

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

TENNECO AUTOMOTIVE )  
OPERATING COMPANY INC., )  
 )  
Plaintiff, )  
 ) Civ. No. 03-1030-SLR  
v. ) (Consolidated)  
 )  
VISTEON CORPORATION, )  
 )  
Defendant. )

MEMORANDUM ORDER

At Wilmington this ~~28<sup>th</sup>~~ day of June, 2005, having heard oral argument and having reviewed the papers submitted in connection with the parties' proposed claim construction;

IT IS ORDERED that the disputed claim construction in U.S. Patent Nos. 4,969,264 ("the '264 patent") and 5,114,476 ("the '476 patent"), as identified by the above referenced parties, shall be construed consistent with the tenets of claim construction set forth by the United States Court of Appeals for the Federal Circuit, as follows:

**A. Claim 1 of the '264 Patent.**

1. "Mid-section." Consistent with the claim language

and its ordinary meaning,<sup>1</sup> and the specification,<sup>2</sup> the court construes "mid-section" to mean "a portion of the substrate that is between the substrate ends but does not extend to the substrate ends, and includes the middle point of the substrate."

2. "Inserting the preassembly into a tubular body of metal so as to be in centered, spaced, relation to the interior wall of said body." Consistent with the claim language and its ordinary meaning,<sup>3</sup> the specification,<sup>4</sup> and the prosecution history,<sup>5</sup> the court construes "inserting the preassembly into a tubular body of metal so as to be in centered, spaced, relation

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<sup>1</sup> D.I. 148, ex. 6 at 722 (defining "mid-section" as "a section midway between the extremes"); D.I. 151, ex. E at 752 (same); Random House Dictionary of the English Language 1218 (2d ed. 1987) (defining "midway" as "in the middle of the way or distance; halfway").

<sup>2</sup> '264 patent, col. 2, ll. 5-7; col. 6, ll. 6-9; figs. 1-10.

<sup>3</sup> D.I. 148, ex. 6 at 592 (defining "insert" as "to put or thrust in" and "to put or introduce into the body of something"); D.I. 151, ex. E at 625 (same), 1129 (defining "spaced" as "to place at intervals or arrange with space between").

<sup>4</sup> The specification presents differing descriptions of preassembly compression, or the lack thereof, during insertion. Compare '264 patent, col. 1, ll. 52-54; col. 2, l. 67 - col. 3, l. 1; col. 4, ll. 66-68; col. 5, ll. 24-27; fig. 5 with '264 patent, col. 2, ll. 31-34; col. 3, ll. 25-27; col. 4, ll. 63-66. The specification describes "spaced" components as separated and not in contact. '264 patent, col. 2, ll. 52-55; col. 4, ll. 14-18. The specification describes the preassembly as being longitudinally and radially "centered". '264 patent, col. 2, l. 67 - col. 3, l. 1; col. 3, ll. 27-29.

<sup>5</sup> D.I. 149 at J-141, J-163 to J-165, J-170, J-173 to J-175, J-177, J-183, J-189, J-192, J-194 to J-195, J-206.

to the interior wall of said body" to mean "introducing or placing the preassembly into the tubular body so that the preassembly is not in contact with the interior wall of the body."

3. **"Reduced diameter annular ring."** Consistent with the claim language and its ordinary meaning,<sup>6</sup> and the specification,<sup>7</sup> the court construes "reduced diameter annular ring" to mean "the wall of the metal body is radially deformed into a smaller diameter portion that is adjacent to at least one larger diameter portion."

4. **"Said deforming step substantially simultaneously applying uniform inward radial pressure on said mat."** Consistent with the claim language and its ordinary meaning,<sup>8</sup> and the

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<sup>6</sup> D.I. 151, ex. E at 1016 (defining "ring" as "a circular band for holding, connecting, hanging, pulling, packing, or sealing"). Plaintiff proffered its own ordinary meaning of "ring." D.I. 148, ex. 6 at 990 (defining "ring" as "a circular line, figure, or object"). As defendant points out, the dictionary plaintiff cites for its ordinary meaning gives "smoke ring" as an example for the definition. This example is not consistent with the subject of the '264 patent. When multiple dictionary definitions are given, courts should adopt the definition most consistent with the inventor's use of the words. Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1203 (Fed. Cir. 2002). Consequently, the court adopts defendant's ordinary meaning.

<sup>7</sup> 264 patent, col. 2, ll. 34-38, 42-52; col. 3, ll. 1-5, 47-55; col. 4, ll. 14-18; col. 5, ll. 30-31; figs. 1, 3, 9, 10.

<sup>8</sup> Random House Dictionary of the English Language 1784, 1897 (2d ed. 1987) (defining "simultaneous" as "existing, occurring, or operating at the same time; concurrent" and defining "substantial" as "basic or essential; fundamental" and "[o]f or

specification,<sup>9</sup> the court construes "said deforming step substantially simultaneously applying uniform inward radial pressure on said mat" to mean "unvarying inward radial pressure is applied to the mat at essentially the same time the tubular body is deformed."

5. "Said deforming step . . . radially compressing the mat to substantially reduce its thickness and to apply sufficient radial pressure against the substrate to hold the substrate in the body." Consistent with the claim language and its ordinary meaning,<sup>10</sup> and the specification,<sup>11</sup> the court construes "said deforming step . . . radially compressing the mat to substantially reduce its thickness and to apply sufficient radial pressure against the substrate to hold the substrate in the body" to mean "the deforming step and the mat alone supply enough pressure to hold the substrate in the body for its intended use."

**B. Claim 8 of the '264 Patent.**

1. "Mid-section." Consistent with the construction of \_\_\_\_\_  
pertaining to the essence of a thing; essential, material, or important"); D.I. 151, ex. E at 1290 (defining "uniform" as "having always the same form, manner, or degree: not varying or variable").

<sup>9</sup> '264 patent, col. 2, ll. 34-42; col. 3, ll. 2-5, 58-61.

<sup>10</sup> D.I. 151, ex. E at 1179 (defining "sufficient" to mean "enough to meet the needs of a situation or a proposed end").

<sup>11</sup> '264 patent, col. 2, ll. 34-46; col. 3, ll. 5-10.

"mid-section" in claim 1 of the '264 patent, the court construes the identical limitation in claim 8 of the '264 patent to mean "a portion of the substrate that is between the substrate ends but does not extend to the substrate ends, and includes the middle point of the substrate."

2. **"Inserting the preassembly into the tube such that the preassembly is disposed centrally relative to the longitudinal axis of the tube."** Consistent with the claim language and its ordinary meaning,<sup>12</sup> and the specification,<sup>13</sup> the court construes "inserting the preassembly into the tube such that the preassembly is disposed centrally relative to the longitudinal axis of the tube" to mean "introducing or placing the preassembly into the tubular body such that the preassembly includes the

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<sup>12</sup> D.I. 148, ex. 6 at 179 (defining "central" as "containing or constituting a center" and "situated at, in, or near the center"), 592 (defining "insert" as "to put or thrust in" and "to put or introduce into the body of something"); D.I. 151, ex. E at 221 (defining "central" as "containing or constituting a center" and "situated at, in, or near the center"), 625 (defining "insert" as "to put or thrust in" and "to put or introduce into the body of something"); see also Random House Dictionary of the English Language 335 (2d ed. 1987) (defining "center" as "the middle point").

<sup>13</sup> The '264 patent specification does not alter the plain ordinary meaning of inserting. Compare '264 patent, col. 1, ll. 52-54; col. 2, l. 67 - col. 3, l. 1; col. 4, ll. 66-68; col. 5, ll. 24-27; fig. 5 with '264 patent, col. 2, ll. 31-34; col. 3, ll. 25-27; col. 4, ll. 63-66.

The '264 patent specification also shows that the preassembly is positioned to include the middle point of the length of the tubular body. '264 patent, col. 2, l. 66 - col. 3, l. 1; col. 3, ll. 27-29; figs. 1, 4, 5-10.

lengthwise middle point of the tube."

3. "Said end portion is formed into a generally hemispherical shape." Consistent with the claim language and its ordinary meaning,<sup>14</sup> and the specification,<sup>15</sup> the court construes "said end portion is formed into a generally hemispherical shape" to mean that "the tubular body ends are formed, for the most part, by spherical segments."

4. "Said tube is reduced generally simultaneously uniformly radially inward to reduce the tube in diameter." Consistent with the claim language and its ordinary meaning,<sup>16</sup> and

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<sup>14</sup> Random House Dictionary of the English Language 795 (2d ed. 1987) (defining "generally" as "with respect to the larger part, for the most part"); D.I. 148, ex. 6 at 529 (defining "hemisphere" as "one of two half spheres formed by a plane through the sphere center"), 1110 (defining "sphere" as a "a solid that is bounded by a surface consisting of all points at a given distance from a point constituting its center" and "spherical" as "having the form of a sphere or of one of its segments"); D.I. 151, ex. E at 410 (defining "end" as "the part of an area that lies at the boundary" and "the extreme or last part lengthwise . . . the terminal unit of something spatial that is marked off by units"), 564 (defining "hemisphere" as "one of two half spheres formed by a plane through the sphere center").

<sup>15</sup> The specification uses "spherical" and "hemispherical" interchangeably to describe the shape of the end portions of the tubular body. '264 patent, col. 1, ll. 29-32; col. 2, ll. 12-14, 46-55; col. 3, ll. 11-16, 19-22, 27-38, 41-43, 61-64; col. 4, 31-33, 59-60; col. 5, ll. 49-53; col. 6, ll. 19-23; figs. 1, 2-4, 7-10.

<sup>16</sup> Random House Dictionary of the English Language 795, 1784 (2d ed. 1987) (defining "generally" as "with respect to the larger part, for the most part" and defining "simultaneous" as "existing, occurring, or operating at the same time; concurrent"); D.I. 151, ex. E at 1290 (defining "uniform" as "having always the same form, manner, or degree: not varying or

the specification,<sup>17</sup> the court construes "said tube is reduced generally simultaneously uniformly radially inward to reduce the tube in diameter" to mean "reducing pressure is applied at substantially the same time to the entire portion of the tube that is to be reduced."

**C. Claim 12 of the '264 Patent.**

**1. "Making said support member from vermiculite."**

Consistent with the claim language and its ordinary meaning,<sup>18</sup> the specification,<sup>19</sup> and the prosecution history,<sup>20</sup> the court construes "making said support member from vermiculite" to mean "the principal ingredient of the mat is vermiculite."

**D. Claim 13 of the '264 Patent.**

**1. "The inserting step comprises axially centering said support member on said catalyst such that axial extensions of the support member are axially inward from each axial end face of the catalyst."** Consistent with the claim language and its ordinary

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variable").

<sup>17</sup> '264 patent, col. 2, ll. 34-42; col. 3, ll. 1-3, 47-53, 58-61.

<sup>18</sup> Random House Dictionary of the English Language 770 (2d ed. 1987) (defining "from" as "used to indicate source or origin").

<sup>19</sup> '264 patent, col. 2, ll. 5-10; col. 4, ll. 4-10.

<sup>20</sup> D.I. 149 at J-174, J-184 to J-185, J-189, J-196.

meaning,<sup>21</sup> and the specification,<sup>22</sup> the court construes "the inserting step comprises axially centering said support member on said catalyst such that axial extensions of the support member are axially inward from each axial end face of the catalyst" to mean "during the inserting step, the support member is disposed on the substrate such that it covers the middle point of the substrate and does not extend to the substrate ends."

**E. Claim 1 of the '476 Patent.**

1. **"An elongated cylindrical body having a pair of enlarged diameter cylindrical end portions."** Consistent with the claim language,<sup>23</sup> and the specification,<sup>24</sup> the court construes "an elongated cylindrical body having a pair of enlarged diameter cylindrical end portions" to mean "a portion of each end of the elongated body has a larger diameter than the portion of the body containing the middle point of the body."

2. **"A reduced diameter cylindrical central portion."** Consistent with the claim language and its ordinary meaning,<sup>25</sup> and

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<sup>21</sup> Random House Dictionary of the English Language 335 (2d ed. 1987) (defining "center" as "the middle point").

<sup>22</sup> '264 patent, col. 2, ll. 5-7, 32-33; col. 4, ll. 63-64; figs. 1, 4, 5-10.

<sup>23</sup> Claim 1, '476 patent, col. 6, ll. 28-43.

<sup>24</sup> '476 patent, col. 2, ll. 12-14, 47-58; col. 3, ll. 4-10, 49-63; col. 4, ll. 16-20; figs. 1, 9, 10.

<sup>25</sup> D.I. 148, ex. 6 at 179 (defining "central" as "situated at, in, or near the center"); D.I. 151, ex. E at 221 (defining



the specification,<sup>26</sup> the court construes "a reduced diameter cylindrical central portion" to mean "the portion of the tubular body that includes the middle point has a smaller diameter than adjacent portions of the tube."

3. **"Said support mat is of uniform thickness between its opposite ends."** Consistent with the claim language and its ordinary meaning,<sup>27</sup> the specification,<sup>28</sup> and the prosecution history,<sup>29</sup> the court construes "said support mat is of uniform thickness between its opposite ends" to mean "the thickness of

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"central" as "containing or constituting the center"); see also Random House Dictionary of the English Language 335 (2d ed. 1987) (defining "center" as "the middle point").

<sup>26</sup> '476 patent, col. 2, ll. 48-57; col. 3, ll. 49-55; figs. 1, 9, 10. Another embodiment of the specification describes a "telescoping configuration." '476 patent, col. 4, l. 44 - col. 5, l. 65. In this configuration, the tubular body consists of two halves, one of which is deformed to have a reduced diameter central portion. '476 patent, col. 5, ll. 5-10. The body is then formed by sliding the undeformed half over the reduced diameter central portion and welding the two halves together. '476 patent, col. 5, ll. 11-18. Because this embodiment does not join enlarged diameter cylindrical end portions, it does not affect construction of "a reduced diameter cylindrical central portion" in claim 1 of the '476 patent. See claim 1, '476 patent, col. 6, ll. 29-33.

<sup>27</sup> D.I. 148, ex. 6 at 1269 (defining "uniform" as "having always the same form, manner, or degree: not varying or variable"); D.I. 151, ex. E at 1290 (same).

<sup>28</sup> '476 patent, col. 2, ll. 38-42; col. 3, ll. 49-55, 60-64; col. 4, ll. 16-22.

<sup>29</sup> D.I. 150 at J-325 to J-326, J-333, J-339 to J-340, J-345 to J-346, J-353, J-360 to J-361, J-366 to J-368, J-379, J-381 to J-383.

the mat does not vary between its ends."

4. "Said support mat and central reduced diameter portion serve as the sole support means for the substrate."<sup>30</sup> Consistent with the claim language and its ordinary meaning,<sup>31</sup> the specification,<sup>32</sup> and the prosecution history,<sup>33</sup> the court construes "said support mat and central reduced diameter portion serve as the sole support means for the substrate" to mean "the central reduced diameter portion and the mat are the only structures that hold the substrate in place in the cylindrical body."

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<sup>30</sup> "An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112, ¶ 6. Use of the term "means" in a claim limitation creates a presumption that § 112, ¶ 6 has been invoked, but that presumption may be rebutted if the properly construed claim itself recites sufficiently definite structure to perform the claimed function. TI Group Auto. Sys. (N. Am.), Inc. v. VDO N. Am., L.L.C., 375 F.3d 1126, 1135 (Fed. Cir. 2004); Personalized Media Communications, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 703-04 (Fed. Cir. 1998).

Claim 1 of the '476 patent uses the term "means". However, the limitation in which "means" is used also recites sufficiently definite structure, namely the central reduced diameter of the tube and the support mat, to perform the claimed function. As a result, the limitation is not governed by 35 U.S.C. § 112, ¶ 6.

<sup>31</sup> D.I. 151, ex. E at 1122 (defining "sole" as "being the only one" and "functioning independently and without assistance or interference"), 1186 (defining "support" as "to hold up or serve as a foundation or prop for").

<sup>32</sup> '476 patent, col. 2, ll. 35-48; col. 3, ll. 7-12, 60-63; figs. 1, 3, 9, 10.

<sup>33</sup> D.I. 150 at J-324 to J-325, J-334, J-389 to J-393, J-396.

**F. Claim 6 of the '476 Patent.**

1. "The body is open at the ends and has end portions attached to gas flow end bushings." Consistent with the claim language and its ordinary meaning,<sup>34</sup> and the specification,<sup>35</sup> the court construes "the body is open at the ends and has end portions attached to gas flow bushings" to mean "the body has open end portions and separate gas bushings are joined to the body."

**G. Claim 7 of the '476 Patent.**

1. "End portions are spherically shaped." Consistent with the claim language and its ordinary meaning,<sup>36</sup> and the

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<sup>34</sup> Random House Dictionary of the English Language 133 (2d ed. 1987) (defining "attached" as "joined; connected; bound").

<sup>35</sup> '476 patent, col. 1, ll. 34-37; col. 2, ll. 18-21, 58-64; col. 3, ll. 18-20; col. 3, l. 67 - col. 4, l. 1; col. 5, ll. 47-50, 55-58; col. 6, ll. 23-26. The '476 patent specification also discloses that gas flow end bushings may be formed from the body itself rather than attached to the body. '476 patent, col. 1, ll. 37-38; col. 4, ll. 52-56, 59-61; col. 5, ll. 22-26. This embodiment does not affect construction of "the body is open at the ends and has end portions attached to gas flow bushings" in claim 6 of the '476 patent because gas flow end bushings are not attached to the body of the embodiment. See claim 6, '476 patent, col. 6, ll. 62-64.

<sup>36</sup> D.I. 148, ex. 6 at 1110 (defining "sphere" as "a solid that is bounded by a surface consisting of all points at a given distance from a point constituting its center" and "spherical" as "having the form of a sphere or of one of its segments"); D.I. 151, ex. E at 410 (defining "end" as "the part of an area that lies at the boundary" and "the extreme or last part lengthwise . . . the terminal unit of something spatial that is marked off by units"), 1134 (defining "sphere" as "a solid that is bounded by a surface consisting of all points at a given distance from a point constituting its center" and "spherical" as "having the

specification,<sup>37</sup> the court construes "end portions are spherically shaped" to mean that "the tubular body ends include a spherical segment."

**H. Claim 8 of the '476 Patent.**

1. **"Spherically-shaped end portions."** Consistent with the construction of "end portions are spherically shaped" in claim 7 of the '476 patent, the court construes "spherically-shaped end portions" to mean "the tubular body ends include a spherical segment."

**I. Claim 11 of the '476 Patent.**

1. **"A reduced diameter central portion."** Consistent with the claim language and its ordinary meaning,<sup>38</sup> and the specification,<sup>39</sup> the court construes "a reduced diameter cylindrical portion" to mean "a portion of the tubular body, which includes the middle point of the tubular body, has a reduced diameter."

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form of a sphere or of one of its segments").

<sup>37</sup> '476 patent, col. 1, ll. 31-32; col. 2, ll. 14-18, 51-57; col. 3, ll. 13-16, 21-24, 35-40; col. 4, ll. 34-37, 61-62; col. 5, ll. 46-54.

<sup>38</sup> D.I. 148, ex. 6 at 179 (defining "central" as "situated at, in, or near the center"); D.I. 151, ex. E at 221 (defining "central" as "containing or constituting the center"); see also Random House Dictionary of the English Language 335 (2d ed. 1987) (defining "center" as "the middle point").

<sup>39</sup> '476 patent, col. 2, ll. 48-57; col. 3, ll. 13-18, 49-57; col. 5, ll. 5-18; figs. 1-4, 9-10.

2. "A resilient support mat having opposite ends and fitted around a central portion of the substrate." Consistent with the claim language and its ordinary meaning,<sup>40</sup> and the specification,<sup>41</sup> the court construes "a resilient support mat having opposite ends and fitted around a central portion of the substrate" to mean "a resilient mat wrapped around the middle point of the substrate."

3. "Said body has a gas flow end bushing at each opposite end thereof." Consistent with the specification,<sup>42</sup> the court construes "said body has a gas flow end bushing at each opposite end thereof" to mean "the tubular body includes gas flow end bushings."

4. "Said support mat is of uniform thickness between its ends." Consistent with the construction of "said support mat is of uniform thickness between its opposite ends" in claim 1 of the '476 patent, the court construes "said support mat is of uniform thickness between its ends" to mean "the thickness of the mat

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<sup>40</sup> D.I. 148, ex. 6 at 179 (defining "central" as "situated at, in, or near the center"); D.I. 151, ex. E at 221 (defining "central" as "containing or constituting the center"); see also Random House Dictionary of the English Language 335 (2d ed. 1987) (defining "center" as "the middle point").

<sup>41</sup> '476 patent, col. 2, ll. 7-9, 32-34; col. 4, ll. 65-66; figs. 1, 4, 5-10.

<sup>42</sup> '476 patent, col. 1, ll. 34-38; col. 2, ll. 18-21, 58-64; col. 3, ll. 18-20; col. 3, l. 67 - col. 4, l. 1; col. 4, ll. 52-56, 59-61; col. 5, ll. 22-26, 47-50, 55-58; col. 6, ll. 23-26.

does not vary between its ends."

5. "Said support mat and central reduced diameter portion serve as the sole support means for the substrate." Consistent with the construction of "said support mat and central reduced diameter portion serve as the sole support means for the substrate" in claim 1 of the '476 patent, the court construes the identical language in claim 11 of the '476 patent to mean "the central reduced diameter portion and the mat are the only structures that hold the substrate in place in the cylindrical body."

J. Claim 19 of the '476 Patent.

1. "Cylindrical wall portions radially spaced from the end portions of the substrate projecting beyond said mat for a distance substantially the same as that of the projecting ends of the substrate." Consistent with the claim language and its ordinary meaning,<sup>43</sup> and the specification,<sup>44</sup> the court construes "cylindrical wall portions radially spaced from the end portions of the substrate projecting beyond said mat for a distance substantially the same as that of the projecting ends of the substrate" to mean "the distance between the inner wall of

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<sup>43</sup> D.I. 151, ex. E at 1176 (defining "substantial" as "being largely but not wholly that which is specified").

<sup>44</sup> '476 patent, col. 2, ll. 54-57; col. 3, ll. 15-18; col. 4, ll. 16-20.

the enlarged diameter tubular body and the catalyst substrate is largely, though not exactly, the same distance the substrate extends beyond the mat."

**K. Claim 22 of the '476 Patent.**

1. **"An elongated tubular body having enlarged diameter end portions."** Consistent with the construction of "an elongated cylindrical body having a pair of enlarged diameter cylindrical end portions" in claim 1 of the '476 patent, the court construes "an elongated tubular body having enlarged diameter end portions" to mean "a portion of each end of the elongated body has a larger diameter than the portion of the body containing the middle point of the body."

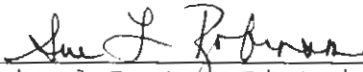
2. **"A reduced diameter central wall portion."** Consistent with the construction of "a reduced diameter cylindrical central portion" in claim 1 of the '476 patent, the court construes "a reduced diameter central wall portion" to mean "the portion of the tubular body that includes the middle point has a smaller diameter than adjacent portions of the tube."

3. **"Said support mat being of uniform thickness between its opposite longitudinal ends."** Consistent with the construction of "said support mat is of uniform thickness between its opposite ends" in claim 1 of the '476 patent, the court construes "said support mat being of uniform thickness between its opposite longitudinal ends" to mean "the thickness of the mat

does not vary between its ends."

4. "Said support mat . . . disposed centrally between said enlarged diameter end portions." Consistent with the claim language and its ordinary meaning,<sup>45</sup> and the specification,<sup>46</sup> the court construes "said support mat . . . disposed centrally between said enlarged diameter end portions" to mean "a mat, covering the middle point of the substrate, positioned between the enlarged diameter end portions of the tubular body."

5. "Said support mat and central reduced diameter portion serve as the sole support means for the substrate." Consistent with the construction of "said support mat and central reduced diameter portion serve as the sole support means for the substrate" in claim 1 of the '476 patent, the court construes the identical language in claim 22 of the '476 patent to mean "the central reduced diameter portion and the mat are the only structures that hold the substrate in place in the cylindrical body."



United States District Judge

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<sup>45</sup> D.I. 148, ex. 6 at 179 (defining "central" as "situated at, in, or near the center"); D.I. 151, ex. E at 221 (defining "central" as "containing or constituting the center"); see also Random House Dictionary of the English Language 335 (2d ed. 1987) (defining "center" as "the middle point").

<sup>46</sup> '476 patent, col. 2, ll. 7-9, 32-34; col. 4, ll. 65-66; figs. 1, 4, 5-10.