

1 THE INVENTION

2 The Appellant claims a self-cleaning facing structure adapted to be fixed to
3 an outdoor stair step, and an outdoor stair step having the self-cleaning facing
4 structure. Claim 18 is illustrative:

5 18. A self-cleaning facing structure adapted to be fixed to an outdoor stair
6 step, said facing structure comprising:

7 a beam-like working member made of a resilient material and having
8 an exposed treading surface adapted to be tread upon by pedestrians;

9 a horizontal fastening member projecting from a rearward facing
10 surface of the working member; and

11 a vertical fastening member projecting from a downward facing
12 surface of the working member;

13 wherein the horizontal and vertical fastening members are integrally
14 formed with the beam-like working member as a single unit;

15 wherein the horizontal fastening member is adapted to be mounted on
16 a horizontal tread surface of the step, and the vertical fastening member is
17 adapted to be mounted on a vertical tread surface of the step;

18 wherein the horizontal fastening member is adapted to have a
19 horizontal facing material applied thereon, and the vertical fastening
20 member is adapted to have a vertical facing material applied thereon; and

21 wherein a modulus of elasticity E of the resilient material of the
22 working member and a thickness H of the working member satisfy $E/H \leq k$,
23 where k is a constant having a value of 10^{11} Newtons per cubic meter.

24 THE REFERENCES

26 Naka '951	US 4,318,951	Mar. 9, 1982
27 Naka '294	US 4,321,294	Mar. 23, 1982
28 Naka '797	US 4,455,797	Jun. 26, 1984
29 Aidan	US 5,073,430	Dec. 17, 1991
30 Nelson	US 5,806,253	Sep. 15, 1998
31 Kemper	US 6,047,506	Apr. 11, 2000

1 THE REJECTIONS

2 The claims stand rejected under 35 U.S.C. § 102 as follows: claims 18-20
3 and 22 over Nelson; claims 18 and 20 over Kemper; claims 18-20 and 22 over
4 Aidan; claims 18-20, 22, 27-30 and 32-35 over Naka '797; claims 18-20 and 22
5 over Naka '951; and claims 18-20 and 22 over Naka '294.

6 OPINION

7 We affirm the rejections over Naka '951, Naka '294 and Naka '797 and
8 reverse the rejections over Nelson, Kemper and Aidan.

9 The Appellant states that the claims are grouped together (Br. 8). Regarding
10 the affirmed rejections, we therefore limit our discussion to one claim, i.e.,
11 claim 18. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2004).

12 Rejection over Naka '951

13 Naka '951 discloses a stair edge cover (11) that is made of flexible synthetic
14 resin, a flexible rubber or the like and comprises an edge bead cushion (13), a thin
15 tread side fixing tongue (14) and a thin riser side fixing tongue (15) (col. 2, ll. 29-
16 32).

17 The Appellant argues that Naka '951 affixes a stair mat, not a facing
18 material, to the tread side fixing tongue, and does not affix anything to the riser
19 side fixing tongue (Br. 16-17; Reply Br. 5; Supp. Reply Br. 2). During patent
20 prosecution, claims are to be given their broadest reasonable interpretation
21 consistent with the Specification, as the claim language would have been read by
22 one of ordinary skill in the art in view of the Specification. *See In re Zletz*, 893
23 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); *In re Sneed*, 710 F.2d
24 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983). The Appellant's Specification
25 does not define "facing material". The dictionary definitions of "facing" include

1 “an ornamental or protective layer”.¹ Hence, because the Naka ‘951 stair mat is an
2 ornamental or protective layer, the broadest reasonable interpretation of the
3 Appellant’s claim term “facing material”, in view of the Appellant’s Specification,
4 includes the Naka ‘951 stair mat. Regardless, the Appellant’s claim 18 requires
5 that the horizontal and vertical fastening members are adapted to, i.e., capable of,
6 have facing material applied thereon. The fixing tongues in the Naka ‘951 figures
7 appear to be capable of having stair facing materials in general affixed to them by a
8 technique such as adhesive bonding.

9 The Appellant argues that none of the applied references discloses the
10 recited relationship between modulus of elasticity E of the resilient material of the
11 working member and a thickness H of the working member (Reply Br. 6). The
12 thickness H of the working member, as disclosed in the Appellant’s Specification,
13 is the maximum distance from the bottom to the top of the working member, and
14 equals the sum of the thicknesses of the facing material, fastening member and
15 adhesive (Spec. 3, 7; figs. 1-3). Like the Appellant’s resilient material of the
16 working member, the Naka ‘951 edge cover is elastic (“a flexible synthetic resin, a
17 flexible rubber, or the like”, col. 2, ll. 29-30). Hence, the Naka ‘951 edge cover
18 appears to have a modulus of elasticity comparable to that of the Appellant’s
19 resilient material of the working member. Also, like the Appellant’s facing
20 structure, the Naka ‘951 edge bead cushion is approximately the thickness of the
21 combined fixing tongue (14, which corresponds to the Appellant’s horizontal
22 fastening member), adhesive (col. 3, ll. 6-9) and tread mat (12, which corresponds
23 to the Appellant’s horizontal facing material) (figs. 1, 2, 5). Consequently, because
24 Naka ‘951 uses a conventional facing material that appears to be comparable to the

¹ *Webster’s New Collegiate Dictionary* 410 (G. & C. Merriam 1973).

1 Appellant's facing materials and, therefore, has a comparable thickness, it appears
2 that, like the Appellant's facing structure, the Naka '951 edge bead cushion (which
3 corresponds to the Appellant's working member and appears to have a comparable
4 modulus of elasticity) has a ratio of E (modulus of elasticity) to H (sum of the
5 thicknesses of the facing material (tread mat), fastening member (fixing tongue)
6 and adhesive) in the Appellant's range. Also, the Appellant's claim 18 merely
7 requires that the horizontal fastening member is adapted to have a horizontal facing
8 material thereon. As discussed above, the Naka '951 edge bead cushion appears to
9 have a modulus of elasticity comparable to that of the Appellant's working
10 member. Also, in both the Appellant's (fig. 1) and Naka '951 (figs. 1, 2, 5)
11 devices, the height of the working member (Naka '951 edge bead cushion) is about
12 equal to the sum of the thicknesses of the horizontal facing material (Naka '951
13 tread mat), fastening member (Naka '951 fixing tongue) and adhesive.
14 Consequently, it appears that, like the Appellant's horizontal fastening member,
15 the Naka '951 fixing tongue is adapted to, i.e., capable of, having a facing material
16 applied thereon such that the edge bead cushion has the Appellant's recited E/H
17 ratio.

18 The Appellant argues that the Naka '951 stair mat is not intended for an
19 outside step where ice is formed (Supp. Reply Br. 3). The Naka '951 disclosure
20 that the stair mat is "adapted to be installed on stairs, especially stairs arranged on
21 the inside of a building" (col. 1, ll. 5-7) indicates that the stair mat is not limited to
22 an inside step, but also can be adapted to be fixed to an outdoor stair step.

23 The Appellant argues that the applied references do not disclose a
24 self-cleaning device (Reply Br. 2-3). The E/H ratio in the Appellant's claim 18 is
25 based upon the modulus of elasticity and the thickness of the working material
26 made of a resilient material. Like the Appellant's working member resilient

1 material, the Naka '951 edge bead cushion is elastic (col. 2, ll. 29-30) and, as
2 discussed above, is capable of having an H value comparable to that of the
3 Appellant's working member. Moreover, the Naka '951 edge bead cushion has a
4 hollow interior that gives it additional flexibility (col. 2, ll. 33-36; fig. 2). Hence, it
5 appears that, like the Appellant's working member (Spec. 4, 6), the Naka '951
6 edge bead cushion can flex when stepped on by a pedestrian (col. 4, ll. 58-60) such
7 that it is self cleaning.

8 The Appellant argues that Naka '951 does not disclose a working member
9 having an exposed treading surface adapted to be tread upon by pedestrians (Reply
10 Br. 3-4). The Naka '951 surface having serrations (17, col. 2, ll. 37-40; fig. 2) is
11 exposed and is adapted to be tread upon by pedestrians (col. 4, ll. 58-60).

12 We therefore are not convinced of reversible error in the rejection over
13 Naka '951.

14 Rejection over Naka '294

15 Naka '294 discloses a stair mat comprising a flexible synthetic resin edge
16 cushion cover (31) (which corresponds to the Appellant's working member)
17 having at its lower edge an integral downward skirt (36) (which corresponds to the
18 Appellant's vertical fastening member (col. 3, ll. 57-60)). A connecting sheet base
19 member (33) (which corresponds to the Appellant's horizontal fastening member
20 and appears to be made of the same material as the edge cushion cover (col. 3,
21 ll. 51-53)) has a hook-shaped rib (40) in a catching groove (37) on the lower
22 surface of the edge cushion cover (col. 4, ll. 6-25; 41-46).

23 The Appellant argues that Naka '294 discloses a stair mat, not a facing
24 structure (Br. 17-18; Reply Br. 5; Supp. Reply Br. 3). That argument is not
25 persuasive for the reason given above regarding the rejection over Naka '951.

1 The Appellant argues that Naka ‘294 does not disclose that the main body
2 (14, figs. 1, 2) is adapted to have horizontal facing material applied thereon
3 (Br. 18). In the embodiment in figure 3, connecting sheet base member 33 is
4 adapted to have applied thereon a tread mat (32) which corresponds to the
5 Appellant’s facing material.

6 The Appellant argues that the Naka ‘294 connecting sheet base member (33)
7 must be attached to the edge cushion cover (31) (Br. 18). During patent
8 prosecution, claims are to be given their broadest reasonable interpretation
9 consistent with the Specification, as the claim language would have been read by
10 one of ordinary skill in the art in view of the Specification. *See Zletz*, 893 F.2d at
11 321, 13 USPQ2d at 1322; *Sneed*, 710 F.2d at 1548, 218 USPQ at 388. The
12 Appellant’s Specification does not define “integral”. The ordinary meanings of
13 that term include “formed as a unit with another part”.² The Appellant’s
14 Specification (4:3-6) indicates that the working material and the fasteners can be
15 made of different materials. Moreover, the recitation in the Appellant’s claim 31
16 that the horizontal and vertical fastening members that are integrally formed with
17 the resilient working member are made of aluminum (which, the Appellant states,
18 is more rigid than the resilient material (Spec. 6:6-10)) indicates that the
19 Appellant’s claim term “integrally formed” encompasses working members and
20 fasteners that are joined together. Thus, because the Naka ‘294 edge cushion cover
21 and connecting sheet base member form a unit when combined, the combination is
22 integral as that term is most broadly construed in view of the Appellant’s
23 Specification.

² *Webster’s New Collegiate Dictionary* 600 (G. & C. Merriam 1973).

1 there is no disclosure of a horizontal fastening member projecting from a rearward
2 facing surface of a working member (the Naka '797 edge base cushion) and a
3 vertical fastening member projecting from a downwardly facing surface of the
4 working member (Br. 20-21). Claim 18 requires "a horizontal fastening member
5 projecting from a rearward facing surface of the working member" and "a vertical
6 fastening member projecting from a downward facing surface of the working
7 member". In the embodiment shown in the Naka '797 figure 2, the edge base (11)
8 (which corresponds to the Appellant's horizontal fastening member) projects from
9 a rearward facing surface of the edge base cushion (12) (which corresponds to the
10 Appellant's working member), and the riser cover (16) projects from a downward
11 facing surface of the edge base cushion. In the embodiment shown in the
12 Naka '797 figure 6, the edge base (81) (which corresponds to the Appellant's
13 horizontal fastening member) projects from a rearward facing surface of the edge
14 base cushion (12) (which corresponds to the Appellant's working member), and
15 the riser cover (16) projects from a downward facing surface of the edge base
16 cushion.

17 The Appellant argues that the Naka '797 edge base and riser cover are not
18 integrally formed with the edge base cushion (Br. 20). The Naka '797 riser
19 cover 16 is integrally formed with edge base 11, and edge base 11 is integrally
20 formed with edge base cushion 12 (col. 2, ll. 16-17, 25-27). Edge base 81 has the
21 structure of edge base 11 except for the omission of a positioning groove (13)
22 (col. 5, ll. 37-39). Hence, edge base 81 also is integrally formed with the edge base
23 cushion.

24 The Appellant argues that none of the applied references discloses the
25 recited relationship between modulus of elasticity E and thickness H (Reply Br. 6).

1 That argument is not convincing for the reason given above with respect to the
2 rejection over Naka '951.

3 The Appellant argues that Naka '797 does not disclose an exposed treading
4 surface adapted to be tread upon by pedestrians (Reply Br. 3). The Naka '797
5 tooth-shaped non-skid top (25) of the edge bead cushion is exposed and is adapted
6 to be tread upon by pedestrians (col. 3, ll. 3-7; fig. 2).

7 For the above reasons we are not convinced of reversible error in the
8 rejection over Naka '797.

9 Rejection over Nelson

10 Nelson discloses a stair nosing (1) comprising a rigid base member (2)
11 having horizontal (21) and vertical (22) flanges, and a flexible tread (3) having
12 flaps (30) (col. 2, ll. 47-50, 63; fig. 2). The flexible tread is fastened to the rigid
13 base member by ribs (31) that interlock with serrations (28) in a groove (27) in the
14 base member, and by flexible flaps (33) that are at the end of the ribs and engage
15 the walls of the groove (col. 3, l. 61 – col. 4, l. 5; figs. 3, 4). The base member is
16 made of metal, preferably aluminum, or rigid synthetic material, and the tread
17 member is made of flexible synthetic resin such as vinyl resin (col. 4, ll. 6-9).

18 The Examiner argues that Nelson's base member (2) corresponds to the
19 Appellant's working member (Answer 3). That is incorrect because Nelson's base
20 member does not have an exposed treading surface adapted to be tread upon by
21 pedestrians. Instead, it is covered by a flexible tread member (3) (col. 2, ll. 47-49).
22 The Examiner argues that the aluminum of which Nelson's base member can be
23 made (col. 4, ll. 6-7) has a modulus of elasticity less than 10^{11} N/m² (Answer 4).
24 The Appellant asserts that the modulus of elasticity of aluminum is 7×10^{11} N/m²
25 (Br. 12). Actually, the modulus of elasticity of aluminum at room temperature

1 appears to be about 6.9×10^{10} N/m².³ The Examiner argues that “[t]he modulus of
2 elasticity for various synthetic resins is on the order serving to satisfy the
3 relationship presented within the language of claim 18” (Answer 8). Nelson’s
4 synthetic resin is rigid (col. 4, ll. 6-7), whereas the Appellant’s working member is
5 resilient. The Examiner has not provided evidence that a rigid synthetic resin
6 necessarily has a modulus of elasticity less than 10^{11} N/m². Also, the Examiner has
7 not explained why there is reason to believe that Nelson’s aluminum or rigid
8 synthetic base member has the E/H ratio required by the Appellant’s claims.

9 The Examiner argues alternatively that Nelson’s flexible tread member (3),
10 serrated ribs (31) and flaps (33) correspond to the Appellant’s working member
11 (Answer 4). That is incorrect because those parts are not adapted to have
12 horizontal and vertical facing material applied thereon. Instead, the flexible tread
13 member’s flaps (30) fit over Nelson’s laminate flooring (6) (col. 2, ll. 63-64;
14 figs. 4, 5) which corresponds to the Appellant’s facing material.

15 The Examiner, therefore, has not established a prima facie case of
16 anticipation of the Appellant’s claimed invention by Nelson.

17 Rejection over Aidan

18 Aidan discloses a tile edging trim strip comprising a body (1) with a plate-
19 like anchorage portion (2) and an integral edge portion (3) having a first abutment
20 part (4) at its outer end and a rigid extension (29) perpendicular to the plate-like
21 anchorage portion (col. 4, ll. 4-14; col. 5, ll. 46-48; fig. 3). The body is extruded
22 from semi-rigid polyvinyl chloride (col. 6, ll. 21-22).

³ See http://www.engineeringtoolbox.com/young-modulus-d_773.html;
<http://zone.ni.com/devzone/cda/ph/p/id/250>.

