



- (51) **International Patent Classification:**
B29C 59/02 (2006.01) *B29C 70/64* (2006.01)
B65D 33/00 (2006.01)
- (21) **International Application Number:**
PCT/HU2017/000029
- (22) **International Filing Date:**
20 April 2017 (20.04.2017)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
P1600341 26 May 2016 (26.05.2016) HU
- (71) **Applicant** (for AL, AU, BA, BE, CA, CH, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, JP, LT, LU, LV, MC, MK, MT, NL, NO, NZ, PL, PT, SE, SI, SK, SM, US only): **FLEXINNOVA KFT** [HU/HU]; Nyírfu u. 17., HU-2151 Fót (HU).
- (71) **Applicant** (for all designated States except AL, AU, BA, BE, CA, CH, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, JP, LT, LU, LV, MC, MK, MT, NL, NO, NZ, PL, PT, SE, SI, SK, SM, US): **STARLINGER & CO GESELLSCHAFT M.B.H.** [AT/AT]; Sonnenuhrgasse 4, 1060 Wien (AT).
- (72) **Inventors:** **MANDZSU, József**; Radványi út 19., H-1118 Budapest (HU). **MANDZSU, Zoltán**; Bod Péter lejtő 4., H-1112 Budapest (HU). **MANDZSU, József**; Nyírfu u. 17., H-2151 Fót (HU).
- (74) **Agent:** **SZENTPÉTERI, Zsolt**; SBGK Patent Attorneys, Andrássy út 113., 1062 Budapest (HU).
- (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,

(54) **Title:** ANTISLIP FLEXIBLE MATERIALS AND METHODS FOR THEIR MAKING AND USE

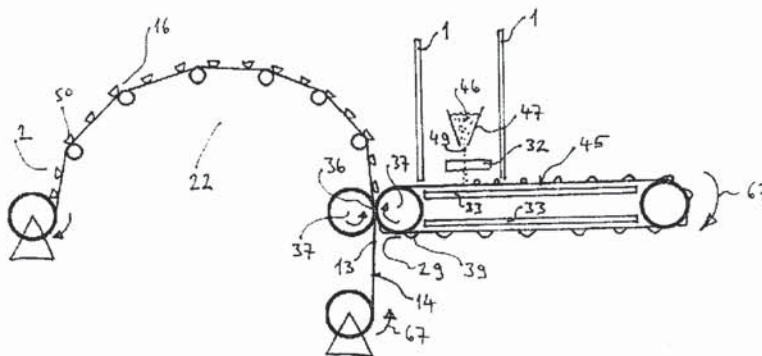


FIG. 1.

(57) **Abstract:** A method for forming an antislip material. A flexible thermoplastic carrier (13) is provided. A hot release surface (45) is provided. Provided is a first layer (29) of discrete thermoplastic particles (39), sitting on the hot release surface (45). The discrete particles (39) are above their softening temperatures, providing in the first layer (29) a tackiness. The method includes contacting the carrier (13) with the tacky first layer for sticking the first layer (29) to the carrier (13), and thereafter removing the carrier, and therewith the tacky first layer stuck to the carrier, from the release surface (45). Thereby the carrier (13) is provided with a hot, preferably discontinuous and/or elastomeric antislip coating. With a heat energy of the hot coating a bond is formed between the carrier and the coating. The removing of the carrier (13) includes pulling the carrier out of the contact with a pulling-out force. The temperature of the hot release surface (45) is above the melting temperature of the carrier (13). The carrier would be spoiled, if heated completely to the temperature of the release surface and simultaneously pulled with the pulling-out force. Therefore the contacting time is kept shorter than a minimum time required by a heat of the hot release surface (45) for spoiling the carrier (13). Flat-topped roughening projections (31) can be included in the antislip coating.

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, 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).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
- *of inventorship (Rule 4.17(iv))*

Published:

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

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 716454/ZSO	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/HU2017/000029	International filing date (<i>day/month/year</i>) 20.04.2017	Priority date (<i>day/month/year</i>) 26.05.2016	
International Patent Classification (IPC) or national classification and IPC INV. B29C59/02			
Applicant Flexinnova Kft			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>8</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ (<i>sent to the applicant and to the International Bureau</i>) a total of <u> </u> sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) <u> </u>, containing a sequence listing, in the form of an Annex C/ST.25 text file, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3ter of Annex C of the Administrative Instructions).			
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☒ Box No. VII Certain defects in the international application ☒ Box No. VIII Certain observations on the international application			
Date of submission of the demand 19.12.2017		Date of completion of this report 16.04.2018	
Name and mailing address of the international preliminary examining authority:  European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016		Authorized officer Fageot, Philippe Telephone No. +31 70 340-2092	



Box No. I Basis of the report

1. With regard to the **language**, this report is based on
- ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a) and (b))
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-96 as originally filed

Claims, Numbers

1-203 as originally filed

Drawings, Sheets

1/20-20/20 as originally filed

- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
5. ☐ This report has been established:
- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
 - ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91(Rules 66.4bis and 70.2(e)).

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/HU2017/000029

6. ☒ With regard to top-up searches (Rules 66.1 *ter* and 70.2(f)):
- ☒ A top-up search was carried out by this Authority on 27.03.2018 (all discovered documents are listed in the Supplemental Box Relating to Top-up Search).
 - ☐ Additional relevant documents have been discovered during the top-up search.
 - ☐ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies) has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded".

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-203</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-203</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-203</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V.

1 The following document is referred to in this communication:

D1 US 2008/140043 A1 (MANDZSU ZOLTAN [HU] ET AL) 12 June 2008
(2008-06-12)

D2 US 7 765 774 B2 (MANDZSU JOZSEF SR [HU] ET AL) 3 August 2010
(2010-08-03) cited in the application

2 Independent claim 1

2.1 Document D1, which is considered to represent the most relevant state of the art, discloses (the references in parenthesis applying to this document) :

a method for forming an antislip flexible material (*the flexible material of D1 having the same physical features as the material of claim 1 is therefore considered as an antislip flexible material*), comprising:

providing a flexible carrier having a front surface, the provided carrier at least partly including a thermoplastic first polymer (*paragraph [0178], figure 1a, ref. 4*), the carrier having at the providing a temperature sufficiently low to keep the first polymer from melting or softening (*implicit feature deducted from paragraph [0178] and figure 1a*);

providing a hot release surface (*paragraph [0178], figure 1a, ref. 40*) of a first temperature (*paragraph [0179]*);

providing a first layer of discrete particles including a thermoplastic second polymer (*paragraph [0179], figure 1a, ref. 36*), sitting on the hot release surface and projecting from the hot release surface to corresponding terminal ends (*paragraph [0179], figure 1a*), in the provided first layer the discrete particles being at least partly of or above a second temperature, the second temperature being above a softening temperature of the second polymer, providing in the first layer a tackiness of at least the particle terminal ends (*paragraph [0178] and [0179]*);

bringing into an, at least partial, contact, and keeping in the contact for a contacting time, the front surface of the provided carrier with the tacky first layer sitting on the hot release surface for at least partly sticking the first layer to the front surface, and thereafter removing the carrier, and therewith at least partly the tacky first layer stuck to its front surface, from the release surface thereby providing the carrier with a coating of a hot state (*paragraph [0179], figure 1a*),

and utilising a heat energy of the hot coating forming a bond between the carrier and the coating, thereby providing an antislip coated flexible material including the carrier and the coating bonded thereto (*paragraph [0179]*); the removing of the carrier including pulling the carrier out of the contact with a pulling-out force (*paragraph [0179], figure 1a*).

2.2 The subject-matter of independent claim **1** differs therefrom in that said method comprises:

providing the first temperature above the softening temperature of the second polymer; and

providing the first temperature above any one or both of a melting temperature and a softening temperature of the first polymer;

selecting a carrier that is spoiled (for example through one or more of breaking, stretching, shrinking, and warping) if heated completely to the first temperature and simultaneously exposed to the pulling-out force; and selecting the contacting time shorter than a minimum time, which minimum time is determined such that the spoiling of the carrier by exertion of heat by the hot release surface is limited to a predefined allowable extent.

The subject-matter of claim **1** is therefore novel (Article 33(2) PCT).

2.3 The objective problem underlying claim **1** is to provide for a method in which it is possible that the material of the antislip coating can be kept molten for a very short time only, to prevent oxidation or degrading even with cheap raw materials, cf description, page 6.

2.4 Although the problem of preventing oxidation or degradation of used raw material is a constant objective for the skilled man, the present solution to this problem proposed in claim **1** of the present application is neither known nor is it suggested from the cited prior art documents.

None of the cited documents discloses the solution of present claim **1**. Also no combination of the documents D1 and D2 will hint the person skilled in the art to the combination of present claim **1** in order to solve the objective problem.

Moreover, it cannot be regarded as being matter of common knowledge of the skilled person. In conclusion, when faced with the problem underlying claim **1**, the skilled person could not arrive at the combination of claim **1** without the involvement of an inventive step.

Consequently the subject-matter of claim **1** meets the requirements of Article 33(3) PCT.

3 Independent claim **89**

3.1 Document D2, which is considered to represent the most relevant state of the art, discloses (the references in parenthesis applying to this document) :

an antislip (*abstract*) packaging bag (*example 3, figures 4 and 5*) or packaging wrap, formed at least partly from an antislip flexible material including a flexible carrier (*example 1, figure 3, reference 18*), the carrier having a front surface with a multiplicity of discrete, solid roughening projections (*example 1, figure 3, reference 7*) looking toward an outside of the bag or wrap (*examples 1 and 3, figures 1, 4 and 5*), the roughening projections including a thermoplastic second polymer (*col. 4, lines 54 - 58 and col. 5, lines 9 - 14, figure 3*), the roughening projections being essentially free of molecular orientation (*result from the production process, see col. 6, lines 29 - 33, figure 3*), the roughening projections having respective feet (*figure 3*), the foot being an end of the roughening projection attaching to the carrier (*figure 3*), the roughening projections having a second contact angle of between 90 and 178 degrees with the front surface in at least one side view of the roughening projection (*figure 3*).

3.2 The subject-matter of claim **89** differs from this known D1 in that at least some of the roughening projections, the flat-topped roughening projections, have a substantially flat top forming an edge at least partially surrounding the substantially flat top.

The subject-matter of claim **89** is therefore novel (Article 33(2) PCT).

3.3 The objective problem underlying claim **89** is to improve the antislip effect of the roughening projections, cf. description page 33.

- 3.4 Although the problem of improving the antislip effect of roughening projections is a constant objective for the skilled man, the present solution to this problem proposed in claim **89** of the present application is neither known nor is it suggested from the cited prior art documents.

In document D1, a male mechanical fastener of the touch-and-close, also known as a hook-and-loop type fastener is disclosed (*see D1, paragraph [0002]*). Such fastener are known to comprise male and female components that touch to close as can be seen on figures 8 and 9 of D1.

In paragraph [0046] of D1, a back-to-back wrapping tape mechanical fastener, offering such possibilities as an inexpensive, highly flexible still strong, very thin or easily cut wrapping tape fastener. The wrapping tape mechanical fastener may be elastically stretchable and can be used for packaging or technical (e.g. cable wrap) applications.

Back-to-back type wrapping tape mechanical fasteners are known to be used in packaging applications for fastening a packaging bag or packaging wrap around the packed-up object, typically the back-to-back wrapping tape mechanical fastener is wrapped around the mouth of a packaging bag or packaging wrap in order to keep its mouth closed. Selecting the mechanical fastener wrapping tape of D1 in the mentioned packaging applications, instead of the more common self-adhesive fastening tape, provides the advantage of a repeated re-closability of the fastener, and thereby, of the package.

Di does not disclose, or suggest, a packaging bag. Nothing prompts the skilled person to look for solutions of antislip packaging bag among mechanical fastener patents.

Further, D1's objectives or recognition do not include an antislip package feature, in which the packages, a packaging bag or a packaging wrap are antislip in the sense that they do not slip up on each other in a stack.

None of the cited documents discloses the solution of present claim **1**. Also no combination of the documents D1 and D2 will hint the person skilled in the art to the combination of present claim **1** in order to solve the objective problem.

Moreover, it cannot be regarded as being matter of common knowledge of the skilled person. In conclusion, when faced with the problem underlying claim **1**, the skilled person could not arrive at the combination of claim **1** without the involvement of an inventive step.

Consequently the subject-matter of claim **1** meets the requirements of Article 33(3) PCT.

4 Independent claim **142** and **195**

The reasoning of independent product claim **89** applies, mutatis mutandis, to the subject-matter of the corresponding independent method claim **142** and **195**, which therefore is also considered novel and inventive (Articles 33(2) and 33(3) PCT).

5 Dependent claims **2 - 88, 90 - 141, 143 - 194** and **196 - 203**

Claims **2 - 88, 90 - 141, 143 - 194** and **196 - 203** are dependent on claims **1, 89, 142** and **195** and fulfill as a result the requirements of Articles 33(2) and (3) PCT.

Re Item VII.

- 6 The relevant background art disclosed in document D1 should be mentioned and identified in the description, cf. Rule 5.1(a)(ii) PCT.

Re Item VIII.

- 7 The brackets used in the claims should be deleted, cf. the PCT Guidelines 5.11.
- 8 Claims **132 - 137, 185 - 190** and **199 - 201** do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claims attempt to define the subject-matter in terms of the result to be achieved which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.

The present claims can not be used for distinguishing of prior art.