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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
01 February 2024 (01.02.2024)

WIPO | PCT

(10) International Publication Number
WO 2024/026112 A4

(51) International Patent Classification:
B27M 3/04 (2006.01) ***E04F 15/10*** (2006.01)
B23B 3/02 (2006.01) *B32B 3/00* (2006.01)
B23B 3/06 (2006.01) *B32B 9/00* (2006.01)
B32B 27/30 (2006.01) *B32B 27/00* (2006.01)
E04F 15/02 (2006.01) *E04F 15/00* (2006.01)

(21) International Application Number:
PCT/US2023/029013

(22) International Filing Date:
28 July 2023 (28.07.2023)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/393,799 29 July 2022 (29.07.2022) US
63/399,487 19 August 2022 (19.08.2022) US

(71) Applicant: **SHAW INDUSTRIES GROUP, INC.** [US/US]; 516 East Walnut Avenue, Dalton, GA 30721 (US).

(72) Inventor: **GRANBERRY, Dale, Carson**; 315 Shady Crest Drive, Chattanooga, TN 37415 (US).

(74) Agent: **KABAKOFF, Stephen E.**; Miller & Martin PLLC, 832 Georgia Avenue, Suite 1200, Chattanooga, TN 37402 (US).

(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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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))*
— *with amended claims (Art. 19(1))*

(54) Title: SLOPED EDGE ON DECORATIVE ARTICLES WITH A RIGID BASE AND A DECOR THAT IS DIGITALLY PRINTED THEREON

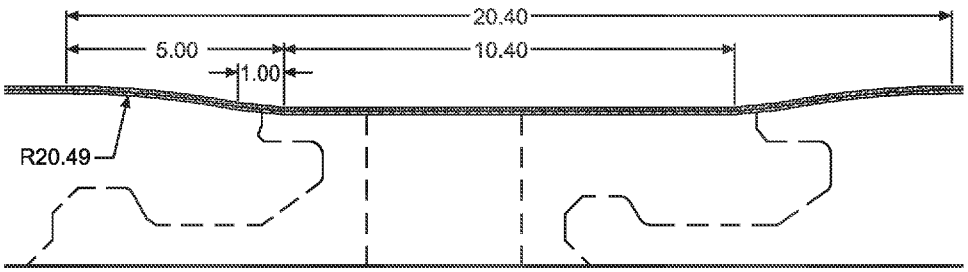

FIG. 7

(57) Abstract: A decorative article comprising a base and a top layer disposed thereon. The base may comprise a first surface, a second surface opposite the first, a side surface disposed between the first and second surfaces, and angled surfaces along at least two of the edges of the first surface. The angled surfaces extend from the first surface and towards the second surface. Each angled surface may comprise at least one of a curved portion and a linear portion extending from the curved portion. The base can include a male connector portion extending from one side surface and a female connector portion formed in the opposing side surface, wherein the male and female connector portions are configured to interconnect. The top layer may comprise a decor layer that further comprises a sub layer, an ink layer, and a wear layer disposed above the ink layer.

WO 2024/026112 A4

[Continued on next page]

(88) Date of publication of the international search report:
29 February 2024 (29.02.2024)

Date of publication of the amended claims:
11 April 2024 (11.04.2024)

AMENDED CLAIMS

received by the International Bureau on 08 March 2024 (08.03.2024)

I claim:

1. A decorative article comprising:

a base comprising: a first major surface having at least two edges; a second major surface disposed opposite to the first major surface; at least one side surface disposed between the first major surface and the second major surface; and angled surfaces along at least two of the edges of the first major surface;

wherein each angled surface extends from the first major surface and towards the second major surface such that a first end of each angled surface is at a first level that is in a plane of the first major surface and the opposing end of the angled surface is at the side surface and at a second level that is below the first level and between the plane of the first major surface and a plane of the second major surface;

wherein each angled surface comprises at least one of a rounded portion and a linear portion extending from the rounded portion;

wherein the base comprises a male connector portion extending from at least one side surface and a female connector portion formed at an opposing side surface of the base, the female connector portion comprising a groove defined by an upper lip and a lower lip, and wherein the female connector portion is configured to receive a corresponding male connector portion of another decorative article to interconnect the decorative article with another decorative article;

a top layer disposed on top of the base, the top layer extending entirely along the first major surface and angled surfaces and mirroring the shape thereof, wherein the top layer further comprises:

a décor layer comprising:

a sub layer disposed on the first major surface and the angled surfaces; and

an ink layer disposed on the sub layer and forming an image, the ink layer having been digitally printed thereon; and

a wear layer disposed above the ink layer,

wherein the décor layer in the top layer is the only décor layer in the decorative article and is disposed above the first major surface and the angled surfaces.

2. The decorative article of claim 1, wherein the top layer has a combined thickness 't' that remains substantially the same above both the first major surface and the angled surfaces.

3. The decorative article of claim 1, wherein the angled portion has a radius ranging from about 4 millimeters to about 30 millimeters.

4. The decorative article of claim 3, wherein the radius has an included angle ranging from about 8 degrees to about 53 degrees.

5. The decorative article of claim 1, wherein a compression of the base adjacent the angled surfaces is less than 1%.

6. The decorative article of claim 1, wherein the decorative article is rectangular in shape.

7. The decorative article of claim 1, wherein the decorative article is one of a floor covering panel or a wall covering panel.

8. The decorative article of claim 1, wherein the base is a rigid base comprising a stone polymer composite or a magnesium-oxide based core.

9. The decorative article of claim 1, wherein the angled surfaces comprise both a rounded portion and a linear portion, wherein the rounded portion comprises no less than 70% of the total length of the angled surface.

10. The decorative article of claim 1, further comprising a topcoat disposed above the wear layer.

11. A method of manufacturing angled edges on decorative articles, the method comprising:

extruding a sheet of core material;

cutting the sheet of core material into a slab;

cooling the slab;

cutting one or more angled edges on a first major surface of the slab;

rotating the slab;

cutting one or more additional angled edges on the top surface of the rotated slab such that the one or more additional angled edges intersect the one or more angled edges previously cut on the top surface of the slab;

digitally printing a décor layer on the top surface of the slab after cutting the one or more angled edges and the one or more additional angled edges on the top surface of the slab;

applying a wear layer over the digitally printed décor layer; and

cutting the slab into a plurality of decorative articles, where each decorative article has one or more outer edges that are angled.

12. The method of claim 11, wherein each of the angled edges are rounded edges having a bevel radius of between about 1 millimeter to about 100 millimeters.

13. The method of claim 12, wherein the bevel radius has an included angle ranging from about 2 degrees to about 90 degrees.

14. The method of claim 11, wherein each of the angled edges are rounded angled edges having a bevel radius of between about 4 millimeters to about 30 millimeters.

15. The method of claim 14, wherein the bevel radius has an included angle ranging from about 8 degrees to about 53 degrees.

16. The method of claim 11, wherein each of the angled edges are straight line angled edges forming an angle of between 0 degrees to about 45 degrees, as measured in a manner relative to a plane parallel with the top surface of the slab.

17. The method of claim 11, wherein each of the angled edges are straight line angled edges forming an angle of between 2 degrees and 20 degrees, as measured in a manner relative to a plane parallel with the top surface of the slab.

18. The method of claim 11, wherein the one or more angled edges and the one or more additional angled edges have identical cut dimensions.

19. The method of claim 11, wherein the core material comprises a rigid stone polymer composite.

20. The method of claim 11, wherein the wear layer is applied over the digitally printed décor layer by a roller.