a plastic carrier which matches the intended base material forming the panel 102.

[00042] Each panel 102 can include polyethylene (PE), polypropylene (PP), polyamide (PA), polyethylene terephthalate (PET), polyvinyl chloride (PVC), or other like hard polymeric material. The panel 102 is molded, and preferably injection molded as described in detail below.

[00043] A method for manufacturing the polymeric panel 102 is now briefly described.

[00044] First, the granular photoluminescence is added and mixed throughout the polymer so as to be evenly dispersed in the resultant mixture.

[00045] Next, the mixture is heated to between 200 to 250°C for injection molding with PP.

[00046] Next, the panel 102 is separately formed by injection molding the heated mixture.

[00047] Next, the panel 102, including polymer and photoluminescence, is cooled in a controlled manner to harden.

[00048] Careful control must be taken with the temperatures during the thermoplastic formation process using the photoluminescent heated admixture. Excess temperatures during fixture formation, or overly rapid cooling rates (in ambient surrounds) can lead to poor product development resulting in material and performance deficiencies. Rapid cooling is however generally desirable for providing a clean injection molded finish so a balance is required.

[00049] Next, the visual indicators 104 are printed on the panel 102.

[00050] A person skilled in the art will appreciate that many embodiments and variations can be made without departing from the ambit of the present invention.

[00051] In one embodiment, the panel 102 can be extruded or cast.

[00052] Figures 5a to 5e show additional embodiments with various visual indicators including images and icons.

[00053] The light 202 can be fastened along a top edge of the sign 100' so as to provide a downlight. Alternatively, the light 202 can be fastened so as to emit light onto the rear of the backing panel 102 of the sign 100'. The assembly 200 can further include a rear acrylic dispersing panel for dispersing the emitted light before it is incident with the backing panel 102.

[00054] The aforementioned signs may be of any dimension, and even A3 in dimension for improved visibility.

[00055] In compliance with the statute, the invention has been described in language more or less specific to structural or methodical features. It is to be understood that the invention is not limited to specific features shown or described since the means herein described comprises preferred forms of putting the invention into effect.

[00056] Reference throughout this specification to 'one embodiment' or 'an embodiment' means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, the appearance of the phrases 'in one embodiment' or 'in an embodiment' in various places throughout this specification are not necessarily all referring to the same embodiment. Furthermore, the particular features, structures, or characteristics may be combined in any suitable manner in one or more combinations.

The claims defining the invention are as follows:

1. A sign including:
a polymeric portion; and
photoluminescence within the portion.
2. A sign as claimed in claim 1, not including a battery or other backup power source thereby obviating the need for routine inspections.
3. A sign as claimed in claim 1, wherein the portion is a backing panel.
4. A sign as claimed in claim 3, further including one or more contrasting indicators applied to the backing panel.
5. A sign as claimed in claim 4, wherein the indicators are opaque.
6. A sign as claimed in claim 4, wherein the indicators are printed on the backing panel.
7. A sign as claimed in claim 4, wherein the indicators include an image, icon, map or word.
8. A sign assembly including the sign of claim 1, and a mains-power light for lighting the sign which is particularly useful in dimly lit locations such as hallways where insufficient charging light is present.
9. A sign assembly as claimed in claim 8, further including a frame for fastening to the sign.
10. A sign assembly as claimed in claim 9, wherein the light is contained in the frame.
11. A sign assembly as claimed in claim 8, wherein the light is located so as to emit light toward the edge of the sign.
12. A sign assembly as claimed in claim 8, further including a diffuser for diffusing emitted light before it is incident with the sign.

13. A sign assembly as claimed in claim 12, wherein the diffuser surrounds the sign.
14. A sign assembly as claimed in claim 8, further including an electronic module such as a smoke alarm, heat source sensor, or video monitor.
15. A sign assembly as claimed in claim 8, wherein the light includes a light emitting diode (LED) to efficiently light the sign.
16. A sign assembly as claimed in claim 15, wherein the light emits bright white light, or comparatively softer ultra-violet (UV) light to efficiently charge the photoluminescence with minimal impact on the viewer.
17. A sign assembly as claimed in claim 8, further including a timing circuit for intermittently actuating the light to charge the photoluminescence.
18. A sign as claimed in claim 1, wherein the photoluminescence is not a coating but is dispersed throughout the portion.
19. A sign as claimed in claim 18, wherein the photoluminescence is mixed throughout the portion.
20. A sign as claimed in claim 18, including an overall photoluminescence between 0.25% and 20%.
21. A sign as claimed in claim 18, wherein the photoluminescence takes the form of a photoluminescent luminous pigment master batch, which contains between 5% and 65% photoluminescent compound.
22. A sign as claimed in claim 21, wherein the master batch is incorporated within a plastic carrier which matches an intended base material forming the portion.
23. A sign as claimed in claim 1, wherein the portion includes polyethylene (PE), polypropylene (PP), polyamide (PA), polyethylene terephthalate (PET), polyvinyl chloride (PVC), or other like hard polymeric material.
24. A sign as claimed in claim 1, wherein the portion is molded or injection molded.

25. A sign as claimed in claim 1, being A3 size in dimension.
26. A portion for a sign, the portion including:
a panel; and
photoluminescence within the panel.
27. A sign including photoluminescence.
28. A method for manufacturing a sign, the method including:
adding photoluminescence within a polymer.
29. A method for manufacturing a sign as claimed in claim 28, wherein the step of adding involves dispersing the photoluminescence throughout the polymer.
30. A method for manufacturing a sign as claimed in claim 29, wherein the dispersing involves mixing the photoluminescence throughout the polymer.
31. A method for manufacturing a sign as claimed in claim 30, wherein the mixing occurs either prior to or during forming of a portion containing the photoluminescence.
32. A method for manufacturing a sign as claimed in claim 28, further including the step of heating the polymer and/or photoluminescence.
33. A method for manufacturing a sign as claimed in claim 32, wherein a portion of the sign is injection molded with the polymer and/or photoluminescence heated to between 200 to 250°C.
34. A method for manufacturing a sign as claimed in claim 28, wherein the method further involves controlled cooling the polymer and/or photoluminescence.

1/6

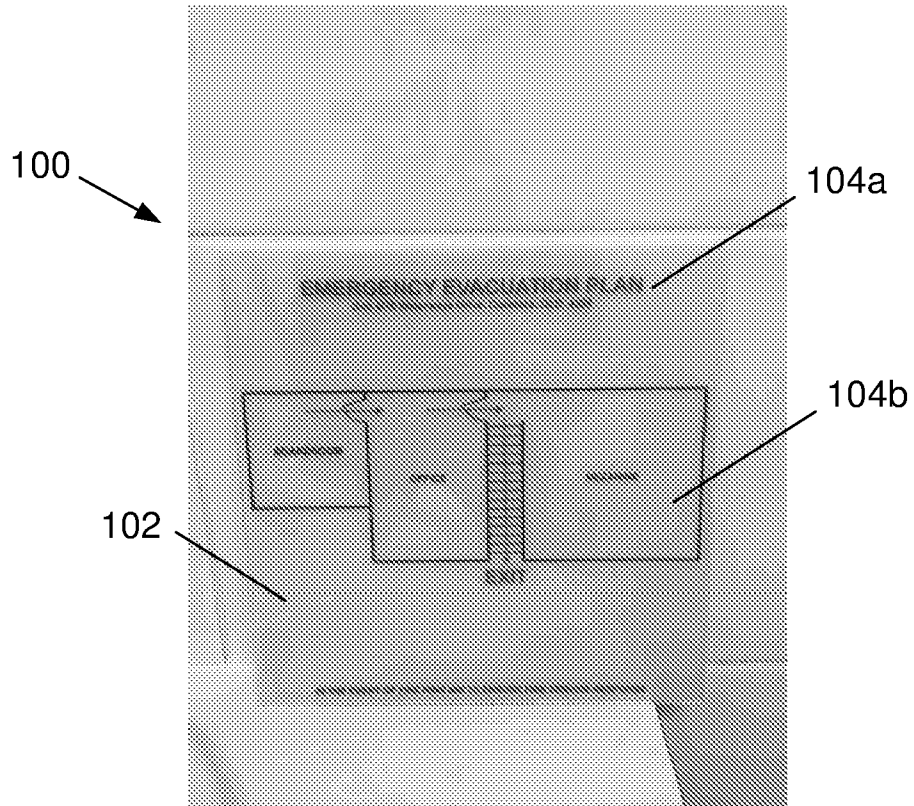


Figure 1a

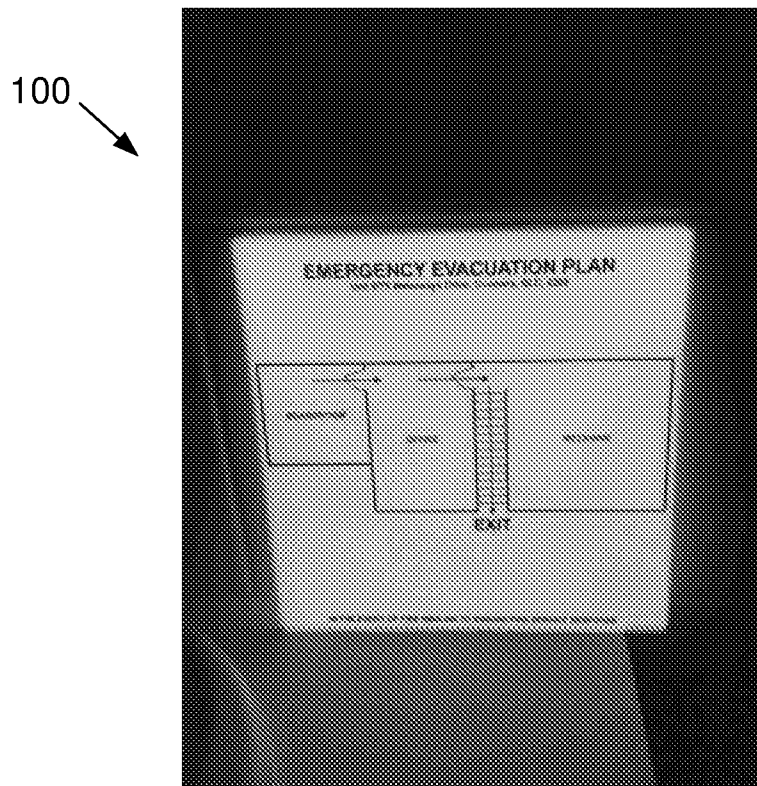


Figure 1b

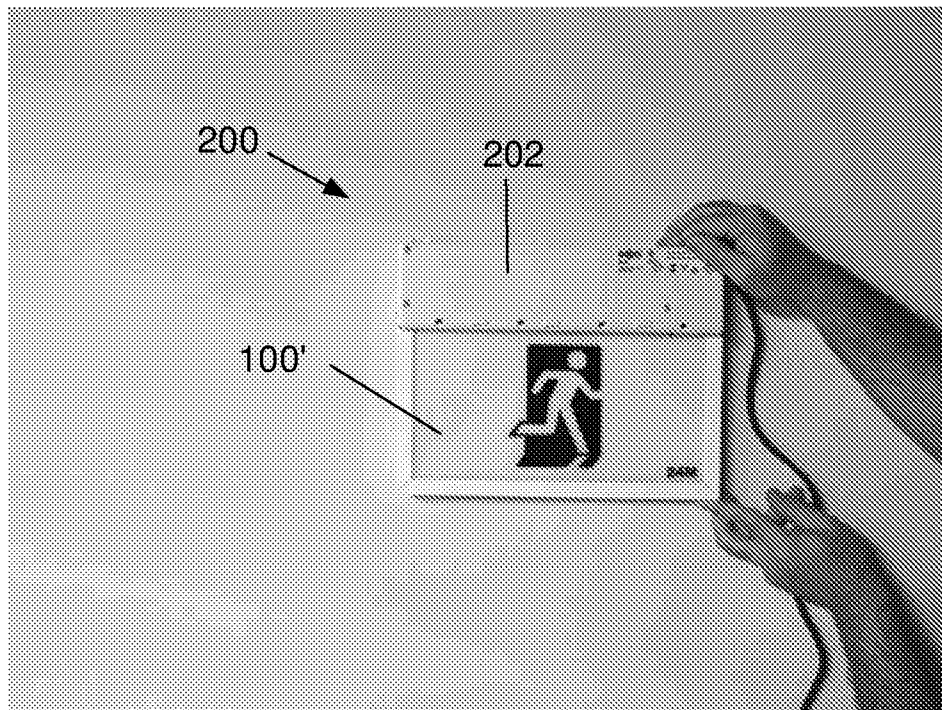


Figure 2a

200 →

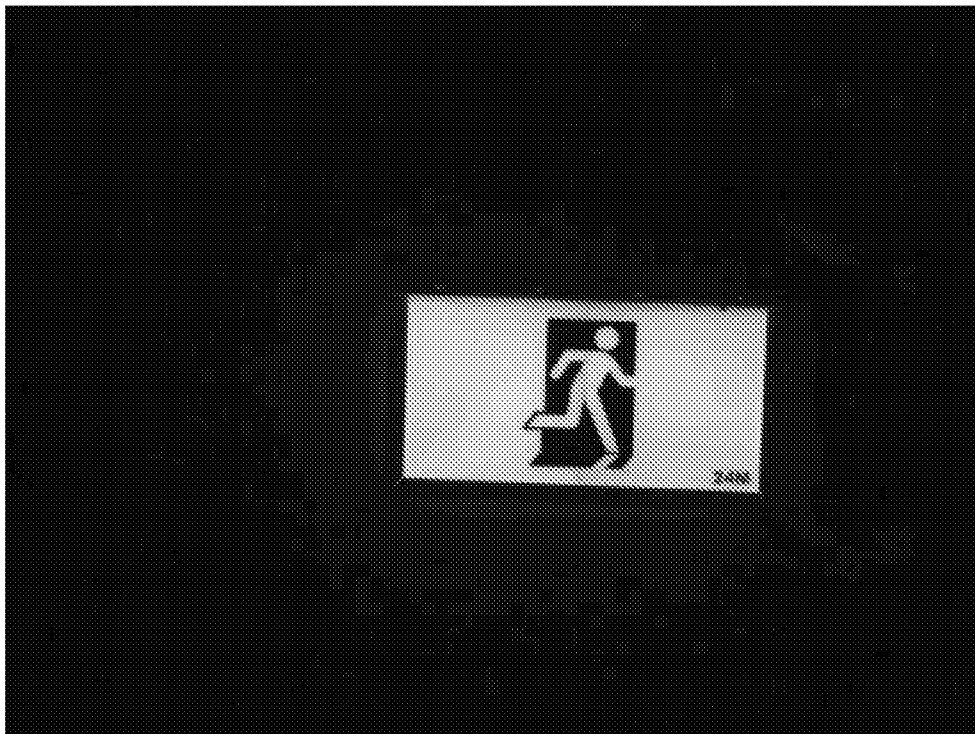
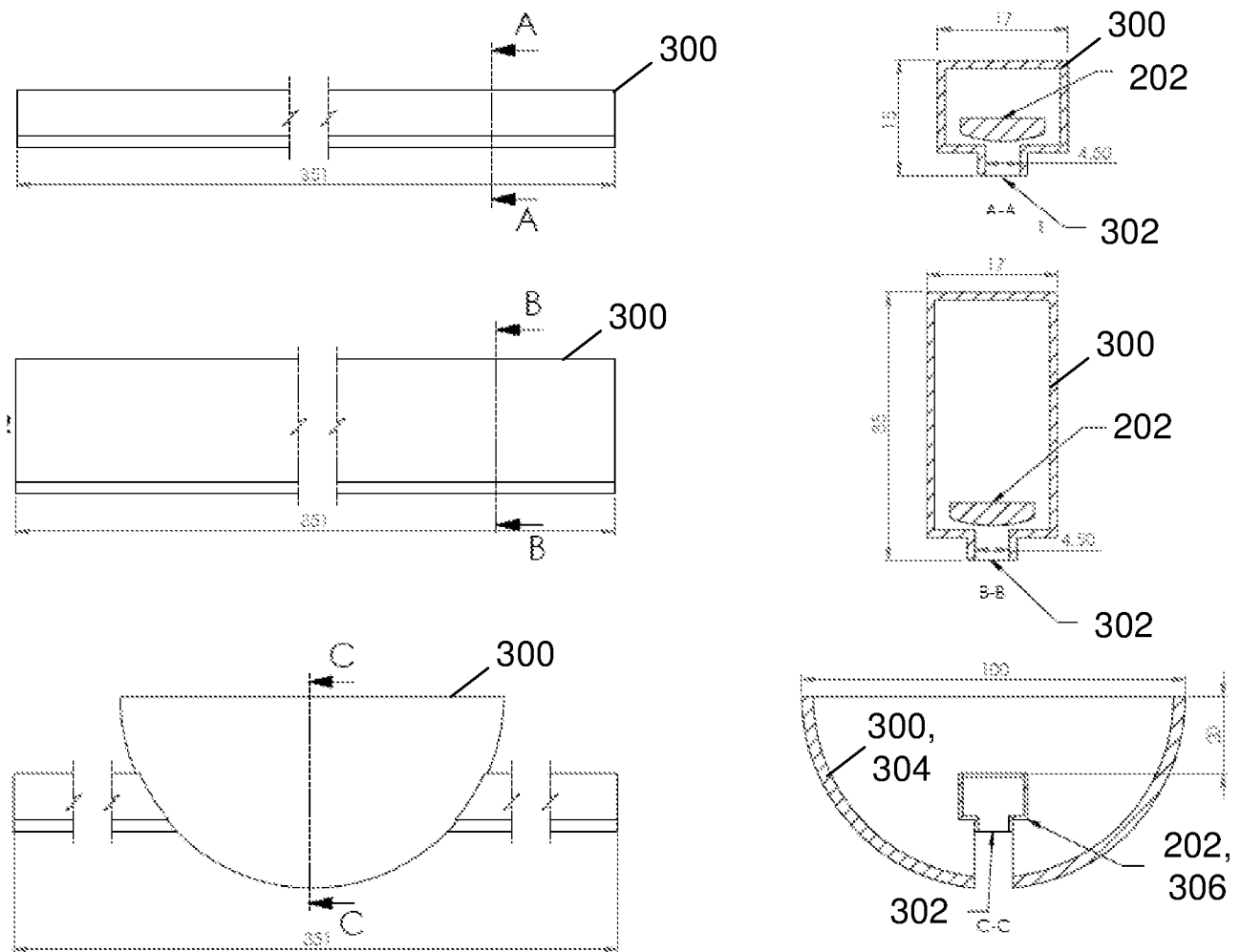
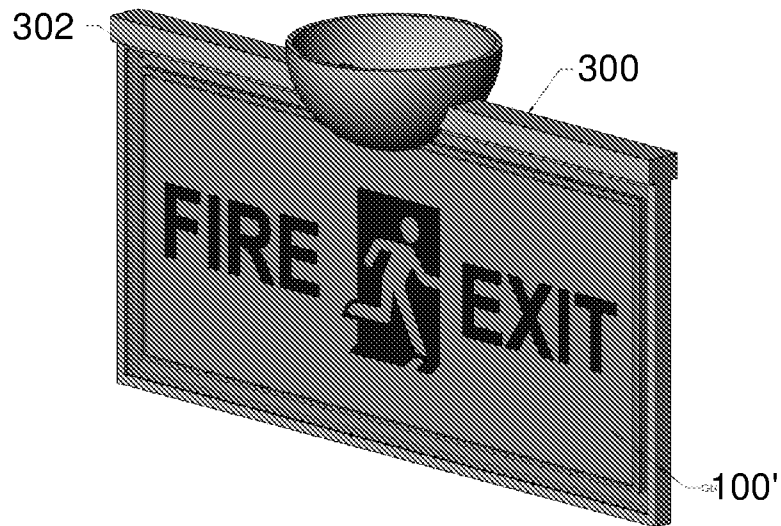


Figure 2b





100'

Figure 5a



Figure 5b

100' 



100' 

Figure 5c

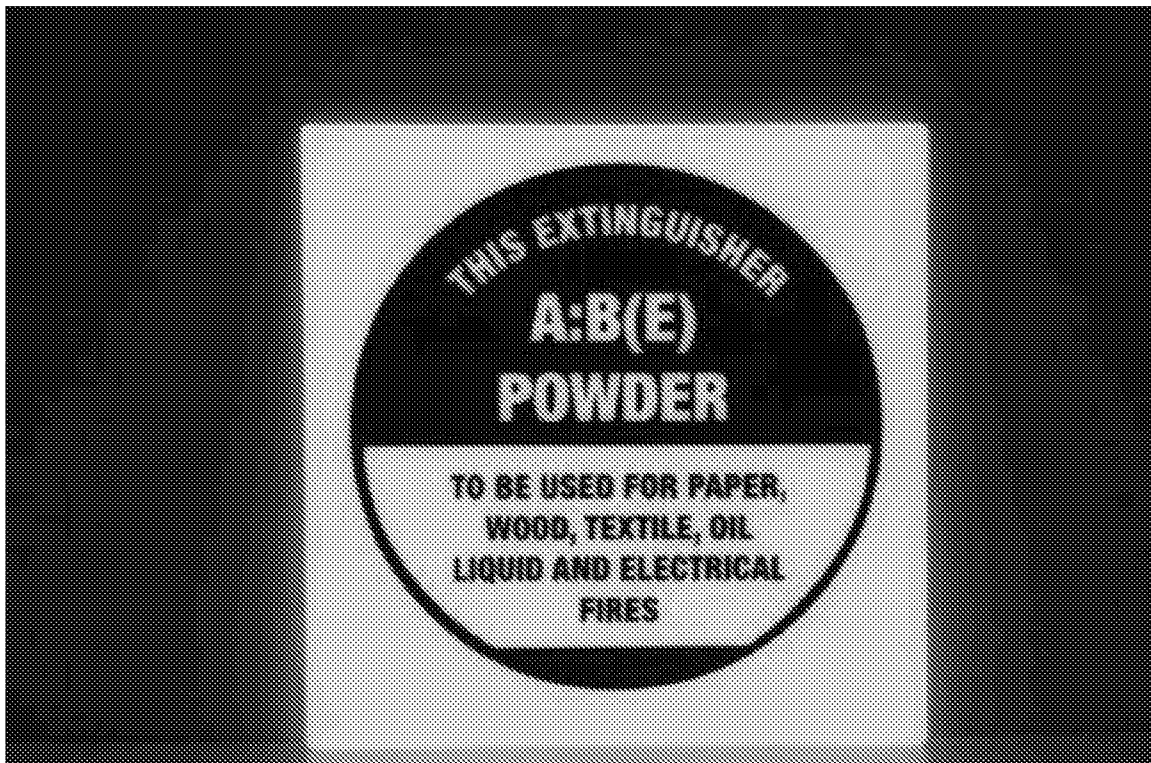


Figure 5d

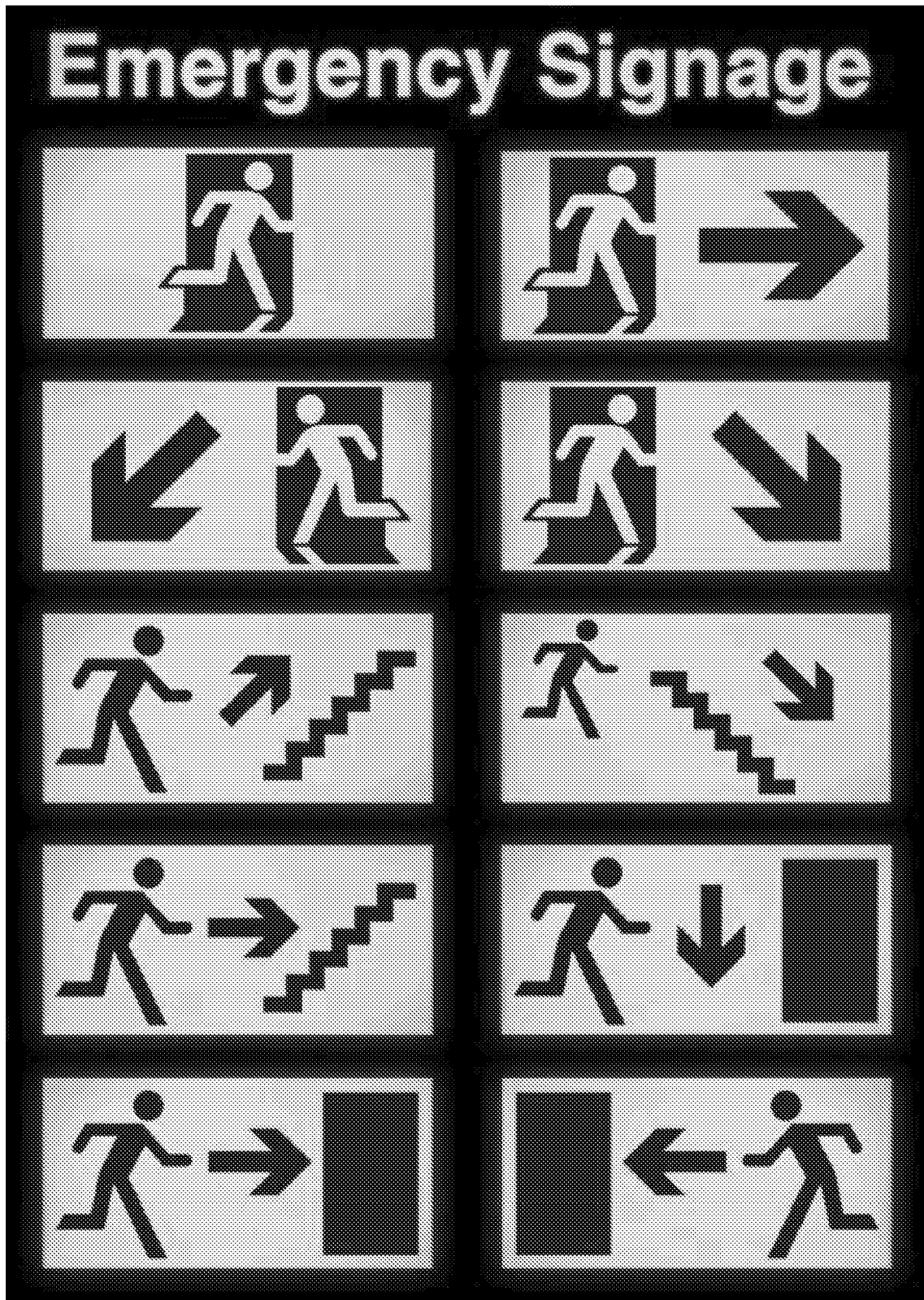
100' 

Figure 5e

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2016/051245

A. CLASSIFICATION OF SUBJECT MATTER

G09F 13/00 (2006.01) G09F 13/18 (2006.01) G09F 13/20 (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)

Databases: WPIAP, EPODOC, INSPEC, NPL, TXTE, Google Patents, and Google Scholar.

IPC/CPC: G09F 13/00, G09F 13/18, G09F 2013/049, G09F 13/0409, G09F 13/005, G09 F13/20

Keywords: sign, advertisement, exit, luminescence, phosphorescence, illumination, polymer, plastic, frame, edge, border, lighting, led, active, passive, AC, power, ambient, timer, controller, diffuser, scatter, disperse, mix and similar terms.

Applicant(s)/Inventor(s) name searched done in Lens, AusPat, and in internal databases provided by IP Australia.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	



Further documents are listed in the continuation of Box C



See patent family annex

* "A"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent but published on or after the international filing date	"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
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 11 April 2017		Date of mailing of the international search report 11 April 2017	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaustralia.gov.au		Authorised officer Ronaldo Sanchez AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. 0262832653	

INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		PCT/AU2016/051245
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012/0227296 A1 (ROBERTS et al.) 13 September 2012 See the whole document in particular the abstract; figs 1-11; and para 0005, 0006, 0024, 0025-0029, 0032, 0033, 0037, 0040, 0044.	1-34
X	US 2007/0031097 A1 (HEIKENFELD et al.) 08 February 2007 See the whole document in particular the abstract; fig 1-31; and para 0002, 0008-0012, 0042.	1-34
X	US 2001/0049893 A1 (MAAS et al.) 13 December 2001 See the whole document in particular the abstract; figs 1A-5B; and para 0001-0006, 0009-0016, 0023-0027, 0035, 0050-0051, 0055-0061, 0072-0080.	1-34
X	US 2013/0199064 A1 (SAF-T-GLO LIMITED) 08 August 2013 See the whole document in particular the abstract; figs 1-3; and para 0003, 0009-0028.	1-34
X	US 2003/0074818 A1 (BRADFORD) 24 April 2003 See the whole document in particular the abstract; figs 1-6; and para 0009-0011, 0031-0032.	1, 26-28
X	US 2006/0080873 A1 (RIOPEL et al.) 20 April 2006 See the whole document in particular the abstract; figs 1-5; and para 0002, 0007-0010, 0019-0028.	1, 26-28

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

INTERNATIONAL SEARCH REPORT		International application No.	
Information on patent family members		PCT/AU2016/051245	
This Annex lists known 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/s Cited in Search Report		Patent Family Member/s	
Publication Number	Publication Date	Publication Number	Publication Date
US 2012/0227296 A1	13 September 2012	US 2012227296 A1	13 Sep 2012
		US 2012102799 A1	03 May 2012
		US 2015007468 A2	08 Jan 2015
US 2007/0031097 A1	08 February 2007	US 2007031097 A1	08 Feb 2007
		US 7430355 B2	30 Sep 2008
		EP 1700147 A2	13 Sep 2006
		EP 1700147 B1	21 Oct 2009
		US 2005123243 A1	09 Jun 2005
		US 7123796 B2	17 Oct 2006
		WO 2005057261 A2	23 Jun 2005
		WO 2008039832 A2	03 Apr 2008
US 2001/0049893 A1	13 December 2001	US 2001049893 A1	13 Dec 2001
		US 6539656 B2	01 Apr 2003
		CN 1350683 A	22 May 2002
		EP 1161754 A1	12 Dec 2001
		EP 1161754 B1	06 Sep 2006
		JP 2003519810 A	24 Jun 2003
		JP 4741142 B2	03 Aug 2011
		TW 459213 B	11 Oct 2001
		US 2003046842 A1	13 Mar 2003
		US 6745506 B2	08 Jun 2004
		WO 0150444 A1	12 Jul 2001
US 2013/0199064 A1	08 August 2013	US 2013199064 A1	08 Aug 2013
		EP 2626850 A2	14 Aug 2013
		GB 2499894 A	04 Sep 2013
US 2003/0074818 A1	24 April 2003	US 2003074818 A1	24 Apr 2003
		US 6612055 B2	02 Sep 2003
		WO 03036598 A1	01 May 2003
US 2006/0080873 A1	20 April 2006	US 2006080873 A1	20 Apr 2006
		US 7412790 B2	19 Aug 2008
		CA 2521880 A1	15 Apr 2006
End of Annex			
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001. Form PCT/ISA/210 (Family Annex)(July 2009)			