

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property

Organization

International Bureau

(43) International Publication Date

24 September 2020 (24.09.2020)



(10) International Publication Number

WO 2020/186331 A1

(51) International Patent Classification:

A61F 13/495 (2006.01) A61F 13/49 (2006.01)

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(21) International Application Number:

PCT/CA2020/000028

Published:

— with international search report (Art. 21(3))

(22) International Filing Date:

16 March 2020 (16.03.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/819,132 15 March 2019 (15.03.2019) US

(71) Applicant: EASYDAY HEALTH PRODUCTS INC.

[CA/CA]; 10 rue Gaston-Dumoulin, Suite 400, Blainville, Quebec J7C 0A3 (CA).

(72) Inventors: STEFU, Cristian; c/o EasyDay Health Products Inc., 10 rue Gaston-Dumoulin, Suite 400, Blainville, Quebec J7C 0A3 (CA). HIDISAN, Ioana Mihaela; c/o EasyDay Health Products Inc., 10 rue Gaston-Dumoulin, Suite 400, Blainville, Quebec J7C 0A3 (CA). RACINE, Regent; c/o EasyDay Health Products Inc., 10 rue Gaston-Dumoulin, Suite 400, Blainville, Quebec J7C 0A3 (CA).

(74) Agent: PRAXIS; 410 - 1500 Du Collège, Montréal, Québec H4L 5G6 (CA).

(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, JO, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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, 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,

(54) Title: DIAPER WITH COLLECTION POUCH

(57) Abstract: A diaper comprises a bottom layer and a top layer mounted thereto. The bottom layer defines a top surface and an opposite outer surface and comprises an absorbent core therebetween. The top layer is mounted to the bottom layer about a peripheral border thereof. The top layer defines a top layer area delimited by the peripheral border overlying the top surface and being unconnected to the bottom layer. The top layer area, the top surface and the peripheral border define a pouch therebetween. The top layer area defines a body contacting surface and an opening for providing access to the pouch. When the diaper is worn by the user, the opening is positioned about the anus of a user for providing for fecal matter to enter the pouch during defecation.



WO 2020/186331 A1

TITLE

DIAPER WITH COLLECTION POUCH

5 CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority on United States Provisional Patent Application No. 62/819,132 filed on March 15, 2019 and being incorporated herein by reference in its entirety.

TECHNICAL FIELD

10 [0002] The present disclosure generally relates to diapers. More particularly but not exclusively the present disclosure relates to a diaper with a collection pouch.

BACKGROUND

[0003] Diapers include both disposable baby diapers and adult diapers. Diapers can be necessary for adults with various conditions, such as incontinence, mobility impairment, severe diarrhea or dementia. A diaper is a type of underwear that allows the wearer to defecate or urinate without the use of a toilet, by absorbing or containing waste products to prevent soiling of outer clothing or the external environment. When diapers become soiled, they require changing, generally by a second person such as a parent or a caregiver. Diapers have a facing layer to be brought into contact with the wearer's skin, an absorbent panel adjacent thereto, and a water-impervious or a water repellant outer layer. Following defecation, prolonged contact of feces with the wearer's skin may have adverse health consequences such as rashes or infections. For caregivers, changing the soiled diapers of adult patients poses many practical challenges as the task is usually extremely messy with fecal matter spilling out of the diapers and onto the sheets of

15
20
25

the patient's bed. The ordeal worsens with patients suffering with severe diarrhea and other digestive issues.

OBJECTS

5 [0004] An object of the present disclosure is to provide a diaper with a collection pouch.

SUMMARY

10 [0005] In accordance with an aspect of the present disclosure, there is provided a diaper comprising: a bottom layer defining a top surface and an opposite outer surface and comprising an absorbent core therebetween; and a top layer mounted to the bottom layer about a peripheral border thereof defining a top layer area delimited by the peripheral border overlying the top surface and being unconnected to the bottom layer, the top layer area, the top surface and the peripheral border defining a pouch therebetween, the top layer area defining a body contacting surface and an opening for providing access to the pouch, wherein when 15 the diaper is worn by the user, the opening is positioned about the anus of a user for providing for fecal matter to enter the pouch during defecation.

20 [0006] In an embodiment, the opening is surrounded by a border. In an embodiment, the top layer area comprises a lip defining the border and upwardly protruding therefrom and circumscribing the opening. In an embodiment, the lip portion is formed by rolled up material. In an embodiment, the top layer comprises a region of flexible and resilient material for upwardly protruding the border therefrom. In an embodiment, the border is so configured and sized as to be positioned within the intergluteal cleft.

[0007] In an embodiment, the top layer is spaced from the top surface of the bottom layer. In an embodiment, the top layer has a top layer surface area and the bottom layer has a bottom layer surface area, the top layer surface area being smaller than the bottom layer surface area. In an embodiment, an underside surface interfacing with the top layer of the bottom surface, the peripheral border defining an inner contour surface at a junction of the underside surface and the top surface of the bottom layer. In an embodiment, at least one of the underside surface, the top surface of the bottom layer and the inner contour surface comprises impermeable material.

10 [0008] In an embodiment, the diaper further comprises a closure for closing the opening following defecation within the pouch. In an embodiment, the closure comprises an adhesive strip of material. In an embodiment, the closure comprises a drawstring fitted within a border surrounding the opening, the border defining border apertures for opposite ends of the drawstring to protrude therefrom for being
15 pulled to close the opening.

[0009] In accordance with an aspect of the present disclosure there is provided a diaper kit comprising a plurality of any one of the above diapers.

[0010] Other objects, advantages and features of the present disclosure will become more apparent upon reading of the following non-restrictive description of illustrative embodiments thereof, given by way of example only with reference to the
20 accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] In the appended drawings:

[0012] Figure 1 is a top plan view of the diaper in accordance with a non-restrictive illustrative embodiment of the present disclosure;

[0013] Figure 2 is a bottom view of the diaper of Figure 1;

[0014] Figure 3 is lateral sectional view taken about the central axis along
5 the length of the diaper of Figure 1;

[0015] Figure 4 is a top plan view of a diaper in accordance with another non-restrictive illustrative embodiment of the present disclosure;

[0016] Figure 5 is a top plan view of the diaper of Figure 4 following usage.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

10 [0017] Generally stated and in accordance with an aspect of the present disclosure, there is provided a diaper comprising a bottom layer and a top layer mounted thereto. The bottom layer defines a top surface and an opposite outer surface and comprises an absorbent core therebetween. The top layer is mounted to the bottom layer about a peripheral border thereof. The top layer defines a top
15 layer area delimited by the peripheral border overlying the top surface and being unconnected to the bottom layer. The top layer area, the top surface and the peripheral border define a pouch therebetween. The top layer area defines a body contacting surface and an opening for providing access to the pouch. When the diaper is worn by the user, the opening is positioned about the anus of a user for
20 providing for fecal matter to enter the pouch during defecation.

[0018] With reference to Figures 1 to 5, non-restrictive illustrative embodiment of the present disclosure will now be described.

[0019] Referring to Figures 1 to 3, the diaper 10 has a generally rectangular shape with front and rear edges 12 and 14, respectively, lateral aides 16A and 16B, an inner surface contacting side 18 and an outer side 20.

5 [0020] Each lateral side 16A and 16B has an inwardly curving edges 22A and 22B respectively. Inwardly curved edge 22A is positioned between lateral end edges 21A and 23A, respectively positioned near edges 12 and 14. Similarly, inwardly curved edge 22B is positioned between lateral end edges 21B and 23B, respectively positioned near edges 12 and 14.

[0021] The diaper includes a rear portion 24 (generally formed between
10 later end edges 21A and 21B), a mid portion 26 (generally formed between inwardly curved edges 22A and 22B) and a front portion 28 (generally formed between lateral end edges 23A and 23B). Tabs 30 extend from the lateral edges 21A and 21B for being fastened to the outer side 20 of the front position 28 thereby attaching the diaper around a user's waist and providing for the rear and front portions 24 and 26
15 to cover the rear and front of the wearer with the mid portion 26 extending therebetween. Of course, belt loops instead of tabs 30 may be used. The inwardly curving edges 22A and 22B are designed to fit around a user's legs and thereby provide a snug fit.

[0022] As shown the inner side 18 defines an opening 32 at the mid
20 portion 26 providing access to a pouch 34.

[0023] The diaper 10 includes a top layer 36 with a bottom layer 38 mounted thereto about a peripheral border 40 thereof defining the pouch 34 therebetween.

[0024] The bottom layer 38 includes a top surface 42, an opposite outer
25 surface 44 with an absorbent core 48 therebetween. The surfaces 42 and 44 and

the core 48 are fused together to form a single layer laminate 38. The outer surface 44 includes elastic material 50 causing the diaper to have a c-shaped curved body form between edges 12 and 14.

5 **[0025]** The top layer 36 defines a top layer area 52 delimited by the peripheral border 40. The top layer 36 is unconnected to the bottom layer 38 and as thus loosely overlies the top surface 42 of the bottom layer 38. The opening 32 is formed in the top layer area 52 providing access to the pouch 34. The top layer 36 includes an undersurface 55.

10 **[0026]** The undersurface 55 of the top layer 36 and the top surface 42 of the bottom layer 38 are connected at a contour portion 57 near the border 40 defining an inner contour surface 57'. The pouch 34 is thus delimited by surfaces 42, 55 and 57'. The bottom layer top surface 42 defines the bottom border to the pouch 34. The top layer undersurface 55 defines the top border of the pouch 34. The contour portion inner surface 57' defined the peripheral border of the pouch 34
15 and is at a junction between the underside surface 55 and the top surface 42 of the bottom layer 38. In an embodiment, surfaces 42, 55 and 57' are made of impermeable material.

20 **[0027]** The top layer 36 has a smaller surface area than the bottom layer 38 and as such when mounted thereto at its border 40, the top layer area 52 is stretched causing it to rise upwardly and be spaced above the top surface 42 of the bottom layer 38 bringing the opening 32 upward towards the wearer. The foregoing is further aided by the elastic material 50 which causes the c-shaped configuration of the bottom layer 38. The foregoing configuration and the disposition of the opening 32 provides for positioning the opening 32 about the anus of the wearer for
25 fecal matter to be guided therethrough during defecation.

[0028] A lip 54 circumscribes the opening 32. The lip 54 is provided by rolled up material 56 upwardly protruding from the top layer area 52. The lip 54 may be so configured and sized so as to be positioned in the intergluteal cleft. The configuration of the diaper 10 due to the differential in the surface area between the top 36 and bottom 38 layers provides for urging the lip 54 about the anus of the wearer for providing to guide fecal matter through the opening 32 and into the pouch 34 during defecation.

[0029] The fecal matter thus fills the pouch 34 formed between the top and bottom layers, 36 and 38, respectively. The lip 54 thus forms a border that substantially blocks spillage of fecal matter onto the top layer surface area 52.

[0030] The diaper 10 provided for the fecal matter to not be in direct contact with the skin of the wearer post defecation and prior removal of the diaper. Moreover, during removal of diaper 10 following defecation, there is less risk of the caregiver coming into direct contact with the fecal matter as it is all or mostly in the pouch 34. The diaper 10 may be provided with a closure for closing the opening 32 post usage to further avoid outward spillage.

[0031] In an embodiment, the closure includes a strip of adhesive material 58 shown in Figure 5 for covering the opening 32. In an embodiment and with reference to Figure 1, the closure is a drawstring 60 positioned within the open center 62 of the rolled up material 56. The lip 54 defines the border of the opening 32. The drawstring 60 has two opposite ends 64A and 64B protruding from openings or apertures 66A and 66B in the lip 54 allowing the caregiver to pull on them to close the opening 32.

[0032] Figures 4 and 5 show a diaper 10' with an opening 32' having an elongate slit like configuration.

[0033] Figure 4 shows the diaper 10' prior use and Figure 5 shows the diaper 10' post-use containing fecal matter. Figure 4 shows the border 54' of the opening 32' being surrounded by a region flexible and resilient material 70 that upwardly biases the border 54' towards the anus of the wearer as previously explained. The material 70 can comprises elastomeric material for example covered
5 by a soft surface material so as not to irritate the user. The caregiver can close the opening 32' with an adhesive strip of material 58 as discussed above.

[0034] The diapers 10 and 10' can be made of a variety of suitable materials and designed in a variety of suitable configurations within the context of
10 the present disclosure.

[0035] The various features described herein can be combined in a variety of ways within the context of the present disclosure so as to provide still other embodiments. As such, the embodiments are not mutually exclusive. Moreover, the embodiments discussed herein need not include all of the features and elements
15 illustrated and/or described and thus partial combinations of features can also be contemplated. Furthermore, embodiments with less features than those described can also be contemplated. It is to be understood that the present disclosure is not limited in its application to the details of construction and parts illustrated in the accompanying drawings and described hereinabove. The disclosure is capable of
20 other embodiments and of being practiced in various ways. It is also to be understood that the phraseology or terminology used herein is for the purpose of description and not limitation. Hence, although the present disclosure has been provided hereinabove by way of non-restrictive illustrative embodiments thereof, it can be modified, without departing from the scope, spirit and nature thereof and of
25 the appended claims.

WHAT IS CLAIMED IS:

1. A diaper comprising:
5 a bottom layer defining a top surface and an opposite outer surface and comprising an absorbent core therebetween; and
a top layer mounted to the bottom layer about a peripheral border thereof defining a top layer area delimited by the peripheral border overlying the top surface and being unconnected to the bottom layer, the top layer area, the top
10 surface and the peripheral border defining a pouch therebetween, the top layer area defining a body contacting surface and an opening for providing access to the pouch,
wherein when the diaper is worn by the user, the opening is positioned about the anus of a user for providing for fecal matter to enter the pouch
15 during defecation.
2. A diaper according to claim 1, wherein the opening is surrounded by a border.
- 20 3. A diaper according to claim 2, wherein the top layer area comprises a lip defining the border and upwardly protruding therefrom and circumscribing the opening.
4. A diaper according to claim 3, wherein the lip portion is formed
25 by rolled up material.
5. A diaper according to any one of claims 2 to 4, wherein the top layer comprises a region of flexible and resilient material for upwardly protruding the

border therefrom.

6. A diaper according to any one of claims 2 to 5, wherein the border is so configured and sized as to be positioned within the intergluteal cleft.

5

7. A diaper according to any one of claims 1 to 6, wherein the top layer is spaced from the top surface of the bottom layer.

8. A diaper according to any one of claims 1 to 7, wherein the top layer has a top layer surface area and the bottom layer has a bottom layer surface area, the top layer surface area being smaller than the bottom layer surface area.

10

9. A diaper according to any one of claims 1 to 8, wherein the top layer defines an underside surface interfacing with the top layer of the bottom surface, the peripheral border defining an inner contour surface at a junction of the underside surface and the top surface of the bottom layer.

15

10. A diaper according to claim 9, wherein at least one of the underside surface, the top surface of the bottom layer and the inner contour surface comprises impermeable material.

20

11. A diaper according to any one of claims 1 to 10, further comprising a closure for closing the opening following defecation within the pouch.

25

12. A diaper according to claim 11, wherein the closure comprises an adhesive strip of material.

13. A diaper according to claim 11, wherein the closure comprises

a drawstring fitted within a border surrounding the opening, the border defining border apertures for opposite ends of the drawstring to protrude therefrom for being pulled to close the opening.

- 5 14. A diaper kit comprising:
 a plurality of the diaper of any one of claims 1 to 13.

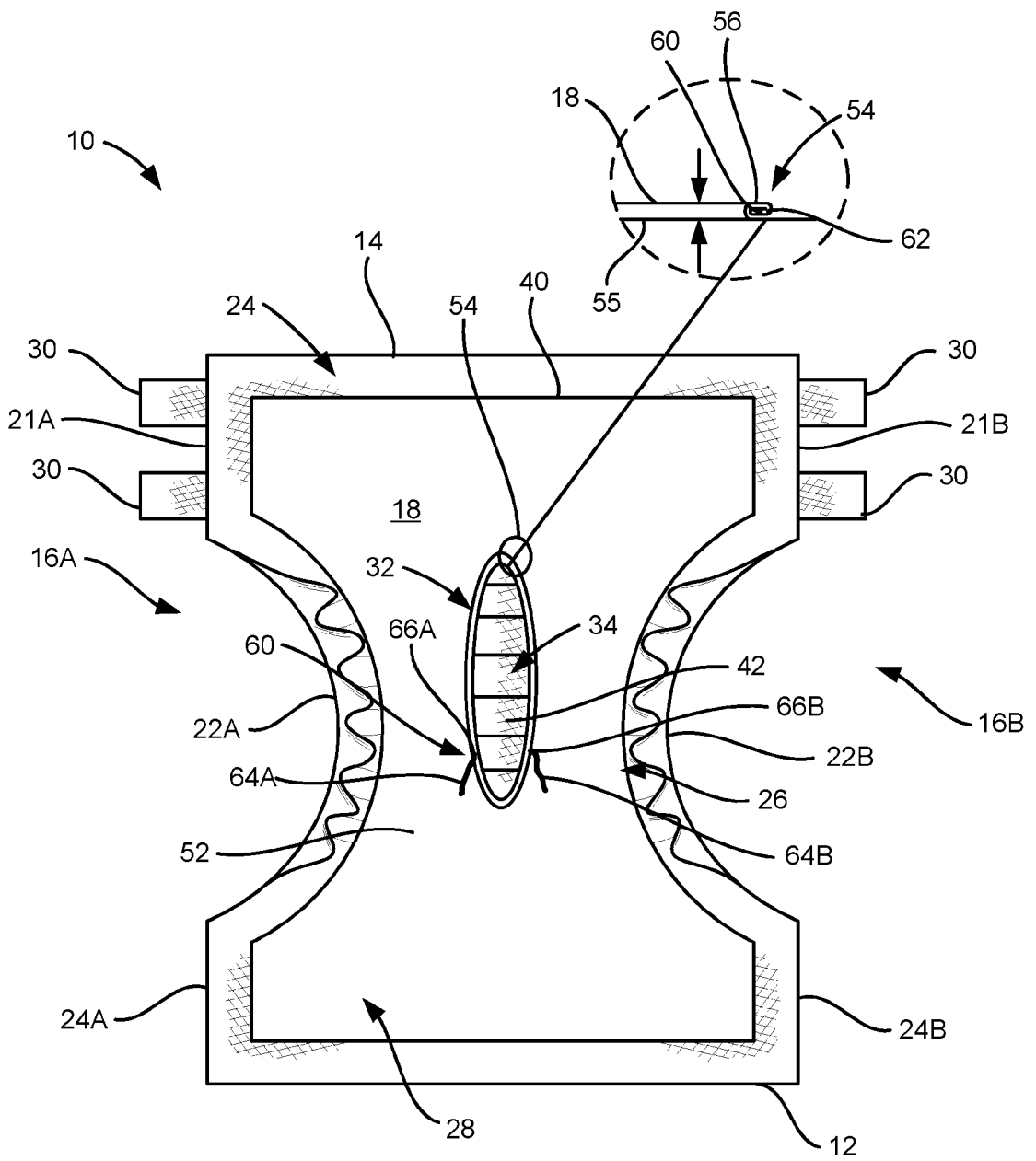


FIG.1

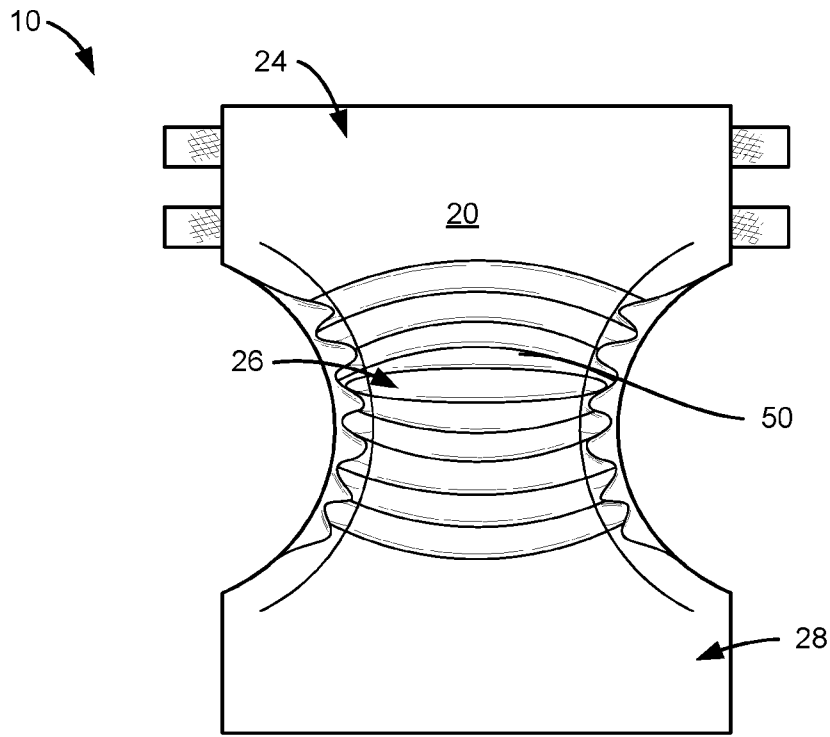


FIG. 2

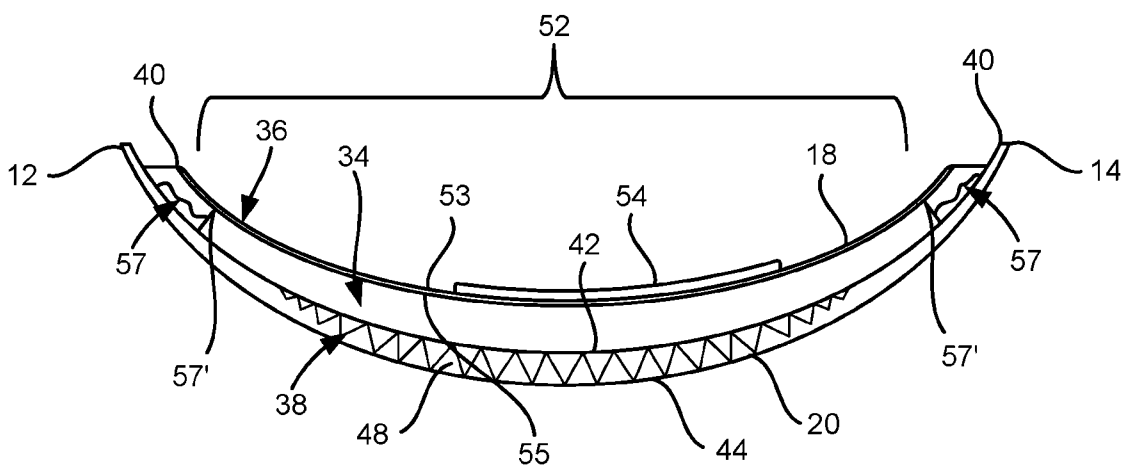


FIG. 3

3/3

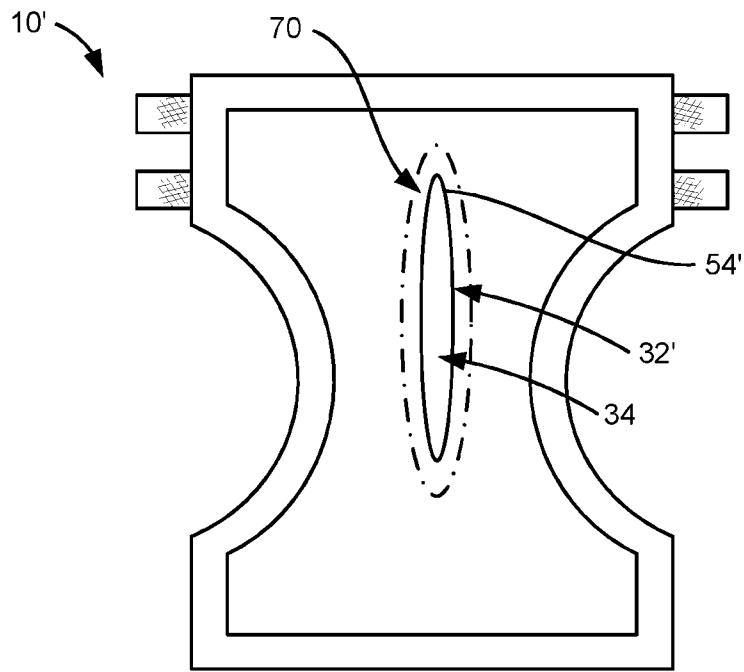


FIG. 4

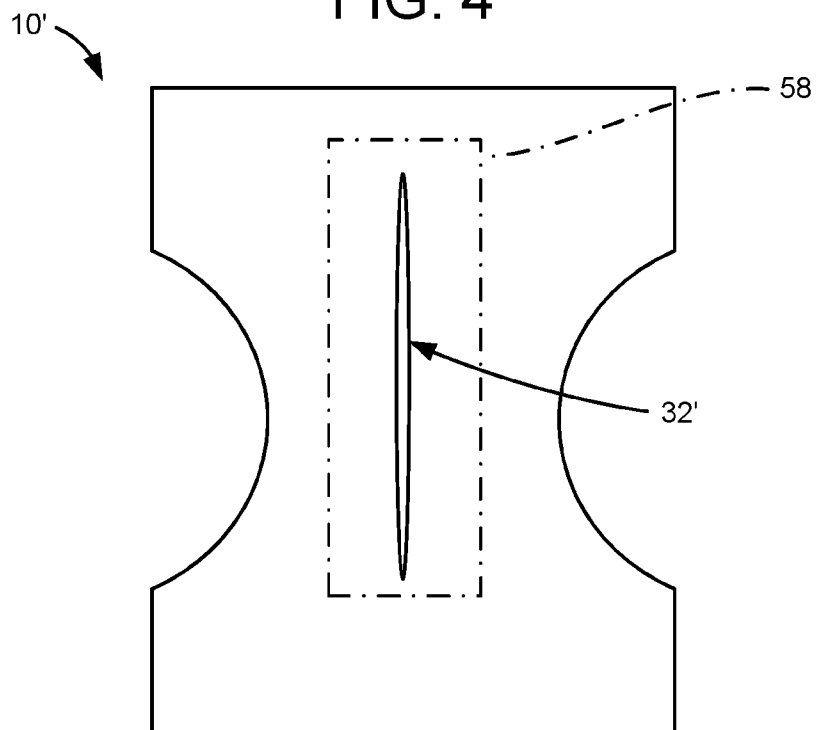


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2020/000028A. CLASSIFICATION OF SUBJECT MATTER
IPC: *A61F 13/495* (2006.01), *A61F 13/49* (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: *A61F 13* (2006.01)

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

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Questel Orbit FamPat

Keywords: diaper, fecal, pouch, pocket, closure, drawstring, opening, aperture, hole, passage, slit, cavity, roll, rolled, lip, material, void, space, closure, seal, retain, adhesive, tape, strip, feces, faecal, excre+, poo+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US6458114B1 (MISHIMA, Y. et al.) 1 October 2002 (01-10-2002) *Entire Document*	1-10
X	US5514121A (ROE, D.C. et al.) 7 May 1996 (07-05-1996) *Entire Document*	1-5, 7, 8, 11-14
X	JP2005160834A (WADA, I. et al.) 23 June 2005 (23-06-2005) *Entire Document*	1-6, 8
X	US6248098B1 (SAYAMA, Y.) 19 June 2001 (19-06-2001) *Entire Document*	1-3, 5-10

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	“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
“A” document defining the general state of the art which is not considered to be of particular relevance	“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
“D” document cited by the applicant in the international application	“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
“E” earlier application or patent but published on or after the international filing date	“&” document member of the same patent family
“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)	
“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	

Date of the actual completion of the international search
17 June 2020 (17-06-2020)Date of mailing of the international search report
17 June 2020 (17-06-2020)Name and mailing address of the ISA/CA
Canadian Intellectual Property Office
Place du Portage I, C114 - 1st Floor, Box PCT
50 Victoria Street
Gatineau, Quebec K1A 0C9
Facsimile No.: 819-953-2476Authorized officer

Allison Bramwell (819) 639-6865

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA2020/000028

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US20120238985A1 (SCHMITZ, C.) 20 September 2012 (20-09-2012) *Entire Document*	1, 2, 5-10
X	US4990147A (FREELAND, M.E.) 5 February 1991 (05-02-1991) *Entire Document*	1, 2, 6-10

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CA2020/000028

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US6458114B1	01 October 2002 (01-10-2002)	CA2316754A1	03 March 2001 (03-03-2001)
		CA2316754C	10 June 2003 (10-06-2003)
		CN1286972A	14 March 2001 (14-03-2001)
		CN1132560C	31 December 2003 (31-12-2003)
		DE60040712D1	18 December 2008 (18-12-2008)
		EP1080707A2	07 March 2001 (07-03-2001)
		EP1080707A3	16 August 2001 (16-08-2001)
		EP1080707B1	05 November 2008 (05-11-2008)
		ID28132A	03 May 2001 (03-05-2001)
		JP2001070342A	21 March 2001 (21-03-2001)
		JP3557133B2	25 August 2004 (25-08-2004)
		KR20010030233A	16 April 2001 (16-04-2001)
		KR100661887B1	28 December 2006 (28-12-2006)
		TW450080U	11 August 2001 (11-08-2001)
US5514121A	07 May 1996 (07-05-1996)	AU4415596A	26 June 1996 (26-06-1996)
		BR9509868A	25 November 1997 (25-11-1997)
		CA2205862A1	13 June 1996 (13-06-1996)
		CA2205862C	24 April 2001 (24-04-2001)
		CN1173124A	11 February 1998 (11-02-1998)
		DE69518662D1	05 October 2000 (05-10-2000)
		DE69518662T2	03 May 2001 (03-05-2001)
		EP0796069A1	24 September 1997 (24-09-1997)
		EP0796069B1	30 August 2000 (30-08-2000)
		ES2149389T3	01 November 2000 (01-11-2000)
		HK1003365A1	27 April 2001 (27-04-2001)
		JPH10512768A	08 December 1998 (08-12-1998)
		JP3665075B2	29 June 2005 (29-06-2005)
		KR100244607B1	15 February 2000 (15-02-2000)
		MX9704221A	30 September 1997 (30-09-1997)
		MY131682A	30 August 2007 (30-08-2007)
		TW302280B	11 April 1997 (11-04-1997)
		US5667503A	16 September 1997 (16-09-1997)
		US5795347A	18 August 1998 (18-08-1998)
US5795348A	18 August 1998 (18-08-1998)		
WO9617572A1	13 June 1996 (13-06-1996)		
ZA9510457B	30 May 1996 (30-05-1996)		
JP2005160834A	23 June 2005 (23-06-2005)	JP4476608B2	09 June 2010 (09-06-2010)
US6248098B1	19 June 2001 (19-06-2001)	AU8833398A	29 April 1999 (29-04-1999)
		AU747143B2	09 May 2002 (09-05-2002)
		BR9804175A	07 December 1999 (07-12-1999)
		CA2249782A1	08 April 1999 (08-04-1999)
		CA2249782C	19 November 2002 (19-11-2002)
		CN1214235A	21 April 1999 (21-04-1999)
		CN1189139C	16 February 2005 (16-02-2005)
		DE69828931D1	17 March 2005 (17-03-2005)
		DE69828931T2	19 January 2006 (19-01-2006)
		EP0908162A2	14 April 1999 (14-04-1999)
		EP0908162A3	22 December 1999 (22-12-1999)
		EP0908162B1	09 February 2005 (09-02-2005)
		ID21018A	08 April 1999 (08-04-1999)
		JPH11113958A	27 April 1999 (27-04-1999)
		JP3406205B2	12 May 2003 (12-05-2003)
		KR19990036930A	25 May 1999 (25-05-1999)
KR100604165B1	05 December 2006 (05-12-2006)		

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA2020/000028

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
		MY121723A	28 February 2006 (28-02-2006)
		SG81939A1	24 July 2001 (24-07-2001)
		TW410599U	01 November 2000 (01-11-2000)
US2012238985A1	20 September 2012 (20-09-2012)	US9161866B2	20 October 2015 (20-10-2015)
		AU2010323162A1	24 May 2012 (24-05-2012)
		AU2010323162B2	17 April 2014 (17-04-2014)
		BR112012011497A2	24 September 2019 (24-09-2019)
		CN102655830A	05 September 2012 (05-09-2012)
		CN102655830B	01 June 2016 (01-06-2016)
		CN102665627A	12 September 2012 (12-09-2012)
		CN102665627B	02 April 2014 (02-04-2014)
		EP2424479A2	07 March 2012 (07-03-2012)
		EP2424479B1	03 July 2013 (03-07-2013)
		EP2503973A1	03 October 2012 (03-10-2012)
		EP2503973B1	17 February 2016 (17-02-2016)
		GB0920571D0	06 January 2010 (06-01-2010)
		GB2475563A	25 May 2011 (25-05-2011)
		GB201004733D0	05 May 2010 (05-05-2010)
		GB2475572A	25 May 2011 (25-05-2011)
		GB201007486D0	16 June 2010 (16-06-2010)
		GB2475575A	25 May 2011 (25-05-2011)
		GB201016540D0	17 November 2010 (17-11-2010)
		GB2475589A	25 May 2011 (25-05-2011)
		GB201016544D0	17 November 2010 (17-11-2010)
		GB2475590A	25 May 2011 (25-05-2011)
		JP2013511312A	04 April 2013 (04-04-2013)
		JP5930403B2	08 June 2016 (08-06-2016)
		MX2012005889A	07 September 2012 (07-09-2012)
		MX337146B	15 February 2016 (15-02-2016)
		US2012277712A1	01 November 2012 (01-11-2012)
		WO2011064272A2	03 June 2011 (03-06-2011)
		WO2011064272A3	21 July 2011 (21-07-2011)
		WO2011064275A1	03 June 2011 (03-06-2011)
US4990147A	05 February 1991 (05-02-1991)	AR243765A1	30 September 1993 (30-09-1993)
		AT104842T	15 May 1994 (15-05-1994)
		AU3680593A	03 June 1993 (03-06-1993)
		AU662401B2	31 August 1995 (31-08-1995)
		AU4095289A	08 March 1990 (08-03-1990)
		BR8904449A	17 April 1990 (17-04-1990)
		CA1332094C	27 September 1994 (27-09-1994)
		CN1040740A	28 March 1990 (28-03-1990)
		CN1020067C	17 March 1993 (17-03-1993)
		DE68914923D1	01 June 1994 (01-06-1994)
		DE68914923T2	29 September 1994 (29-09-1994)
		DE68914923T3	27 February 2003 (27-02-2003)
		DK429289D0	31 August 1989 (31-08-1989)
		DK429289A	03 March 1990 (03-03-1990)
		EG18812A	30 April 1994 (30-04-1994)
		EP0359410A1	21 March 1990 (21-03-1990)
		EP0359410B1	27 April 1994 (27-04-1994)
		EP0359410B2	10 July 2002 (10-07-2002)
		ES2051369T3	16 June 1994 (16-06-1994)
		ES2051369T5	01 December 2002 (01-12-2002)
		FI894114A	03 March 1990 (03-03-1990)
		FI95652B	30 November 1995 (30-11-1995)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA2020/000028

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
		FI95652C	11 March 1996 (11-03-1996)
		HK156196A	23 August 1996 (23-08-1996)
		IE892826L	02 March 1990 (02-03-1990)
		IE62812B1	08 March 1995 (08-03-1995)
		JPH02121662A	09 May 1990 (09-05-1990)
		JP2825545B2	18 November 1998 (18-11-1998)
		KR900004285A	12 April 1990 (12-04-1990)
		KR0134190B1	18 April 1998 (18-04-1998)
		MA21623A1	01 April 1990 (01-04-1990)
		MX167059B	01 March 1993 (01-03-1993)
		NZ230528A	23 December 1992 (23-12-1992)
		PH26143A	18 March 1992 (18-03-1992)
		PT91605A	30 March 1990 (30-03-1990)
		PT91605B	18 July 1995 (18-07-1995)
		SA46B1	12 February 2002 (12-02-2002)
		TR23977A	14 January 1991 (14-01-1991)