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(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, 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, KN, KP, KR, 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.

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Published:

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

[Continued on next page]

(54) Title: SEGMENTED AND NON-SEGMENTED TRANSFER TAPES, ARTICLES THEREFROM AND METHOD OF MAKING AND USE THEREOF

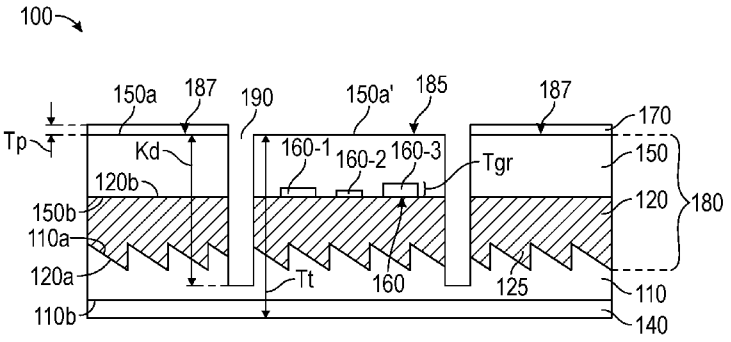

FIG. 1A

(57) Abstract: The present disclosure relates to transfer tapes, segmented (100) and non-segmented (800) which include at least one graphics layer. The transfer tapes include a removable template layer (110), a transfer layer (180) which includes a backfill layer (120), having at least one first graphics layer (140), and an adhesive layer (150). Segmented transfer tapes further at least one transferable segment (185), at least one non-transferable segment (187) in the segmented transfer tape and include at least one kerf (190). The present disclosure also provides optical assemblies, e.g. micro-optical assemblies, which may be fabricated from the transfer tapes which include at least one graphics layer. The present disclosure also provides methods of forming the transfer tapes and methods of making the micro optical assemblies.

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— *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))*

(88) Date of publication of the international search report:
16 March 2017

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. H01L51/52 B32B3/30
ADD. G02B6/00 G03F7/20 B32B33/00 F21V8/00

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)
B32B G02B G03F H01L

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2014/099388 A1 (3M INNOVATIVE PROPERTIES CO [US]) 26 June 2014 (2014-06-26)	55-60
A	page 6, line 9 - line 10 page 10, line 20 - page 11, line 11 page 15, line 29 - line 32 figures 1-11B	1-21, 31-41

A	US 2013/051032 A1 (JONES V W; LAMANSKY S; LAMANSKY S A; LE H T; LE HA T; LE HA T T; NELSO) 28 February 2013 (2013-02-28) paragraphs [0017], [0018] figure 1	1-21, 31-41, 55-60

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

☒ 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

"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

"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
31 January 2017	06/02/2017

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Bataille, Laurent

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2016/037191

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2014099388 A1	26-06-2014	CN 104937695 A	23-09-2015
		EP 2936549 A1	28-10-2015
		KR 20150099814 A	01-09-2015
		US 2014175707 A1	26-06-2014
		US 2016096316 A1	07-04-2016
		US 2016375666 A1	29-12-2016
		WO 2014099388 A1	26-06-2014
US 2013051032 A1	28-02-2013	CN 103765625 A	30-04-2014
		EP 2748879 A1	02-07-2014
		JP 2014529169 A	30-10-2014
		KR 20140054317 A	08-05-2014
		SG 11201400175U A	28-03-2014
		TW 201314988 A	01-04-2013
		US 2013051032 A1	28-02-2013
		WO 2013032759 A1	07-03-2013

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/037191

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

1-21, 31-41, 55-60

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-21, 31-41

Segmented transfer tape

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2. claims: 22-30

Segmented transfer tape with micro-optical structures

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3. claims: 42-54

Micro-optical assembly with transparent glass substrate

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4. claims: 55-60

Non-segmented transfer tape with backfill layer transmitting 50% to 100% of incident light

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