

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZHEJIANG LINGDI DIGITAL TECHNOLOGY CO., LTD.
Petitioner,

v.

CLO VIRTUAL FASHION, INC.
Patent Owner.

Case No. IPR2024-00970
U.S. Patent No. 10,733,773

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	THE '773 PATENT	5
A.	Background	5
B.	Description of the '773 Patent.....	8
III.	OVERVIEW OF THE CITED REFERENCES	15
A.	EZBRUSH.....	15
B.	Corel	23
C.	Thoemmes	27
D.	TUKATECH	28
E.	Niterra.....	29
IV.	LEVEL OF ORDINARY SKILL IN THE ART	32
V.	CLAIM CONSTRUCTION	33
VI.	GROUND 1 BASED ON EZBRUSH IN VIEW OF COREL, THOEMMES, AND TUKATECH IS DEFICIENT (CLAIMS 1-2 AND 6-9).....	39
A.	Petitioner's Proposed Combination Fails to Satisfy Elements [1.5] and [7.6].....	39
1.	EZBRUSH Does Not Teach a "Candidate Ending Point" That Is "On The Second Segment"	39
2.	Corel Does Not Teach a "Candidate Ending Point" That Is "On The Second Segment" or Related Limitations	41
3.	A POSITA Would Not Have Been Motivated To Modify EZBRUSH To Incorporate Corel's Dynamic Guides	49
B.	Petitioner's Proposed Motivation to Modify EZBRUSH Based on Corel and Thoemmes is Legally Deficient.....	62
C.	TUKATECH Does Not Disclose Elements [1.8] and [7.8]	68
VII.	GROUND 2 BASED ON EZBRUSH IN VIEW OF COREL, THOEMMES, TUKATECH, AND NITERRA IS DEFICIENT (CLAIMS 4-5 AND 10-11)	73

A. Claims 4 and 10	73
B. Claims 5 and 11	78
VIII. CONCLUSION.....	79
CERTIFICATE OF SERVICE	81

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Adidas AG v. Nike, Inc.</i> , IPR2016-00922, Paper 21 (Oct. 19, 2017)	65, 69
<i>In re Anova Hearing Labs, Inc.</i> , 809 Fed. Appx. 840 (Fed. Cir. 2020)	64, 66
<i>Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.</i> , 98 F.3d 1563 (Fed. Cir. 1996)	37
<i>Bio-Rad Labs., Inc. v. 10X Genomics Inc.</i> , 967 F.3d 1353 (Fed. Cir. 2020)	35
<i>Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.</i> , 868 F.2d 1251 (Fed. Cir. 1989)	34, 36, 39
<i>Eli Lilly v. Teva Pharmaceuticals Intl. GmbH</i> , 8 F.4th 1331 (Fed. Cir. 2021)	38, 62
<i>In re Fritch</i> , 972 F.2d 1260	78
<i>Gen. Elec. Co. v. Nintendo Co.</i> , 179 F.3d 1350 (Fed. Cir. 1999)	34, 36
<i>Kinetic Concepts, Inc. v. Smith & Nephew, Inc.</i> , 688 F. 3d 1342 (Fed. Cir. 2012)	64, 66
<i>Kropa v. Robie</i> , 38 C.C.P.A. 858, 187 F.2d 150 (1951)	34
<i>KSR 'Int'l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007)	65
<i>MEMS Tech. Berhad v. Int'l Trade Comm'n</i> , 447 F. App'x 142 (Fed. Cir. 2011)	38

<i>Millennium Pharms., Inc. v. Sandoz, Inc.</i> , 862 F.3d 1356 (Fed. Cir. 2017)	68
<i>On Demand Machine Corp. v. Ingram Industries, Inc.</i> , 442 F.3d 1331 (Fed. Cir. 2006)	34, 38
<i>Pacing Technologies, LLC v. Garmin International, Inc.</i> , 778 F.3d 1021 (Fed. Cir. 2015)	39
<i>Personal Web Technologies, LLC v. Apple, Inc.</i> , 848 F. 3d 987 (Fed. Cir. 2017)	65, 69
<i>Poly–America, L.P. v. GSE Lining Tech., Inc.</i> , 383 F.3d 1303 (Fed. Cir. 2004)	37
<i>Sensonics, Inc. v. Aerosonic Corp.</i> , 81 F.3d 1566 (Fed. Cir. 1996)	68
<i>SIMO Holdings Inc. v. Hong Kong uCloudlink Network Technology Ltd.</i> , 983 F.3d 1367 (Fed. Cir. 2021)	34
Statutes	
35 U.S.C. §102	16

PATENT OWNER'S EXHIBIT LIST

Exhibit No.	Description
2001	Declaration of Muthu Govindaraj, Ph.D.
2002	Select pages from <u>Patternmaking for Fashion Design, Fifth Edition</u> , Helen Joseph-Armstrong, ©2010, 2006
2003	Select pages from <u>Modaris and Diamino for Apparel Design</u> , Catherine Black, ©2008

I. INTRODUCTION

The Board should deny institution of the Petition for *Inter Partes* Review (“IPR”) of U.S. Patent No. 10,733,773 (“the ’773 Patent”) because the ’773 Patent claims a novel and non-obvious method and apparatus for creating digital clothing comprising free sewing 2-dimensional digital patterns together to create 3-dimensional digital clothing in a way that is easier, faster, and more efficient, and that more accurately aligns the sewn-together portions of digital patterns to avoid wrinkles and other imperfections, and ensures proper draping of the clothing. These advantages are critical to users of Patent Owner’s patented software, and are not found in the prior art.

Patent Owner is a pioneer in the virtual clothing design software industry and consistently innovates and improves its technology. Clothing simulation technology is a billion-dollar market, and is used to model clothing in various industries such as fashion, animation, movie visual effects, and gaming. Clothing simulation programs generally involve virtually sewing 2D digital patterns together along seam lines to create 3D clothing. A user selects the seam lines or line segments on the 2D patterns to be sewn together. The software then virtually drapes the 3D clothing formed from 2D patterns over a 3D avatar to allow a user to visualize how the clothing fits on an actual person. Changes to the 2D patterns, length of the seam lines and type of fabric affect the draping of the 3D clothing.

The '773 Patent's claimed invention significantly improved virtual clothing software, including the user's ability to design virtual clothing with speed and efficiency to achieve accurate results, and nothing comparable is disclosed in the prior art of record. Petitioner's primary prior art reference is a video tutorial showing a prior version of Patent Owner's software that existed well before the patented invention, and a version that Patent Owner disclosed to the USPTO during prosecution. It fails to disclose many key elements of the '773 Patent's claims. Petitioner's secondary references are far afield and likewise fail to disclose those same key claim elements. Combining them cannot and does not create those elements where they don't exist in the first place. Petitioner cannot make a *prima facie* case of invalidity of the challenged claims.

Patent Owner's Preliminary Response lays out three independent reasons why this proceeding should not be instituted.

First, Petitioner's proposed combination to satisfy Elements [1.5] and [7.6] fails. The Petitioner's primary reference is EZBRUSH, a YouTube video showing a user's tutorial of Patent Owner's "Marvelous Designer 2" commercial software product. "Marvelous Designer 2" is a much earlier version of Patent Owner's virtual clothing design software before Patent Owner modified its software to include the patented advancements. EZBRUSH (and the Marvelous Designer 2 software) does

not disclose any advancements in creating segments with equal lengths during free sewing, does not describe problems with wrinkles in digital clothing whatsoever and does not disclose or contemplate a candidate ending point on a second segment that helps make free sewing much faster, easier, efficient and user friendly.

So Petitioner turns to Corel. But Corel is a generic CAD program that displays vertical and horizontal “dynamic guides” that only allow a user to visualize where vertical and horizontal lines would intersect if they were extended. Corel’s software is specifically suited for aligning purely horizontal and/or vertical lines, and would *not* be suitable for aligning different shaped segments sewn together. Corel likewise does not disclose or contemplate a pre-existing second segment or seam line required for free sewing, nor a candidate ending point on a second segment. The combination of EZBRUSH with Corel cannot and would *not* display a candidate ending point on the second segment, let alone one that would make a second selected segment (no matter its shape) the same length as the first selected segment. This reason alone is fatal to the Petition.

Second, the Petition completely misreads the limitations of Elements [1.8] and [7.8]. Elements [1.8] and [7.8] require “displaying a difference value between the length of the first selected segment and a length of *the line*.” The claimed “*line*” is the portion of the second segment between the *starting point* of the second selected

segment and a “*present point*” on the second segment associated with the current cursor position. The “line” changes as the user moves the cursor before the user selects an ending point and thereby selects the designated *second selected segment* for sewing to the first selected segment. The user can view, in real-time as the cursor moves, the difference between the length of the first selected segment and the length of the claimed “line” on the second segment before the user selects the ending point on the line and determines the second selected segment.

This, by itself, is also fatal to the Petition. These claimed features are *not* disclosed by any of the prior art of record, nor or any combination thereof. Petitioner concedes that EZBRUSH, Corel and Thoemmes do not disclose this element, so Petitioner tries to bring in yet another reference TUKATECH – Peitioner’s fourth reference in its failed combination – for Elements [1.8] and [7.8]. But TUKATECH teaches displaying a difference between lengths of two *already-existing* line segments of fabric patterns. TUKATECH’s displayed lengths and length differences have nothing to do with a line on a second segment that dynamically changes as the user moves the cursor so the user knows how the length of that line compares to a first selected segment – whether the user is trying to match the two segments or intentionally create a second segment that is shorter or longer than the first segment to create intended effects in the 3D clothing.

Third, in Ground II Petitioner attempts to add a fifth prior art reference, Niterra, to the EZBRUSH-Corel combination for the claimed element of “displaying a warning sign in response to the difference value being greater than a third reference value” in Claims 4 and 10. This combination also fails. Niterra has nothing to do with digital clothing design, but is instead directed to a CAD system for electrical circuit boards in which a display showing the circuitry’s line-length differential is shown *at all times*. Clearly non-analogous art, Niterra’s line-length differential unsurprisingly is not displayed specifically “*in response to*” the difference value being greater than any threshold. The Petition does not address this deficiency. Even more, certain claims of Ground II require the warning sign to include a color *change* when the threshold is met, yet Niterra only teaches that “color *may be used*” to provide the warning. Using color at all times is not the same as changing color. Petitioner cannot and does not meet its burden for Ground II.

For each of these reasons and the others stated below, Petitioner cannot meet its burden, and the Board should decline to institute an IPR proceeding relative to the ’773 Patent.

II. THE ’773 PATENT

A. Background

The ’773 Patent discloses a method and apparatus for creating digital clothing comprising free sewing 2D digital patterns together to create 3D digital clothing in

a way that is easier, faster, and more efficient, and more accurately aligns the sewn-together portions of digital patterns to avoid wrinkles and other imperfections, and ensuring proper draping of the clothing. EX1001, Abstract; 1:60-2:5. Clothing simulation technology is used to model textiles, as well as in the fashion, animation, movie visual effects and gaming industries. *Id.* at 1:25-26; EX2001, ¶57.

The '773 Patent inventors recognized many difficulties in the prior art. When trying to virtually free sew together two segments from two different digital patterns, users found it difficult to match the lengths of these segments. *Id.* at 1:40-46. If one segment is larger or smaller than the other segment, the 3D virtual clothes may have wrinkles, bunching or other clothing defects. *Id.* And this can further complicated by the fact that different fabrics have different properties. For instance, some fabrics may stretch well and some may not; some fabrics drape or fold differently, etc. *Id.* at 1:40-46, 10:14-23. So even if the same length, sewing segments or seam lines from different patterns together can create undesirable wrinkles or other clothing imperfections, depending on the material selected. *Id.* Matching the lengths of segments on digital fabric patterns with differing properties such as flexibility or the ability to stretch requires the software to accurately account for length and material or fabric. *Id.*; EX2001, ¶58.

A different problem existed if two segments need to have different lengths to create intended clothing effects like bunching, ruffles or wrinkles. A user is required to recognize how long or short the segments were during free sewing – a difficult task, particularly when the segments to be sewn together have different shapes. *Id.* at 1:47-51. Virtual clothing software users were required to iterate designs, checking the 3D rendering after identifying seam lines to be free sewn together, and then adjusting the segments, then checking the 3D rendering, then adjusting the segments, etc. EX2001, ¶59. This takes valuable time, and that time is particularly valuable when users and designers are under project deadlines, or when a virtual clothing design forms the basis or is a prerequisite for further clothing design or animation, which is often the case in the clothing design and animation industries. *Id.*

Additionally, prior virtual clothing software provided users with no desired notice or warning that lengths of two segments to be virtually free sewn together are different so they can adjust the segment lengths quickly and accurately during the process of free sewing. *Id.* at 1:40-56. Virtually free sewing two patterns together along seam lines that are improperly matched leads to errors and increased design time. EX2001, ¶60.

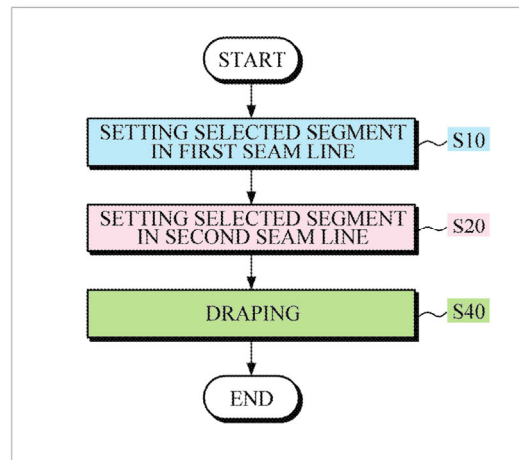
The '773 Patent's digital clothing program allows a user to more accurately and efficiently align the sewn-together segments to avoid wrinkles and other

clothing defects. The claimed invention allows a user to quickly and easily adjust the length of one digital pattern's line lengths to match another's during free sewing. EX1001, 1:60-62. The claimed method and apparatus display the differences in the length of the seam lines or segments on different digital patterns to be virtually free sewn together dynamically in real time as the user is selected and configuring the length of the second seam line segment as compared to first. *Id.* at 1:63-67. The claimed invention also provides a user with a warning when the difference in length of segments from two digital 2D patterns to be free sewn together is too large or too small, depending on inputs such fabric type and desired clothing style that may dictate when segments lengths are substantially the same to accomplish the user's purpose. *Id.* at 2:1-5. The '773 patent allows users to quickly and efficiently virtually free sew digital patterns together without wrinkles or other clothing imperfections, or to specifically add wrinkles for desired aesthetic effects. *Id.* at 6:9-19; EX2001, ¶61.

B. Description of the '773 Patent

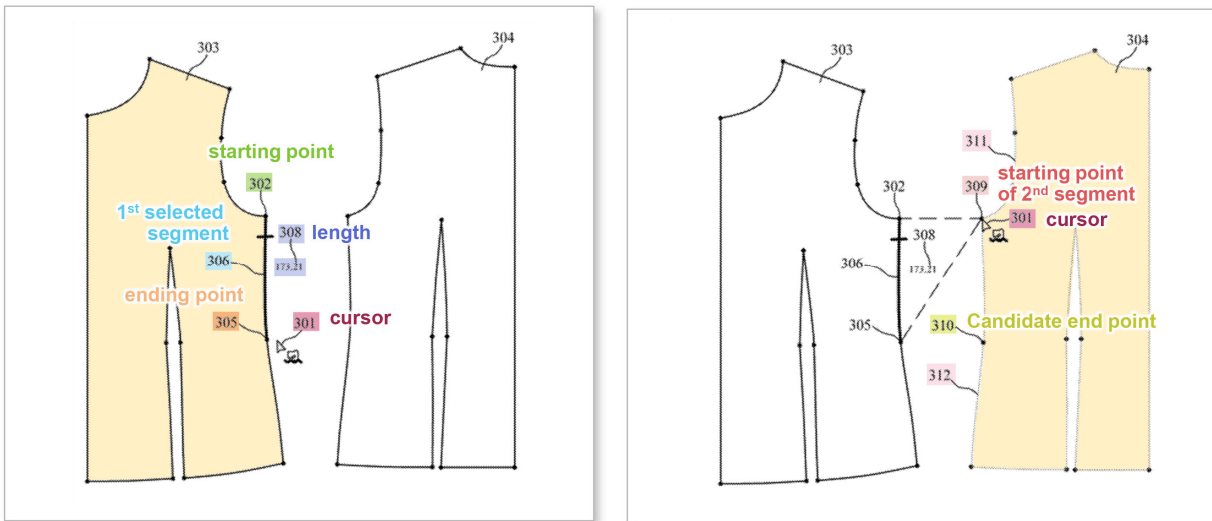
The digital clothing simulation program starts with two 2D virtual fabric patterns that may be stored in the memory of a computer. EX1001, 4:28-36; FIGS. 3-4. Fig. 1 below outlines the general process, whereby a user first sets a selected segment in a first seam line of a first digital pattern, next sets a selected segment in a second seam line of a second digital pattern, and then drapes the 2D patterns to

generate 3D digital clothing. *Id.* 4:28-36. The selected segments are set in pre-set seam lines, which are (1) the outlines of the patterns (see Figs. 3-9, 8:5-10), or (2) pre-set seam lines internal to the pattern (see Figs. 12(b), 12(c), 11:13-27). EX2001, ¶62.



EX1001, FIG. 1 (annotated); EX2001, ¶62

More detailed examples are shown in Figs. 3-9 of the patents. As illustrated in Fig. 4 below, a user first sets a starting point 302 and an ending point 305 on the first pattern 303 to define a first selected segment 306. EX1001, 8:16-44. The computer program can determine and display the length 308 of the first selected segment 306.

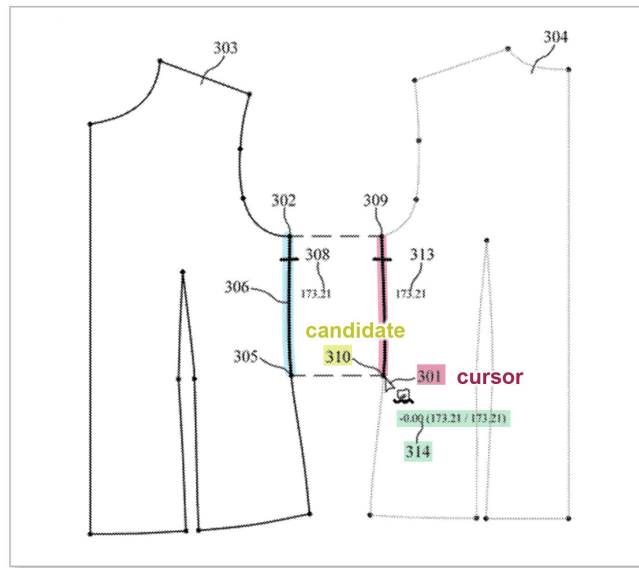


EX1001, FIGS. 4, 6 (annotated); EX2001, ¶63

As illustrated in FIG. 6 above, the user may then select a starting point 309 on the seam line of the second pattern, and depending on the position of the cursor, can identify a second segment 311 or 312 of the second digital pattern 304. EX1001, 9:3-27. Based on the cursor 301 position (here identifying second segment 312), the program displays a candidate ending point 310 on the second segment that would make a second selected segment — no matter the its shape — the same length as the first selected segment. *Id.*; EX2001, ¶64.

The '773 Patent's program can determine and display to the user a "difference value" representing difference in length between the first selected segment and the second selected segment. As is illustrated in Fig. 7 below, if the distance from the cursor to the candidate ending point is within a particular range, the cursor may be moved to the candidate ending point 310 on the second selected segment to quickly

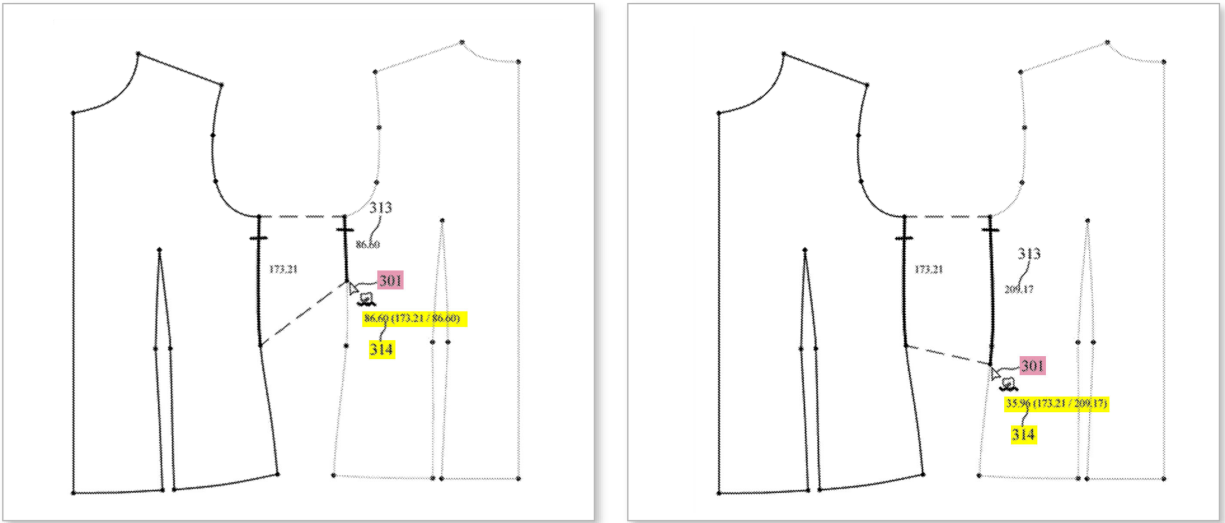
and easily allow the user to set the second selected segment to be the same length as the first selected segment. EX1001, 6:48-60, 9:37-47. The difference value 314 is shown as 0.00 in FIG. 7 (illustrated in green below).



EX1001, FIG. 7 (annotated); EX2001, ¶65

The user does not have to select the candidate ending point 310 as the ending point for the second selected segment. Before the user selects the ending point for the second selected segment, the user can move the cursor around. Once the user moves the position of the cursor, the length of the “line” on the second segment is changed accordingly. *Id.* The length of the “line” on the second segment is dictated by the current cursor position – measured from starting point on the second segment to the point on the second segment that is closest to the cursor position. *Id.* at 9:39-49. Figures 8 and 9 (shown below) demonstrate instances where the user moves the

cursor such that the second selected segment is either shorter (FIG. 8) or longer (FIG. 9) than the first selected segment 306.



EX1001, FIG. 8, 9 (annotated); EX2001, ¶66

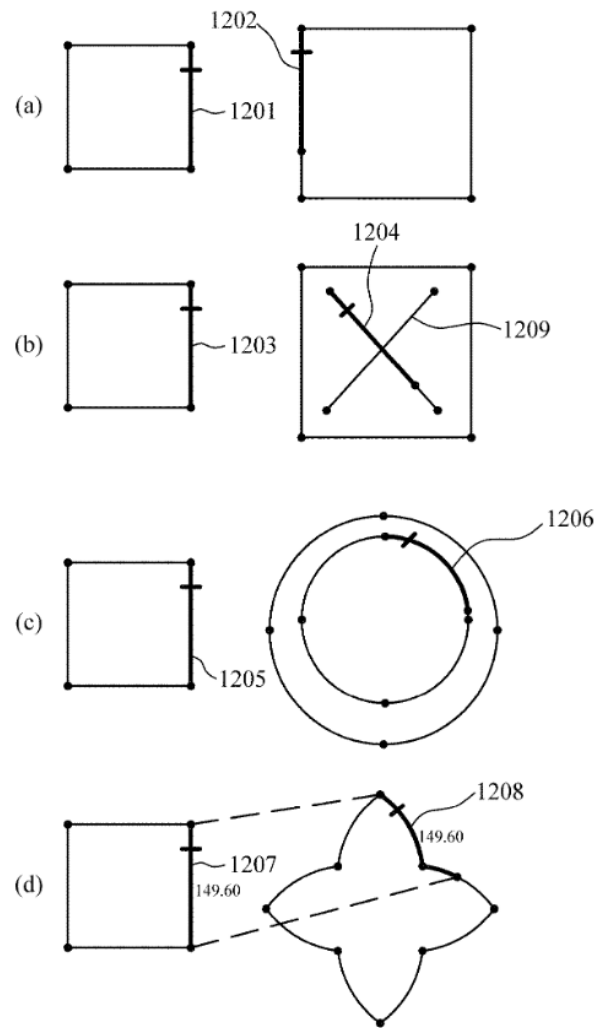
In FIG. 8 (above, left), because the cursor 301 is positioned in a location short of the candidate ending point of the second segment, the program determines the difference value between the lengths of the first segment and second segment (where the length of the second segment is determined by connecting the starting point on the second selected segment to a point that is on the second segment that is closest in distance to the current cursor position). *Id.* at Col. 9:58-67. FIG. 9 is similar, except that cursor 301 is positioned past the candidate ending point of the second segment. The program determines the difference value between the lengths of the first segment and second segment (where the length of the second segment is determined again by connecting the starting point of the second segment to a point

that is on the second segment and this is the closest in distance to the current cursor position). *Id.* at 10:24-35.

The '773 Patent teaches that when measuring whether the first selected segment is the same length as the second selected segment, the program accounts for factors such as the type of fabric. The '773 Patent explains and provide a similar example in numerous locations: “[f]or example, knit and chiffon stretching well do not create wrinkles if the difference between the first and second selected segments is lower than one inch. Cotton and denim not stretching well may not create wrinkles if the difference between the first and second selected segments is lower than one centimeter.” *Id.* at 10:14-24; 10:47-56; 14:13-22. Thus, there is a range or tolerance that determines whether the length of the second selected segment is the same as or different than the first selected segment. The program may provide a warning sign to the user in various form such as a display or color change, for example, when the first and second segments are different in length, even when the shapes and lengths of the segments look the same at first blush. *Id.* at 9:49-57; 10:12-14; 10:39-47. EX2001, ¶67.

When creating digital clothing from 2D patterns, the shapes of the first and second segments do not need to be the same. As illustrated in Fig. 12 below, the segments may take any number of shapes, but the program is still able to ensure that

the user is able to match the lengths of the first and second segments to proper fit to eliminate wrinkles or other imperfections, create 3-dimensional virtual clothing and account for the draping of virtual clothing. *Id.* at 11:6-34. Figs. 12(b) and 12(c) also illustrate how a user pre-sets internal seam lines (i.e. “x” internal seam lines 1204, 1209 in 12b; internal circle seam line in 12c) that a user can ultimately choose as second selected segments for virtual sewing. EX2001, ¶68.



EX1001, FIG. 12

III. OVERVIEW OF THE CITED REFERENCES

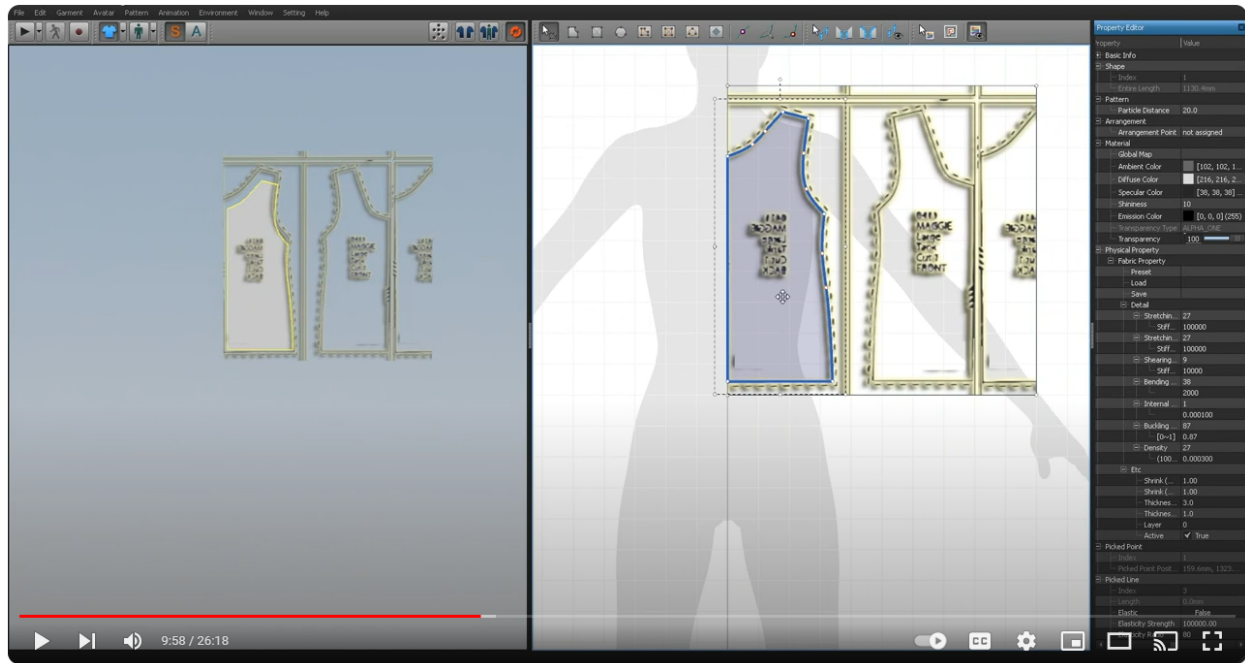
A. EZBRUSH

EZBRUSH is a YouTube video showing the use of an old version of Patent Owner's "Marvelous Designer 2" 3D CAD software program for creating virtual clothing.¹ It is nothing new. Patent Owner cited the User Manual for this Marvelous Designer 2 software to the USPTO during prosecution of the '773 Patent. *See* EX1001, Cover Page. The '773 is a result of improvements and advancements Patent Owner made to create new versions of its Marvelous Designer software. EZBRUSH is cumulative of what the Examiner had when he allowed the '773 Patent.

In the video, a user creates a virtual shirt. To do so, the user first selects a pattern and then traces over the pattern. In doing so, the user can point and click the

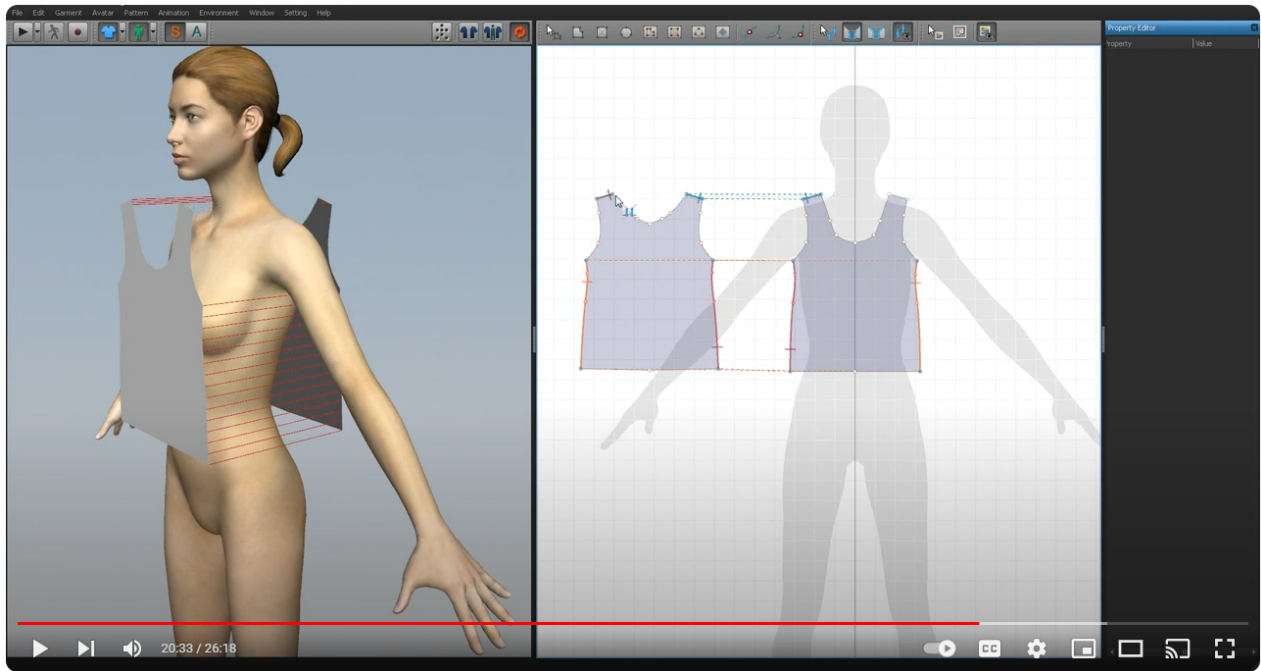
¹ Patent Owner does not admit or concede that EZBRUSH constitutes prior art under 35 U.S.C. §102. Petitioner has not carried its burden to establish that the EZBRUSH YouTube video is a "printed publication" based "upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it." The video is titled "Trace Patter" and was created by a YouTube user who has hundreds of videos. A POSITA would not have discovered the video using reasonable search terms, and certainly would not have searched for "trace pattern". Additionally, it's unlikely a POSITA would have watched a 26 minute video until nearly the end to discover the portion of the video Petitioner relies on (24 minute mark) in this Petition.

mouse at various spots along the underlying pattern to create seam lines that can be sized and shaped to a desired fit on the 2D avatar. EX1004, 1:16-18:30; EX2001, ¶70.



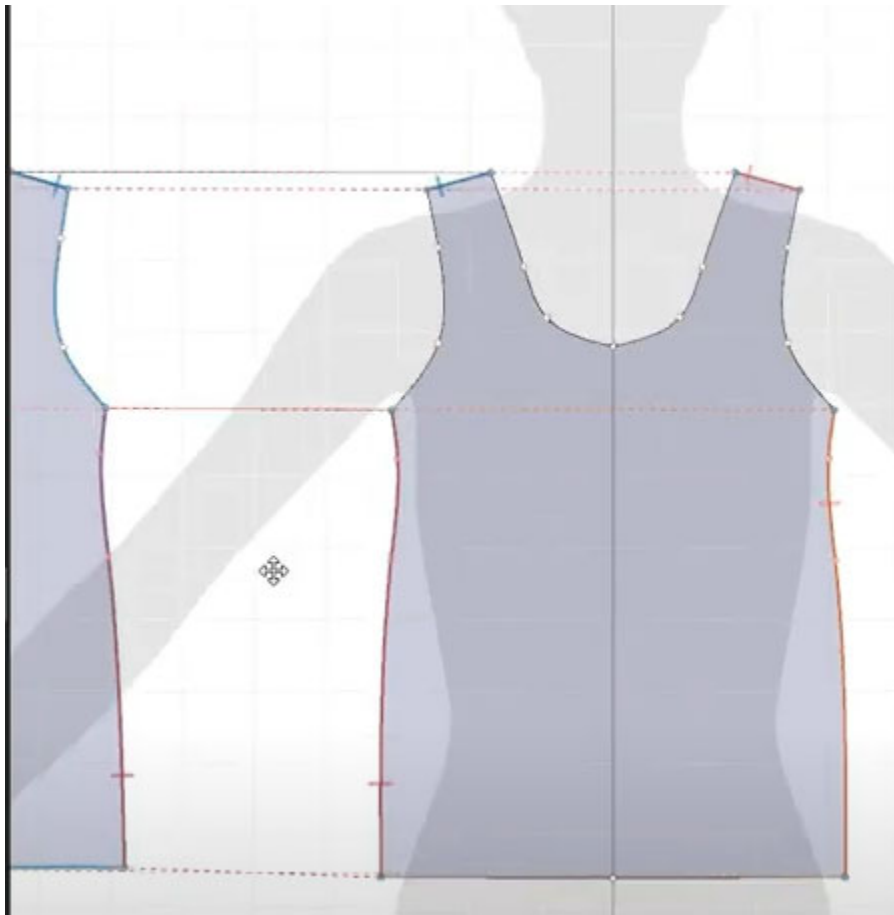
EX1001, 9:58

Once the patterns are traced and mirrored to create a front and back of the shirt, the user can select any of the seam lines or line segments (of various sizes and shapes) to be virtually sewn together. EX2001, ¶71. For example, in the screenshot shown below, the sides of the shirt (under the armpit) are sewn together, and the tops of the shirt (over the shoulder) are sewn together:



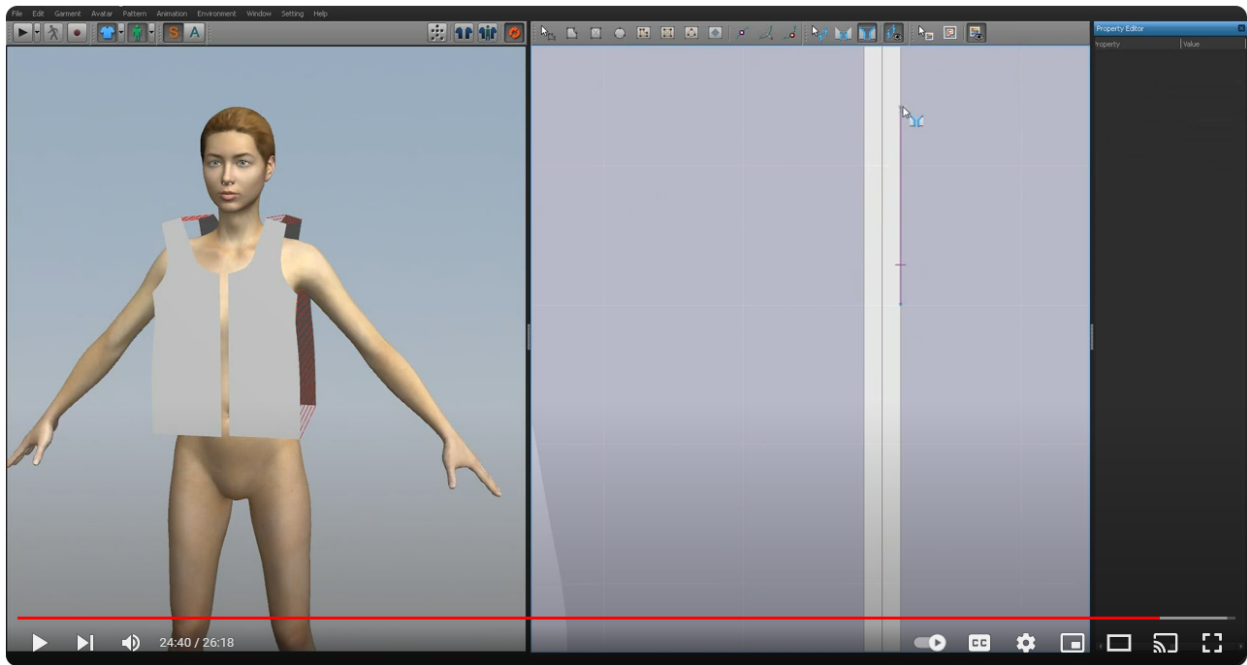
EX1004, 20:00-20:50; EX2001, ¶71

Note that the seams being sewn together are not vertical lines, horizontal lines, not straight and are not even horizontally aligned:



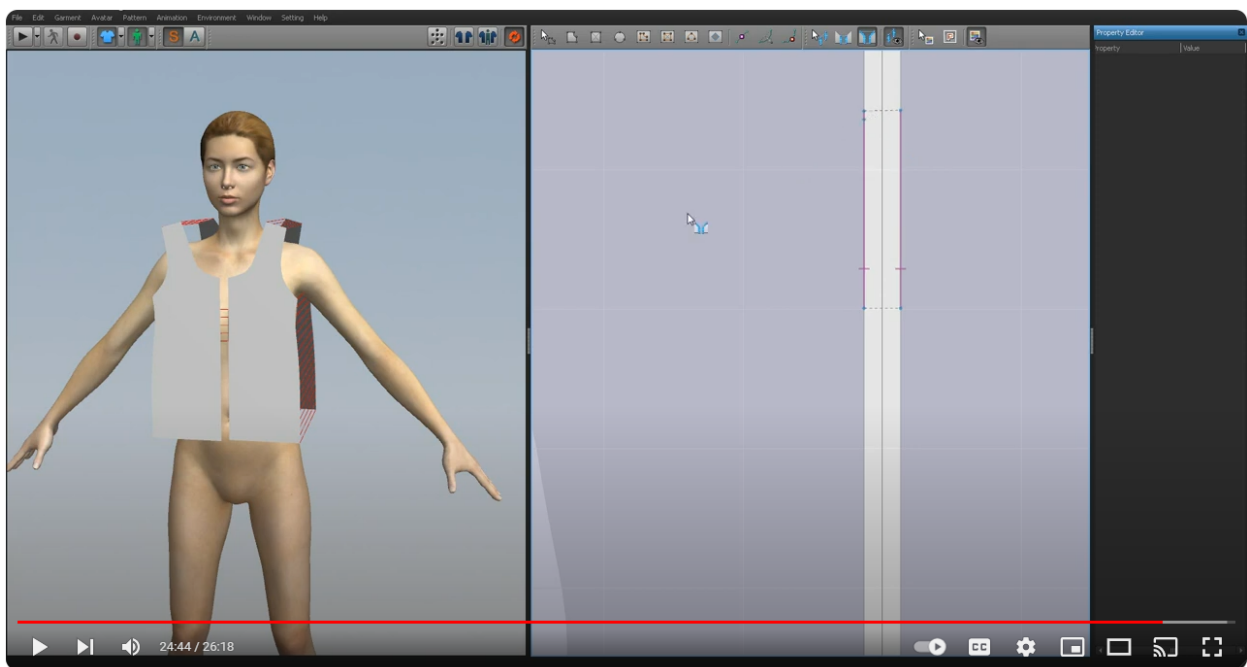
EX1004, 21:56; EX2001, ¶72

Near the end, the EZBRUSH video shows an example of “free sewing” two segments of the shirt together. EX1004, 22:42-26:13. In EZBRUSH, the user creates a first sew segment on the left side of the right pattern by pointing and clicking two points on the first segment:



EX1004, 24:40; EX2001, ¶73

The user then repeats the same point-and-click procedure on the left side of the fabric:



EX1004, 24:44; EX2001, ¶74

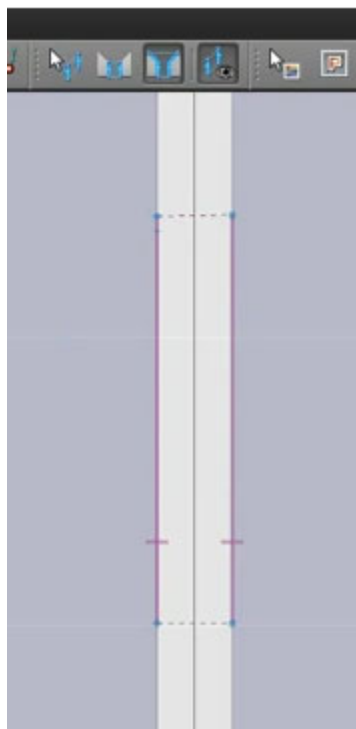
These two created segments are then sewn together, and the fabric is draped over the avatar with the sewn segments shown in the front of the shirt:



EX1004, 24:51; EX2001, ¶75

Note the trial and error process here – there are no suggested points for the user to click and create these seams, no segment lengths displayed, and no indicators as to when the segment lengths match for a particular fabric or user style or clothing preference. EX2001, ¶76. The user is free to point and click anywhere on the seam lines of the first and second patterns. *Id.* The user must iterate designs and segment lengths in order to ensure proper segment size and configuration. *Id.* The two seams may not be identical in length, or have different but known length desired by a user.

For example, in the screenshot below, the upper points of each segment are not perfectly aligned (*i.e.*, the dashed line connecting the two top points is slightly askew from horizontal). EX2001, ¶76. This old version of Patent Owner's software did not include the key claimed features. Indeed, the '773 patent was filed and obtained to protect improved software with many advantages over the old version.



EX1001, 24:51

EZBRUSH does not display a candidate end point on the second segment to make length of second selected segment substantially equal to the length of the first selected segment. The user just guesses. EX2001, ¶77. EZBRUSH does not display the length of the line between starting point and the present point on the second

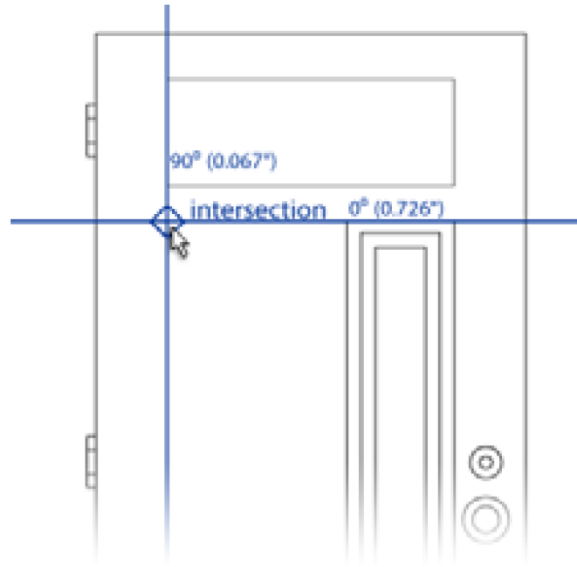
segment, or the difference value between the length of the first selected segment and the length of the second line. *Id.* There is no warning when the lengths of first selected segment is substantially different than the length of the second selected segment. *Id.* EZBRUSH does not even teach that doing so has the potential to create wrinkles or other imperfections in the 3Dvirtual clothing. In fact, EZBRUSH is completely silent regarding the difficulties of not making the segments equal in length, and gives no tools to help a user to do so. *Id.*

Indeed, there are many instances in designing virtual clothing where the seam lines on a first digital pattern are different in shape, size, configuration or dimension than the seam lines on a second digital pattern. EX2001, ¶78. Even when they look the same, it is common for a user to unable to discern differences on a computer screen. *Id.* It is important that the program provide the user with an indication of when the first and second selected segments are substantially the same, which determination is based on not only segment length, but factors such as type of fabric (different fabrics stretch, flex and drape differently) and user design or draping preferences (for instance, tight fitting v. loose fitting design, significant ease v. little ease, wrinkles v. no wrinkles, bunching v. no bunching, etc.). *Id.*

B. Corel

Corel is a publication describing a Corel DESIGNER software program. Corel just involves lining up horizontal and vertical lines from linear shapes, and has nothing to do with free sewing or virtual clothing design.

Corel describes vertical and horizontal “dynamic guides” that aid the user in aligning lines relative to one another in creating static objects such as, for example, door panels for doors. EX1005, p.10; EX2001, ¶79. These dynamic guides extend out previously-created line segments to aid a user in creating a new line that aligns with a previously-created line. In the screenshot below, a blue vertical dynamic guide extends out the left-most line of the upper door panel, and a blue horizontal dynamic guide extends out the upper-most line of the right door panel. EX2001, ¶79. The intersection of these two lines can be selected by the user as the upper-left point of a new, left door panel.

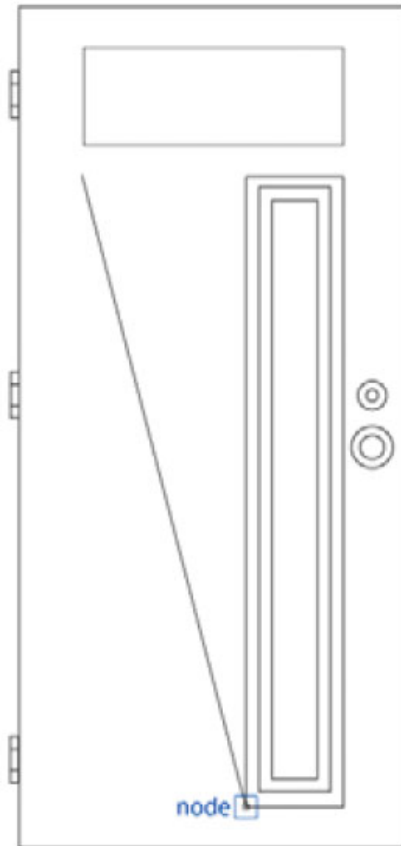


EX1005, p.11

But this is just the starting point of a second line. Petitioner failed to include in its Petition the next, intermediate step in Corel's sequence showing what happens after a user selects a starting point for a second line. As shown below, there is no (i) pre-existing second segment or seam line, (ii) second segment or seam line that a user cursors near to display a present point on the second segment, (iii) candidate ending point on the second segment for the second selected segment, (iv) measurement of the length of a line on the second segment and the length of a first selected segment, or (v) any comparison of a length of second line to a first selected segment. EX2001, ¶80. The user is simply trying to find the horizontal coordinate of the bottom edge of the first door panel. *Id.* This is not close to the same thing, and for good reason. Corel is a CAD program intended to match coordinates of an

existing shape, not software for virtual clothing design that is attempting to free sew together two segments from two seam lines on two different, pre-existing patterns.

Id.

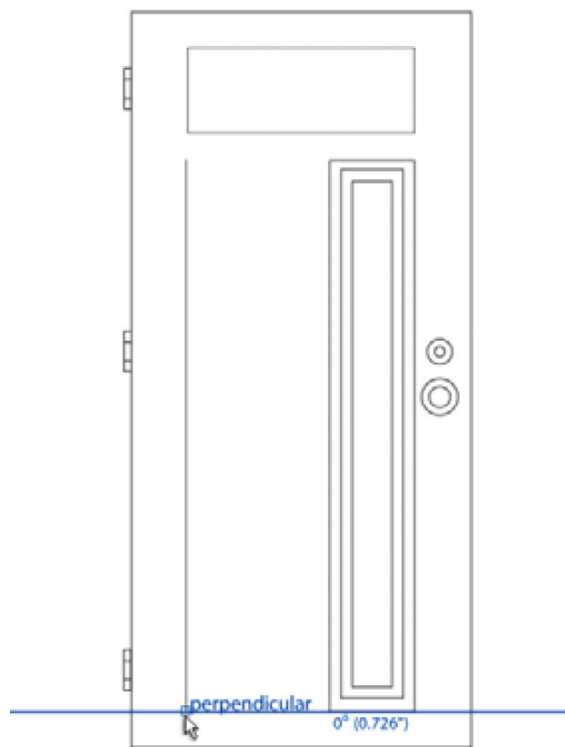


EX1005, p.11

In fact, the entire second line is moving with the cursor. EX2001, ¶81. The cursor is certainly not triggering a “present point” on a (non-existent) second seam line segment that is closest to the cursor position. *Id.* The last image shown in the cited portion of Corel (below) merely shows a user dragging the cursor to a new location that is the intersection of a horizontal and vertical dynamic guide. *Id.* That

intersection point is only displayed if the user positions the cursor on or very near the correct horizontal coordinate, and on or very near the correct vertical coordinate.

Id. If the user fails to do either, there is no intersection point. *Id.* However, there is still no candidate ending point displayed on a pre-existing second seam line segment when the user sets a starting point on the second segment. *Id.*



EX1005, p.11

Additionally, Corel is requires straight, linear lines. EX2001, ¶82. Corel is not related to or contemplated for digital clothing design. Curved, sinuous, uneven or non-linear seam lines dominate most digital patterns. Corel could not determine an intersection point. Additionally, digital clothing design requires a user to match

seam lines for free sewing two non-matching digital patterns together. So merely duplicating the shape of a line, a horizontal coordinate or a vertical coordinate as taught by Corel does not work. *Id.*

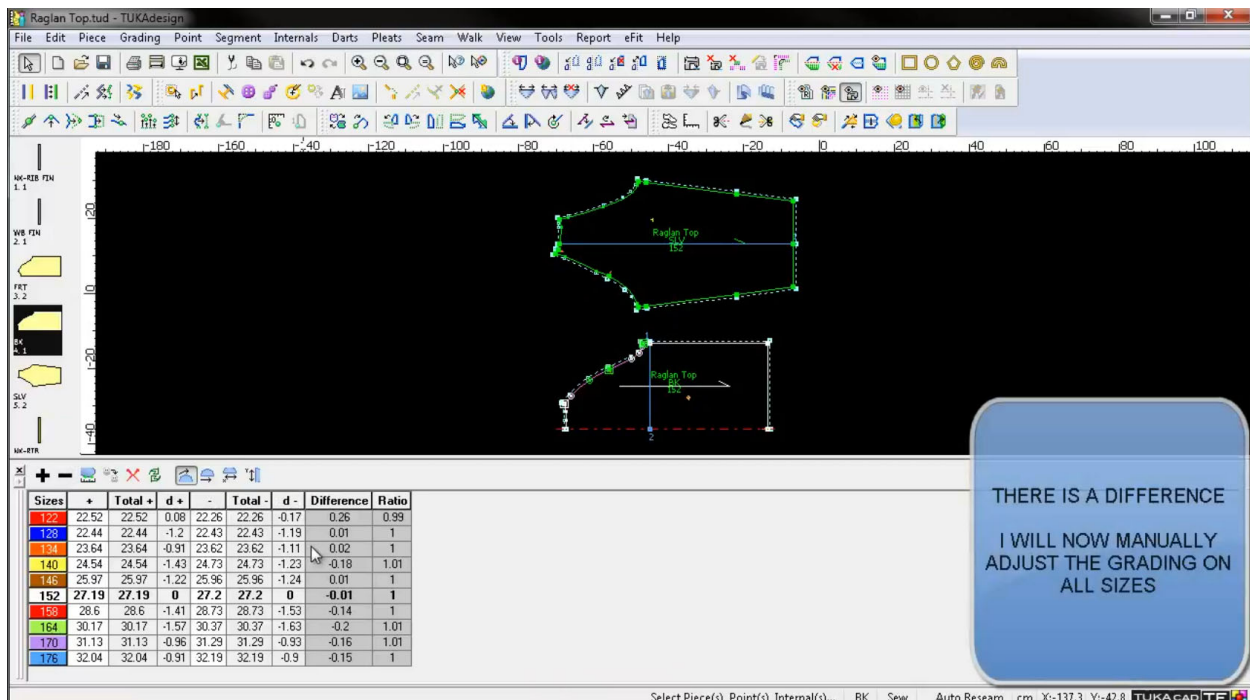
C. Thoemmes

Thoemmes is a U.S. Patent directed to “implementing a relative polar angle snap tool.” EX1006, Abstract. Thoemmes “relates to computer-implemented systems and methods for drawing images, and in particular to a computer-aided drafting tool for drawing lines at pre-settable angles from an existing linear entity and at pre-settable distances from pick points on the existing linear entity.” *Id.*, 1:24-29.

Thoemmes does not disclose or contemplate a second segment, displaying a candidate on the second segment or showing how length of the second segment changes in real-time as the cursor moves, or displaying an indication of whether the first and second segments are substantially the same such that they fall within an acceptable tolerance for sewing them together to either avoid wrinkles or other clothing imperfections, or intentionally add wrinkles or garment gathering if desired by the user. EX2001, ¶84. And for good reason. Thoemmes was not and is not intended to address free sewing two patterns together to create 3D clothing in virtual clothing design. It is simply a program for drawing lines with a particular angle and length. *Id.*

D. TUKATECH

TUKATECH is a YouTube video showing a TUKAcad software program directed to “grading” of clothing, or adjusting the size of the same garment so it can be offered in different sizes (i.e., S, M, L, XL, etc.). EX2001, ¶90. It is not directed to free sewing 2D digital garment patterns together to create 3D virtual clothing that is draped or modelled. *Id.* The short video showing use of the TUKATECH software shows a user comparing the length of two different pre-set segments of different garment patterns. *Id.* The user selects two previously-created line segments on the patterns, and a table is displayed that shows the difference in length between those two selected segments. *Id.* The table shows the difference in lengths of selected pre-set line segments.



EX1007, 0:10-0:30

TUKATECH's measurements do not inform the user of the length of the first or second segments as they are being formed; do not provide a comparison of the length of a second segment on a second pattern that is to be free-sewn to a first segment on a first pattern; are not based on real-time movement of the cursor; and do not assist the user in selecting a second segment that is substantially the same length as the first selected segment. EX2001, ¶91. The displayed difference values in TUKATECH do not change as a user moves the cursor, but rather must be recalculated every time a user adjusts the length of a segment. *Id.*

E. Niterra

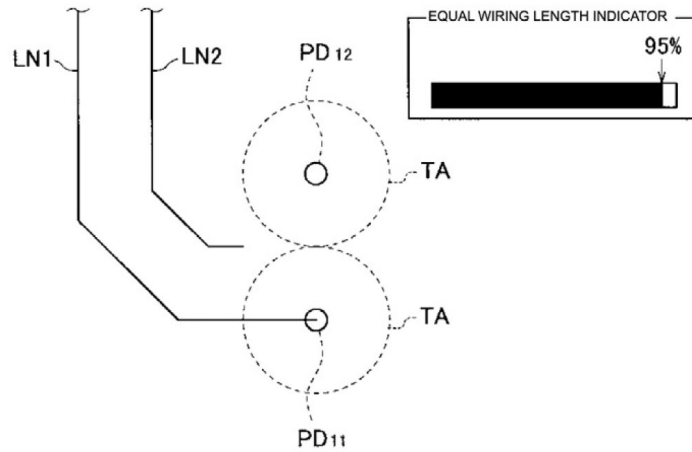
Niterra is a Japanese patent publication directed to a CAD system designing for electronic circuit boards. EX1009, [0001]. This reference has nothing to do with virtual clothing design, and does not appreciate or contemplate the challenges, problems faced, intricacies and necessary solutions of designing virtual clothing. EX2001, ¶85. Niterra's CAD system allows a user to design and visualize the wirings of an electronic circuit board before manufacturing.

In electronic circuit boards, electrical wirings transmit signals from one part of the circuit board to another part of the circuit board. EX2001, ¶86. To complete the electrical connection, the terminal ends of each wire are connected to pads. *Id.*, [0008]. Niterra explains a type of electrical wiring construction called “differential

wiring,” where a user drafts two electrical wirings separately and individually. EX1009, [0004]. And, “[i]n differential wiring, it is important to make the difference in length between the two wirings as small as possible so that the difference in signal arrival time is within an allowable range.” *Id.*, [0005]. Said another way, “there is a need to equalize the wiring length in differential wiring as much as possible.” *Id.*, [0008]. EX2001, ¶86.

Because the difference in the length of these two wiring lines is important, Niterra’s invention involves calculating and displaying the difference in length of the two wirings. *Id.*, [0007]; see also [0008]-[0016] (“[w]ith the present invention,... the difference in wiring length (amount of wiring length deviation) is calculated,” “wiring length deviation information” is “generated” so that “the length of wiring... can easily be individually read (calculated) and the differences in length can be easily be compared. This eliminates the need to individually check the wiring lengths when checking differential wiring lengths.”) EX2001, ¶87.

As an example, Niterra’s FIG. 29 shows two electrical wiring lines LN1, LN2, being drafted by the user, along with an “equal wiring length indicator” that indicates the ratio of the length of the second wiring LN2 to the first wiring LN1. *Id.*, [0069]. EX2001, ¶88.



EX1009, FIG. 29

This tool allows the user to draw the second wiring LN2 and connect it to the pad PD₁₂ (to create the electrical connection) while monitoring its length relative to the first wiring LN1. *Id.*, [0069]. So, as the second wiring LN2 is drawn extending closer to the length of the first wiring LN1, the equal wiring length indicator would approach 100%. EX2001, ¶88-89.

Notably, and as will be explained further below, a user would not draw the second wiring LN2 to extend beyond the second pad PD₁₂. Doing so would create excess wiring that is unnecessary because the electrical connection is already completed when the second wiring LN2 is connected to the second pad PD₁₂. EX2001, ¶89. And, if a user were to attempt to draw the second wiring LN2 to extend beyond the second pad PD₁₂, Niterra’s “equal wiring length indicator” would not provide sufficient information because the indicator only goes up to 100%; the

indicator cannot go beyond 100% if the second wiring LN2 is drawn to travel past the second pad PD12 (which a user would not even do in the first place). In such a situation, the equal wiring length indicator would likely either stay at 100% or would malfunction. EX2001, ¶89.

IV. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner argues that a person of ordinary skill in the art (“POSITA” or “POSA”) would have had “a minimum of a bachelor’s degree in an engineering, computer science, graphic design, or a related field plus 2-3 years of work and/or research experience in the field of computer aided design (CAD) software.” Petition at 21.

Patent Owner agrees with a portion of Petitioner’s proposal, but respectfully submits that it fails to account for a key aspect of the ’773 Patent’s invention – creating computer programs for virtual or digital clothing design. General CAD software is not suitable to solve the intricacies of virtual clothing design, such as converting 2D patterns into a draped 3D clothing article. As explained above in Section II and III above, the types of problems encountered in the art would include creating seams and sew lines, and understanding flexible material properties such that when the clothing is draped, no wrinkles are created. EX1001, 1:40-46. The use of 2D fabric patterns to create 3D clothing designs (i.e., draping) is a specialized process that static, generic CAD software is not suited for. EX2001, ¶55.

A POSITA to which the '773 Patent pertains would have had a minimum of a bachelor's degree in mechanical engineering, textile engineering, computer engineering, computer science, graphic design, or an equivalent degree, with at least 2-3 years of experience in software design for the creation of digital or virtual clothing. EX2001, ¶56.

V. CLAIM CONSTRUCTION

Petitioner submits that no claim terms need be construed. Patent Owner generally agrees, except to note that the preamble in the independent claims (*i.e.*, claims 1 and 7) is limiting. In considering whether a preamble is limiting, the preamble is analyzed to ascertain whether it states a necessary and defining aspect of the invention, or is simply an introduction to the general field of the claim. *On Demand Machine Corp. v. Ingram Industries, Inc.*, 442 F.3d 1331, 1343 (Fed. Cir. 2006). In *Kropa v. Robie*, the court described the inquiry as whether the preamble is “necessary to give life, meaning and vitality to the claims or counts.” 38 C.C.P.A. 858, 187 F.2d 150, 152 (1951). The preamble may also operate as a claim limitation when it recites additional structure or steps underscored as important by the specification. *Corning Glass*, 868 F.2d at 1257; *General Electric Co. v. Nintendo Co.*, 179 F.3d 1350, 1361–62 (Fed.Cir.1999). Likewise, the Federal Circuit has “repeatedly held a preamble limiting when it serves as antecedent basis for a term appearing in the body of a claim.” *SIMO Holdings Inc. v. Hong Kong uCloudlink*

Network Technology Ltd., 983 F.3d 1367, 1375-76 (Fed. Cir. 2021); *see also Bio-Rad Labs., Inc. v. 10X Genomics Inc.*, 967 F.3d 1353, 1371 (Fed. Cir. 2020) ([the claim] body’s reliance on preamble for antecedent basis “is a strong indication that the preamble acts as a necessary component of the claimed invention”).

Each of the two preambles of the independent claims in the ’773 Patent are limiting because they are “a necessary and defining aspect of the invention,” rather than “an introduction to the general field of the claim.” The preambles describe either a method of or apparatus for creating digital clothing that tethers the claim body to the entire invention. The bodies of the independent claims specifically address virtually sewing two digital patterns together along segments set by a user. The entire operations are performed on a computer to create digital clothing designs. The entirety of the claims are directed to implementing the preamble’s clear directive, and there is no way to read the claims to apply to manual sewing, or to fields other than digital or virtual clothing.

Likewise, the ’773 specification describes a method of creating digital clothing that is unique to digital clothing. The Title of the invention is “Method and Apparatus for Creating Digital Clothing”; the Abstract recites “a computer simulation technology the processes 2D clothing patterns and thus creates digital clothing”; and the Field of the Invention is “computer simulation technology that

processes 2D clothing patterns and thus creates digital clothing.” Moreover, each of Figs. 1-13 either describes or illustrates creation of digital clothing, and the entire specification is directed to and describes how to better virtually free sew two 2D digital patterns together along seam lines to create a 3D digital clothing. Not actual cutting and sewing of fabrics; not cars, planes, buildings, or rigid parts and structures; but digital clothing that must be created by virtually free-sewing 2-dimensional patterns together to form a 3-dimensional article of digital clothing using computer programs. It is a fundamental characteristic of the invention.

The Federal Circuit has consistently found preambles limiting under similar circumstances. For example, in *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, the Federal Circuit noted that the “specification makes clear that the inventors were working on the particular problem of an effective optical communication system, not on general improvements in conventional optical fibers”, and held the “optical waveguide” language in the preamble was limiting in contrast to broader optical fibers irrespective of any waveguide properties. 868 F.2d 1251, 1257 (Fed. Cir. 1989). The claim body was properly understood only with reference to the preamble and the preamble was thus limiting. *Id.* Similarly, in *Gen. Elec. Co. v. Nintendo Co.*, the Federal Circuit noted that “the ’125 specification makes clear that the inventors were working on the particular problem of displaying binary data on a raster scan

display device and not general improvements to all display systems” and held “system for displaying a pattern on a raster scanned display device” in the preamble as limiting when the claim body was ostensibly directed to all types of display systems. 179 F.3d 1350, 1361–62 (Fed. Cir. 1999). Yet another example is *Poly-America, L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1309–10 (Fed. Cir. 2004). There, the court determined that the phrase “blown-film” is a limitation of the claims of the disputed patent. The court reasoned that the specification is replete with references to the invention as a “blown-film” liner, including the title of the patent itself and the “Summary of the Invention”; the phrase is used repeatedly to describe the preferred embodiments; and the entire preamble “blown-film textured liner” is restated in each of the patent's seven claims. *Id.*

Other Federal Circuit cases reach similar holdings. *See also, Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1571–3 (Fed. Cir. 1996) (holding “[i]n a cold purge process” in the preamble as limiting and relying on the “specification stated that the purpose of the invention” was to address a problem in a “cold purge process”); and *Poly-Am., L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1309–10 (Fed. Cir. 2004) (reading the preamble as limiting because the patent document “shows that the inventor considered that the ... preamble language represented an important characteristic of the claimed

invention”); *On Demand Mach. Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1343–44 (Fed. Cir. 2006) (reading the preamble as limiting because “it states the framework of the invention ... [that] is fundamental to the [] invention” as described in the patent and therefore “embraces the totality of [the recited] limitations, and limits the claim to the subject matter of the preamble”); *MEMS Tech. Berhad v. Int’l Trade Comm’n*, 447 F. App’x 142, 153–54 (Fed. Cir. 2011) (reading the preamble as limiting because it states “the essence of the invention” and “standing alone, the bodies of [the claims] do not require” the important characteristic of the invention recited in the preamble); and *Eli Lilly v. Teva Pharmaceuticals Intl. GmbH*, 8 F.4th 1331, 1336-9 (Fed. Cir. 2021)(preamble limitation reflected in every section of the patents’ written description, including Abstract, “Field of the Invention”, “Background of the Invention”, “Brief Summary of the Invention”, and the “Detailed Description of the Invention”).

The preambles in Claims 1 and 7 of the ’773 Patent also recite additional structure. Each preamble recites that the method is executable by or the apparatus comprises: **“a computing device storing patterns and draped digital clothing”** (or similar). This is important structure and context for the claims, which address computer simulations to create digital clothing. The specification also underscores

its key nature, as described above. *See Corning Glass*, 868 F.2d at 1257; *General Electric Co.*, 179 F.3d at 1361–62.

Likewise, the preambles also provide antecedent basis for “patterns”. Each of the three independent claim bodies recites the element “setting a first selected segment by inputting the first selected segment to be sewn on a first segment on a **pattern**”, or similar language. (’773 Patent, Claim 1.) Use of “pattern” in the claim body is a reference back to the “patterns” in the preambles. *See, e.g., Pacing Technologies, LLC v. Garmin International, Inc.*, 778 F.3d 1021, 1023–24 (Fed. Cir. 2015) (holding that a statement of intended use— “[a] repetitive motion pacing system for pacing a user”—was limiting because the term “user” in the preamble provided antecedent basis for that term later in the body of the claim).

This is important to note because Corel, Thoemmes, and Niterra have nothing to do with “creating digital clothing executable by a computing device storing patterns and draped digital clothing,” which is the preamble of claim 1. Problems and solutions addressed by those references simply are not applicable to the problems encountered in creating digital clothing, as will be described below.

VI. GROUND 1 BASED ON EZBRUSH IN VIEW OF COREL, THOEMMES, AND TUKATECH IS DEFICIENT (CLAIMS 1-2 AND 6-9)²

For the reasons described below, the Petition's Ground I challenges against Claims 1-2 and 6-9 are deficient and institution should be denied.

A. Petitioner's Proposed Combination Fails to Satisfy Elements [1.5] and [7.6]

Elements [1.5] and [7.6] require displaying a "candidate ending point" on the second segment that would make a length of the second selected segment substantially equal to a length of the first selected segment. The Petitioner's proposed combination fails to satisfy these elements.

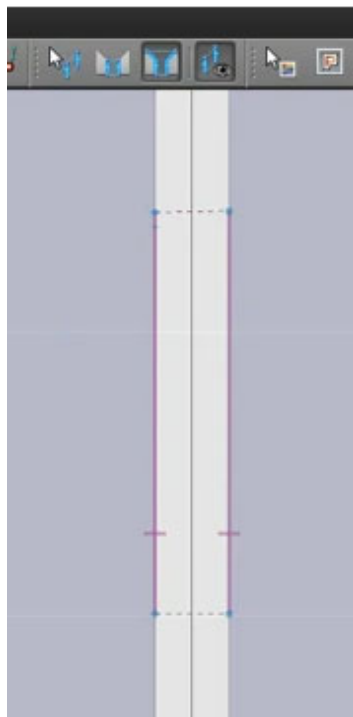
1. EZBRUSH Does Not Teach a "Candidate Ending Point" That Is "On The Second Segment"

Petitioner effectively concedes that EZBRUSH does not disclose determining, setting or displaying a "candidate ending point" on the second segment that would make a length of the second selected segment substantially equal to a length of the first selected segment. Petition, pp.52-55. Petitioner also does not argue that

² In this preliminary response, Patent Owner only presents arguments against institution of this Petition. In the event that this Petition is instituted, Patent Owner reserves the right to raise additional or different arguments in its Patent Owner Response.

EZBRUSH teaches “moving the present point to a candidate ending point on the second segment, in response to the difference between the present point and the candidate end point being less than a reference value.” *Id.* These facts are undisputed.

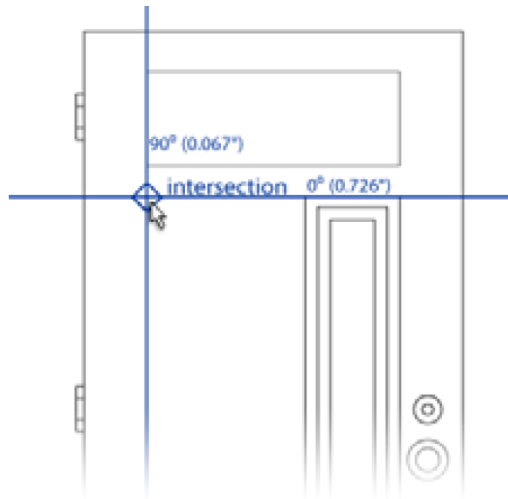
For example, as exemplified by the screenshot below, EZBRUSH is a very manual process without aids, so that even when the user in the YouTube video attempts to make line segments of somewhat equal length, the upper points of each segment are not perfectly aligned (*i.e.*, the dashed line connecting the two top points is slightly askew from horizontal).



EX1001, 24:51

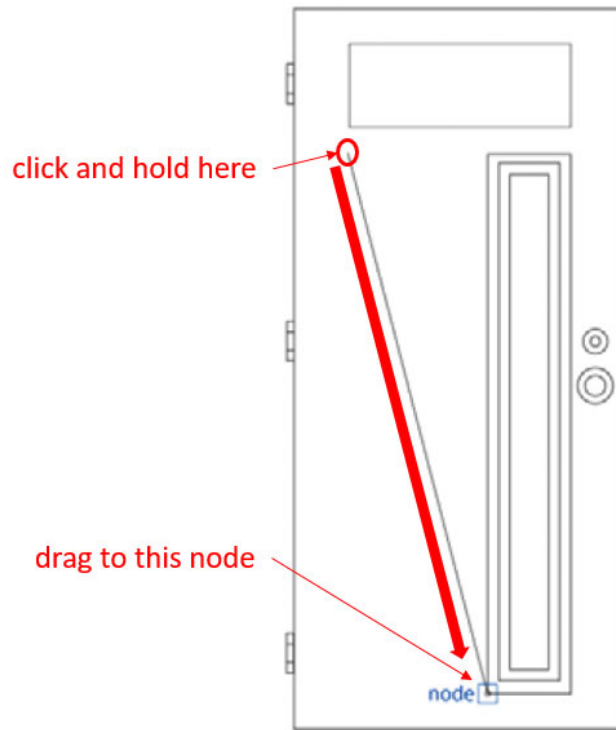
**2. Corel Does Not Teach a “Candidate Ending Point” That Is
“On The Second Segment” or Related Limitations**

Corel does not teach and cannot supply these elements. As shown below, Corel teaches that a user can click and hold a mouse button to select a point as the beginning of a line segment.



EX1005, p.11; EX2001, ¶100.

While holding the mouse button, the user “drag[s] downward to the lower-left node of the right panel” as shown by the red arrow below:



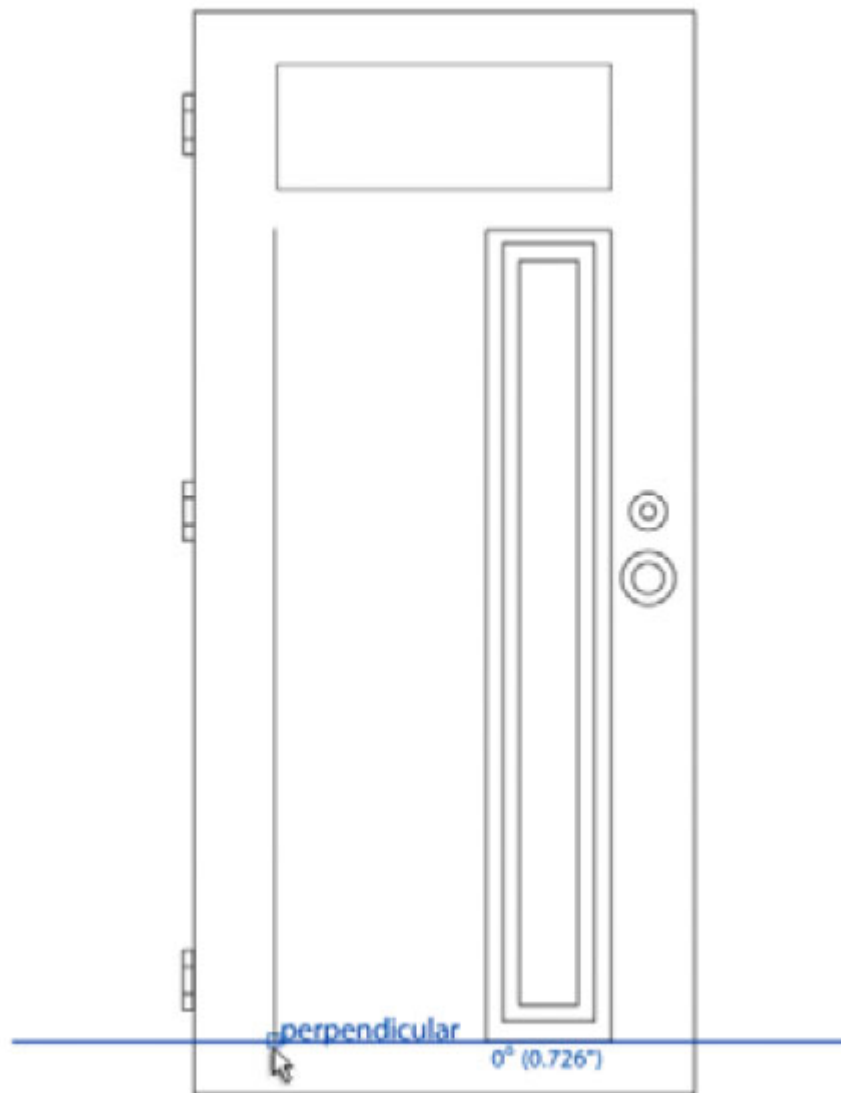
EX1005, p.11 (annotated) EX2001, ¶101

Petitioner’s supposed “candidate ending point” is merely the end of a line that the user is *currently drawing*; it is not a candidate ending point on an *already-existing* “second segment,” which is required by the claims. EX2001, ¶103.

Corel’s deficiencies are massive and significant. Even after a user selects a starting point for a new line, (i) there is no pre-existing second segment or seam line, (ii) there is no second segment or seam line that a user cursors near to display a present point on the second segment, (iii) there is no candidate ending point on the second segment for the second selected segment, (iv) there is no measurement of the length of a line on the second segment and the length of a first selected segment, and

(v) there is no comparison of a length of second line to a first selected segment. EX2001, ¶104. The user is simply trying to find the horizontal coordinate of the bottom edge of the first door panel. *Id.* This is not close to the same thing setting a candidate ending point on a second segment.

Additionally, the entire second line is moving with the cursor. EX2001, ¶¶104-105. The cursor is certainly not triggering a “present point” on a (non-existent) second seam line segment that is closest to the cursor position. *Id.* The last image shown in the cited portion of Corel (shown below) merely shows a user dragging the cursor to a new location that is the intersection of a horizontal and vertical dynamic guide. *Id.* That intersection point is only displayed if the user positions the cursor on or very near the correct horizontal coordinate, and on or very near the correct vertical coordinate. *Id.* If the user fails to do either, there is no intersection point. *Id.* However, there is still no candidate ending point displayed on a pre-existing second seam line segment when the user sets a starting point on the second segment. *Id.* This logically follows from the fact that Corel is a CAD program intended to match coordinates of an existing shape, not software for virtual clothing design that is attempting to free sew together two segments from two seam lines on two different, pre-existing patterns.



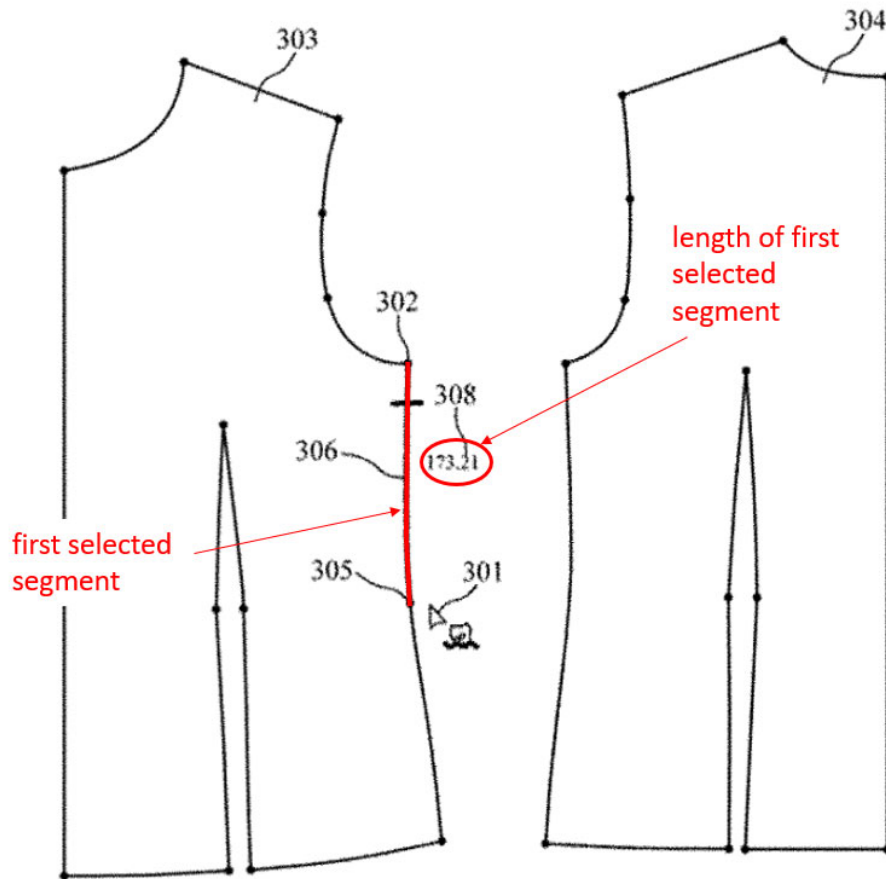
EX1005, p.11

Additionally, Corel is requires straight, linear lines. EX2001, ¶105. Corel is not related to or contemplated for digital clothing design. *Id.* Curved, sinuous, uneven or non-linear seam lines dominate most digital patterns. *Id.* Corel is not designed to, and could not, determine an intersection point for these types of patterns; it would only work for purely vertical and/or horizontal lines. *Id.*

Additionally, digital clothing design requires a user to match seam lines for free sewing two non-matching digital patterns together. *Id.* So merely duplicating the shape of a line, a horizontal coordinate or a vertical coordinate as taught by Corel does not work. *Id.*

The '773 Patent explains and demonstrates why it is important that the “candidate ending point 310” is *on* “second segment 312”, as the software only works if a candidate ending point for a second segment free sewing seam is positioned on an already-existing seam line of the second pattern. EX2001, ¶94, 106. For example, once a user has created a first selected segment 306, the length 308 of the first selected segment 306 is determined and displayed:

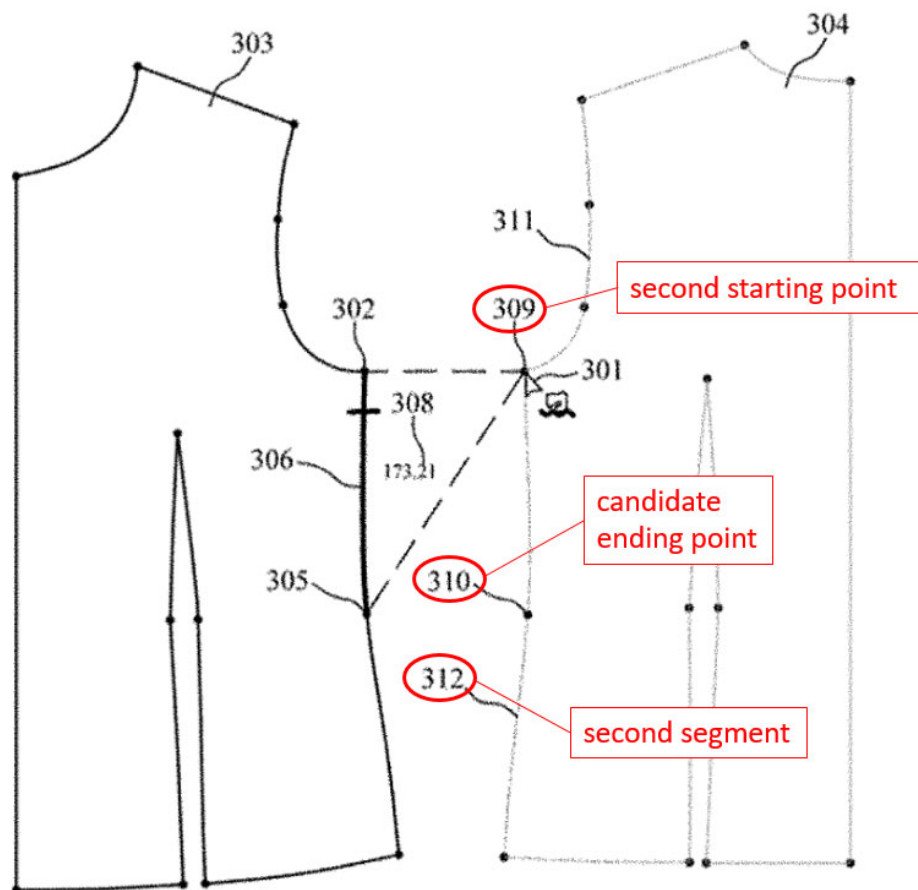
Once a user has created a first selected segment 306, the length 308 of the first selected segment 306 is determined and displayed:



EX1001, FIG. 4 (annotated); EX2001, ¶94

Then, once the user selects a second starting point 309 for a second selected segment, and a user moves the cursor to trigger a second segment above (311) or below (312) the starting point 309 as illustrated in FIG. 6 below, “a point is displayed as the candidate 310 for the ending point of the second selected segment, wherein the point ... makes the second selected segment the same as the length of the first selected segment along the second segment that includes the input starting point 309, wherein the second selected segment is made by connecting the input starting point 309 to [the candidate ending point 310].” EX1001, 9:10-19. And, as expressly

required by Element [1.5], the candidate ending point 310 is “on the second segment” 312. This is logical and clear, as the candidate ending point 310 must be on a seam line of the second pattern to allow the second pattern to be free sewn to the first pattern along seam lines in both patterns. EX2001, ¶95.



EX1001, FIG. 6 (annotated); EX2001, ¶95

The location of the candidate ending point 310 (and thus a candidate length of a second selected segment) is beneficial in avoiding wrinkles in the fabric: “If the

lengths of the first and second selected segments are not the same, wrinkles are created on the selected segment with the longer length, thus making aesthetic effects.” EX1001, 6:14-17. Moreover, any difference in length of the sewn-together segments can be amplified depending on the type of material: “knit and chiffon” might “not create wrinkles if the difference between the first and second selected segments is lower than one inch.” *Id.*, 7:44-47; 10:18-21; 10:51-54; 14:17-19. This one-inch threshold might be as low as “one centimeter” for fabrics (such as cotton and denim) that do not stretch well. *Id.*, 7:47-49; 10:21-23; 10:54-56; 14:19-22; EX2001, ¶96.

The candidate ending point on the second seam line is also particularly beneficial for free sewing together segments having different shapes. EX2001, ¶97. In such situations, it may be difficult for a user, without aid, to determine how long the second selected segment should be to match the length of the first selected segment. FIG. 12 shows four such examples. “[T]he first and second selected segments may be sewn together even if each of the first and second segments has the different shape e.g., a straight line and a curved line.” EX1001, 11:24-27. Note that in the case of FIG. 12(d), even though the shapes of the two segments 1207, 1208 being very different shapes, the candidate ending point on the second segment 1208 would assure the length of the first and second selected segments remains equal

(*i.e.*, the length of each line being displayed in this example as 149.60). *Id.*; EX2001, ¶97.

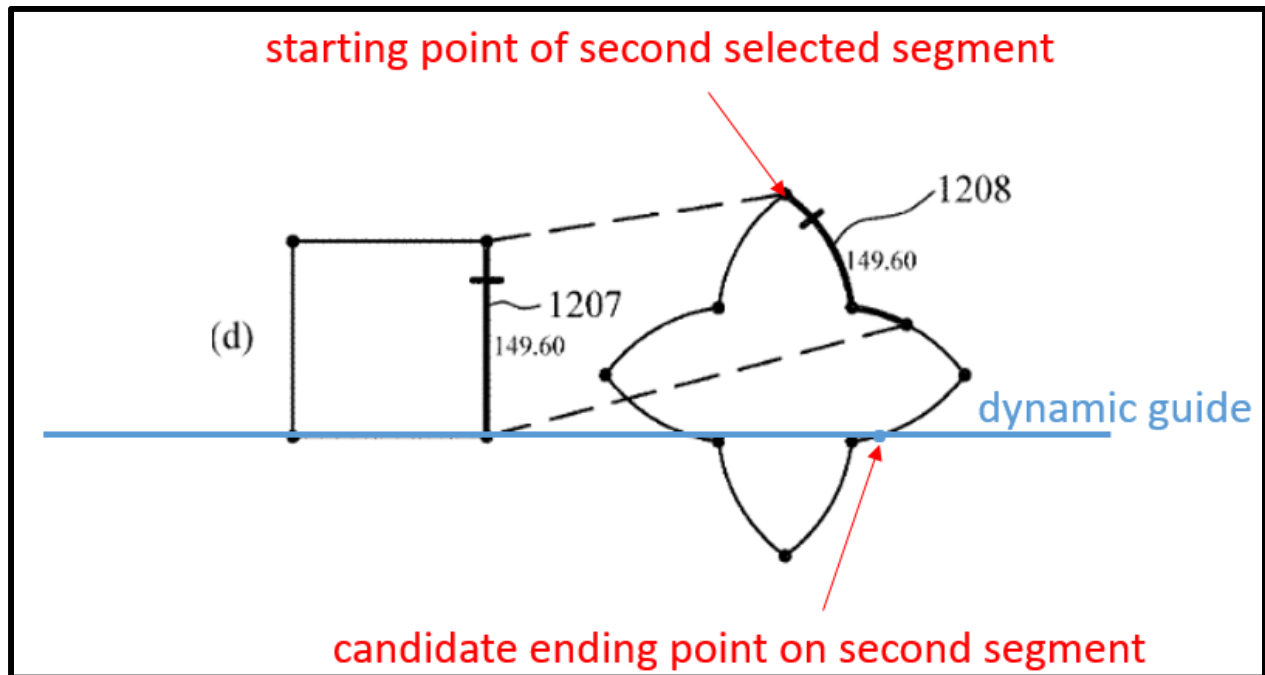
Additionally, displaying a candidate end point on the second seam line likewise allows the user to design with increased speed, efficiency and simplicity as the user knows the point that must be selected in order to match the first and second seam lines in the first and second digital patterns based on fabric type and other user clothing design preferences. EX2001, ¶108.

3. A POSITA Would Not Have Been Motivated To Modify EZBRUSH To Incorporate Corel's Dynamic Guides

A POSITA would *not* have been motivated to modify EZBRUSH's video tutorial in a manner that implements Corel's horizontal and vertical dynamic guides, and would *not* have any reasonable expectation of success in doing so. EX2001, ¶¶109-126.

The EZBRUSH video depicts a user sewing together two sew segments that are not only both vertical, but also have starting and ending points that are horizontally aligned with one another. However, a POSITA would understand that it is extremely common and more likely for a user to sew together two sew segments that are not vertical, and do not have starting and ending points that are aligned. EX2001, ¶¶110-114. In such situations, Corel cannot be used whatsoever.

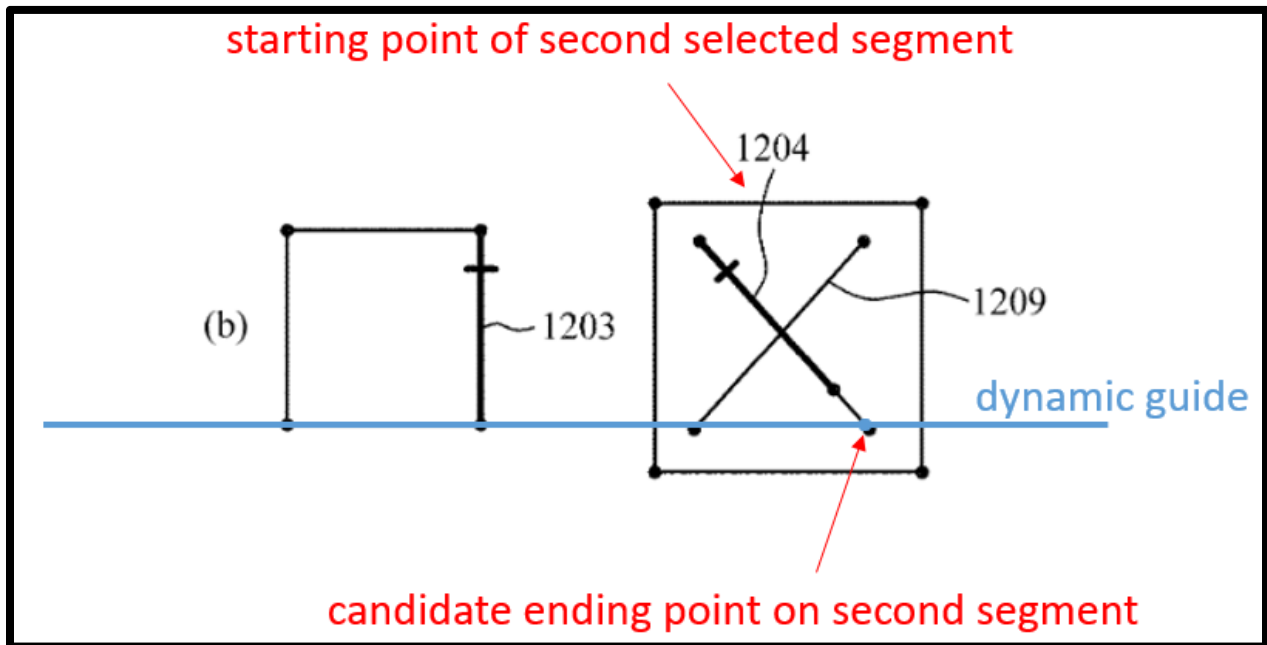
FIG. 12(d) of the '773 Patent provides one example. The '773 Patent teaches that the user desires to free sew together a first selected segment 1207 and a second selected segment 1208. Notably, the starting points and ending points of both selected segments 1207, 1208 are not horizontally aligned, and the shapes of the two selected segments 1207, 1208 differ substantially. If a POSITA attempted to implement Corel's teachings – not even possible in the first place given that neither reference discloses the claim elements in dispute - a horizontal dynamic guide (blue) would theoretically extend horizontally from the ending point of the first selected segment 1207 to aid the user in determining an ending point for the second selected segment 1208, as shown below. EX2001, ¶115. This leads to multiple problems that establish EZBRUSH and Corel cannot be combined. Initially, there is no vertical line in the shape on the right like in Corel that would display an intersection point. But even if one assumes that the candidate ending point for the second selected segment 1208 would be at the intersection of the dynamic guide and the second segment 1208, due to the curved nature of the second selected segment 1208, the suggested ending point for the second selected segment 1208 would have a length ***much larger*** than the length of the first selected segment 1207. *Id.*



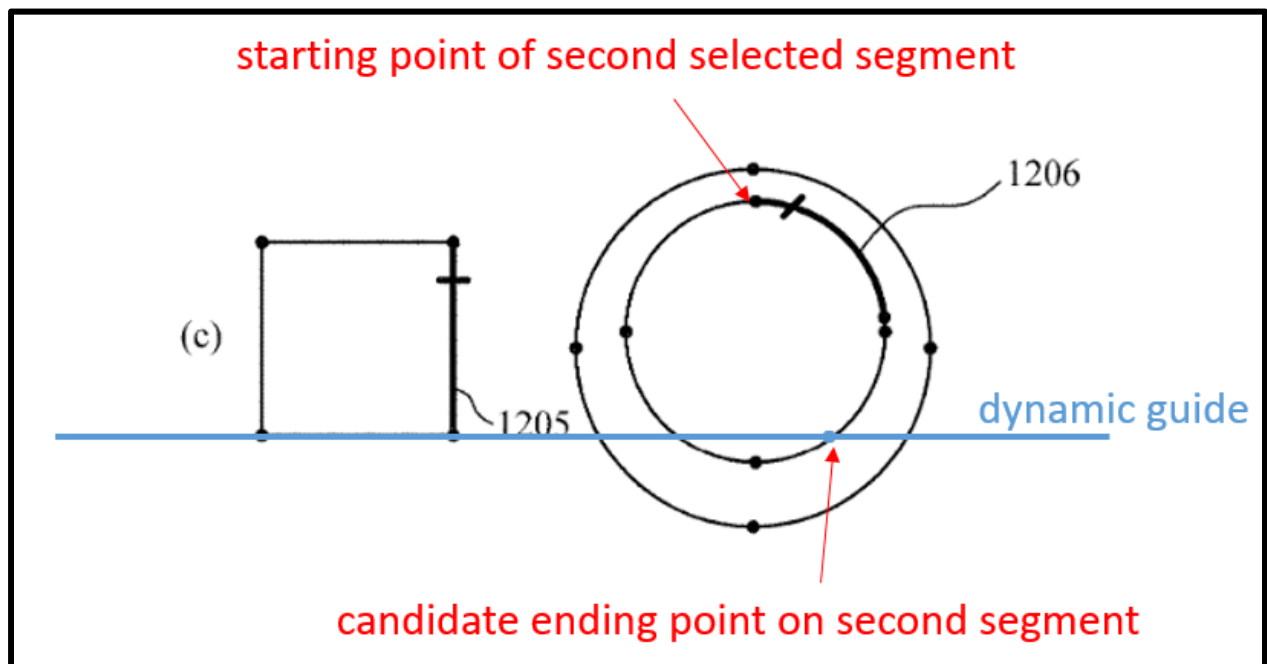
EX1001, FIG. 12(d) (annotated); EX2001, ¶115

In fact, movement of the horizontal dynamic guide to *any* location would not help the user to determine where the ending point on the second selected segment 1208 should be in order to maintain an equal length as the first selected segment 1207. EX2001, ¶116

The same holds true for the other images in FIG. 12. In both FIGS. 12(b) and 12(c) shown below, Corel's dynamic guide would not provide any candidate ending point on the second segment that would yield a second selected segment 1204/1206 to be equal in length to the first selected segment 1203/1205, respectively. EX2001, ¶117.

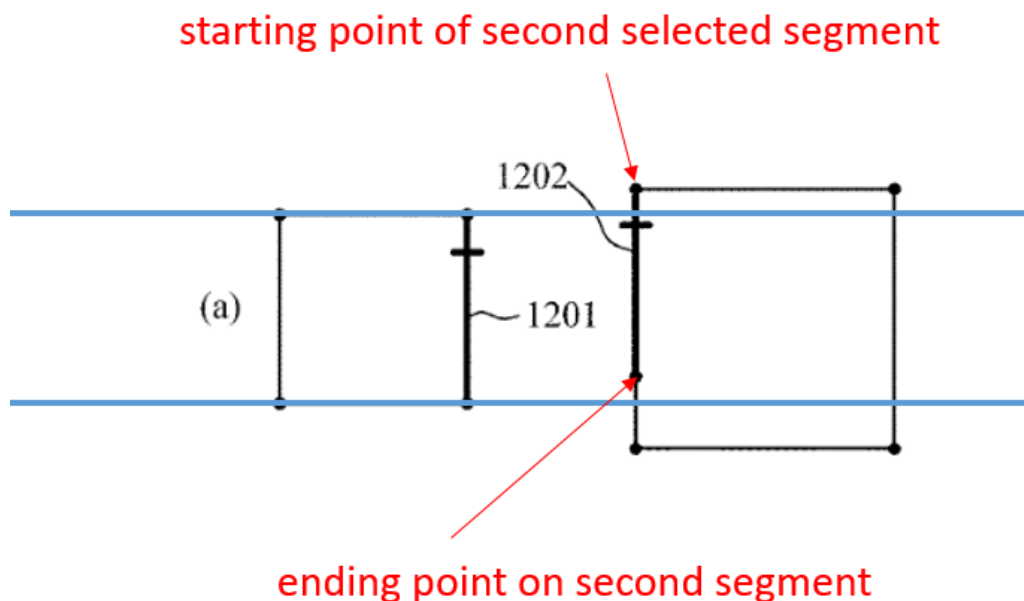


EX1001, FIG. 12(b) annotated; EX2001, ¶117



EX1001, Fig. 12(c) annotated; EX2001, ¶117

Even if both the first and second segments are purely vertical, *any time* the starting points of the first and second selected segments are not perfectly aligned, Corel's dynamic guide would be useless. EX2001, ¶118. This is because Corel's dynamic guides are for vertically or horizontally aligning two points. The '773 Patent's FIG. 12(a) demonstrates this. As shown below, after a first selected segment 1201 is selected, the user selects a starting point of the second selected segment 1202 that is not horizontally aligned with the starting point of the first selected segment 1201. Therefore, the horizontal guides (when aligned with either the top or bottom of the first selected segment 1201) would provide the user with no help in determining where the ending point for the second selected segment 1202 should be in order to create equal-length segments. EX2001, ¶118.



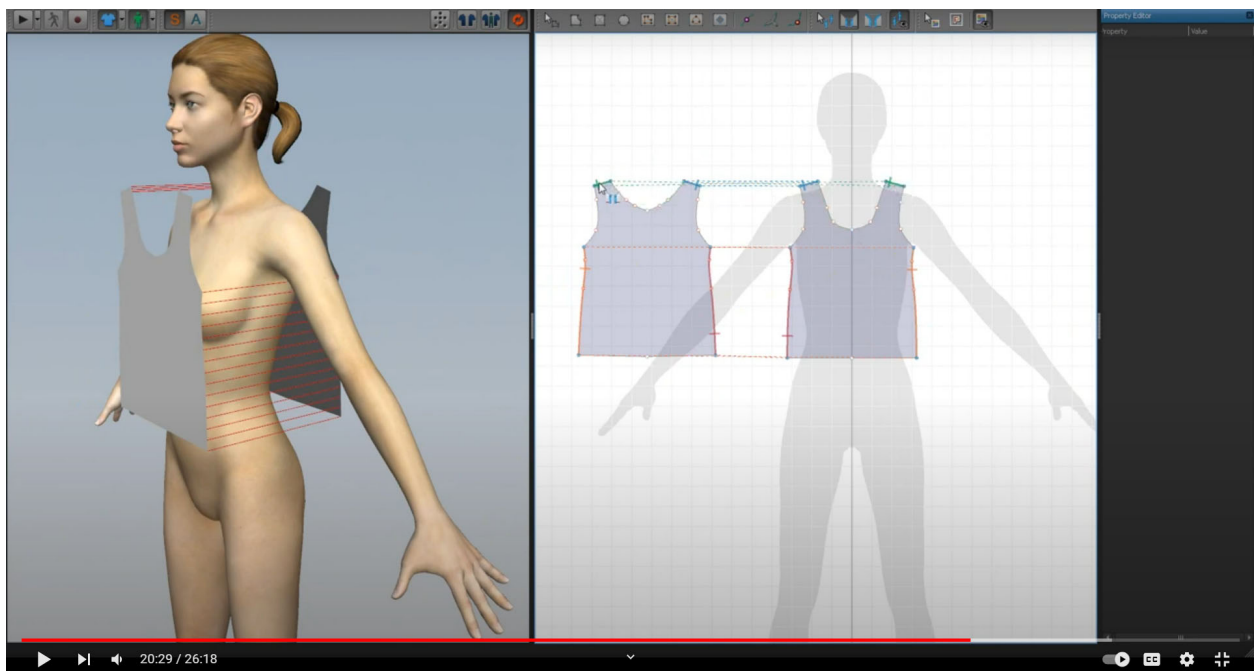
EX1001, Fig. 12(a) annotated; EX2001, ¶118

These same problems would be present if a POSITA attempted to combine Corel's teachings with the EZBRUSH video. EX2001, ¶119. First, as explained above, neither reference discloses a candidate ending point on a second segment, let alone determining, setting or displaying a "candidate ending point" on the second segment that would make a length of the second selected segment substantially equal to a length of the first selected segment. Likewise, neither reference discloses "moving the present point to a candidate ending point on the second segment, in response to the difference between the present point and the candidate end point being less than a reference value." No combination of Corel and EZBRUSH can yield an element that does not exist in either.

Second, if Petitioner designates the diagonal line extending from the second point in Corel as a "second segment," that line moves with the cursor. That is incompatible with EZBRUSH's teachings, which require a pre-set second segment on a seam line of a second digital pattern. The pattern and location of the seam line are set. *Id.*

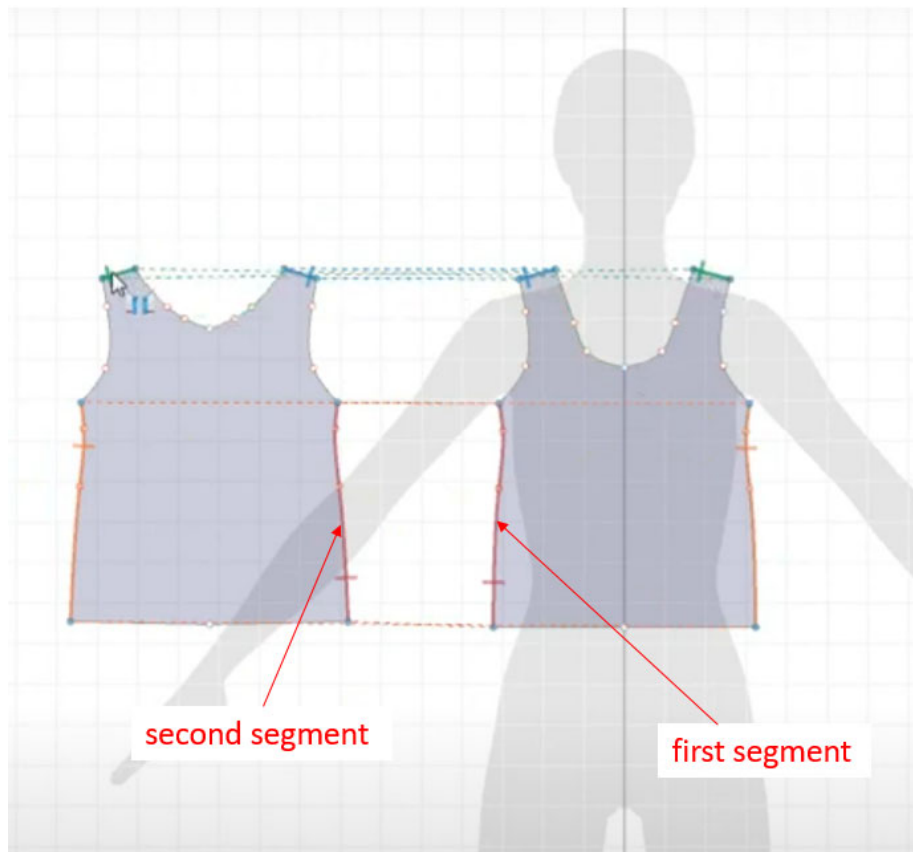
Third, Corel has no teachings to snap a cursor location to a pre-existing line, required by EZBRUSH to locate the present point on the second segment. *Id.* Corel only snaps to a horizontal or vertical coordinate. *Id.*

Fourth, Petitioner conveniently selects a portion of the EZBRUSH video that has purely vertical sew segments in order to portray the idea that adding the horizontal dynamic guides of Corel would be beneficial to the EZBRUSH video. EX2001, ¶119. However, if Corel was applied to other sew segments shown in EZBRUSH, the horizontal guidelines would be of no help. *Id.* Consider, for example, the below screenshot in which a front of a shirt being sewn to a back of the shirt:



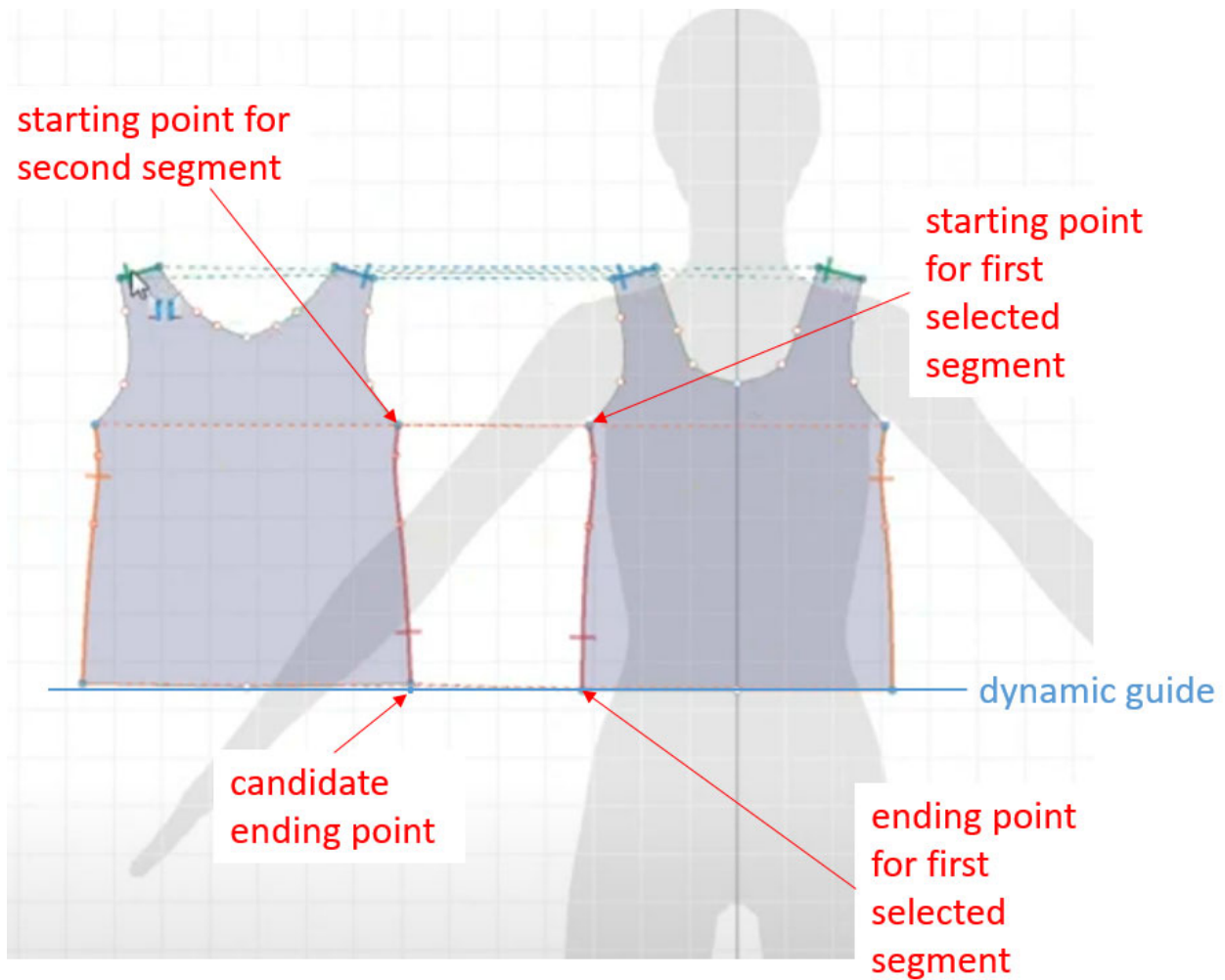
EX1004, 20:29; EX2001, ¶119

The first and second segments on the front and back of the shirt to be sewn together are not identical in shape.



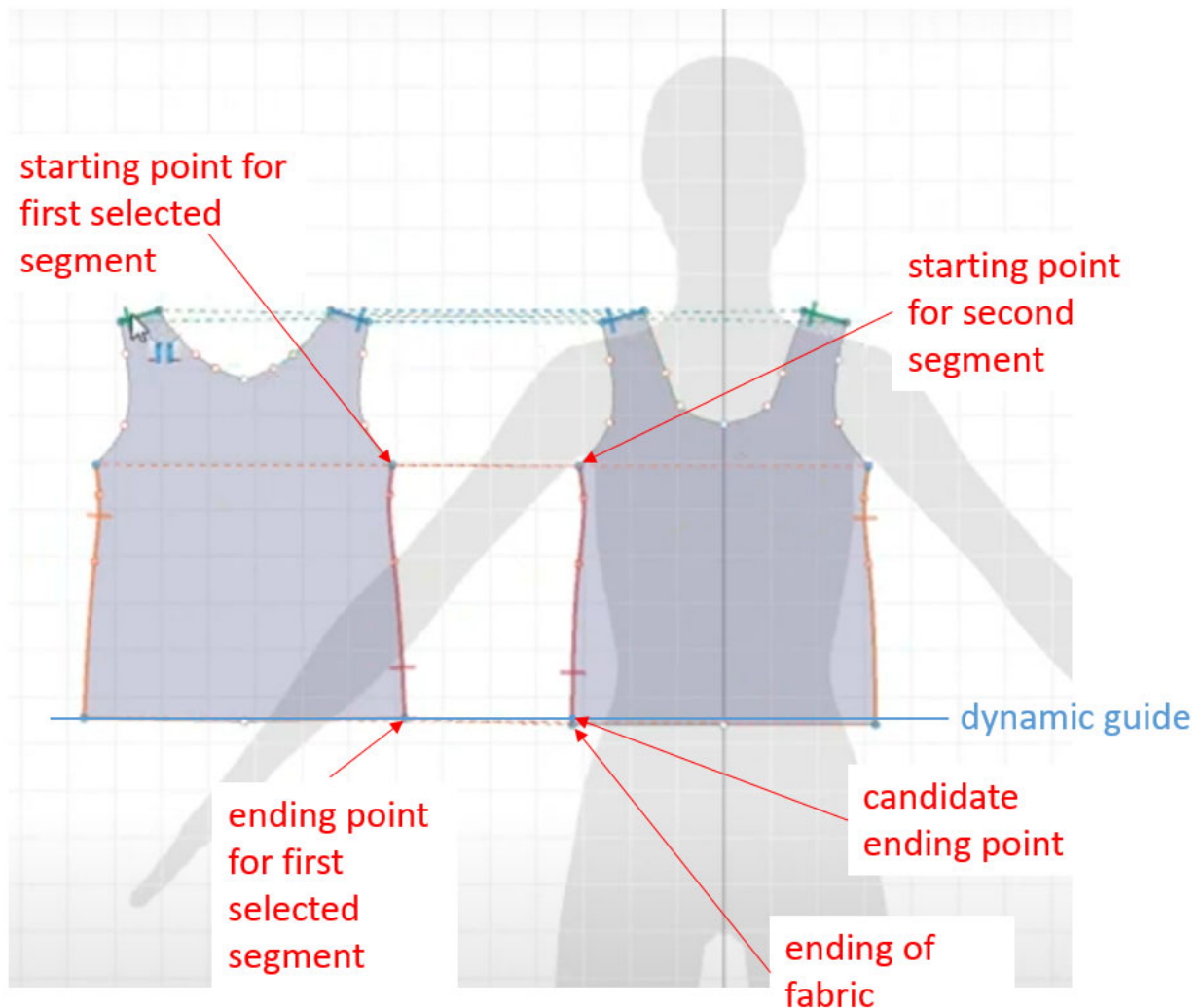
EX1004, 20:29 (annotated); EX2001, ¶120

If a user selected the starting point and ending point for the first selected segment as shown below, Corel's horizontal dynamic guide would extend through the ending point of the first selected segment. EX2001, ¶121. This would lead to a candidate ending point that is ***not even on the pattern***. This is because the first and second segments are not identical in length, size, or shape. *Id.*



EX1004, 20:29 (annotated); EX2001, ¶121

The same would happen if the first and second segments were reversed. If a user selected the starting point and ending point for the first selected segment as shown below, Corel's horizontal dynamic guide would lead to a candidate ending point that is well above the bottom of the pattern, thereby leaving a significant, undesirable amount of fabric that is not sewn to anything. *Id.* at ¶122.

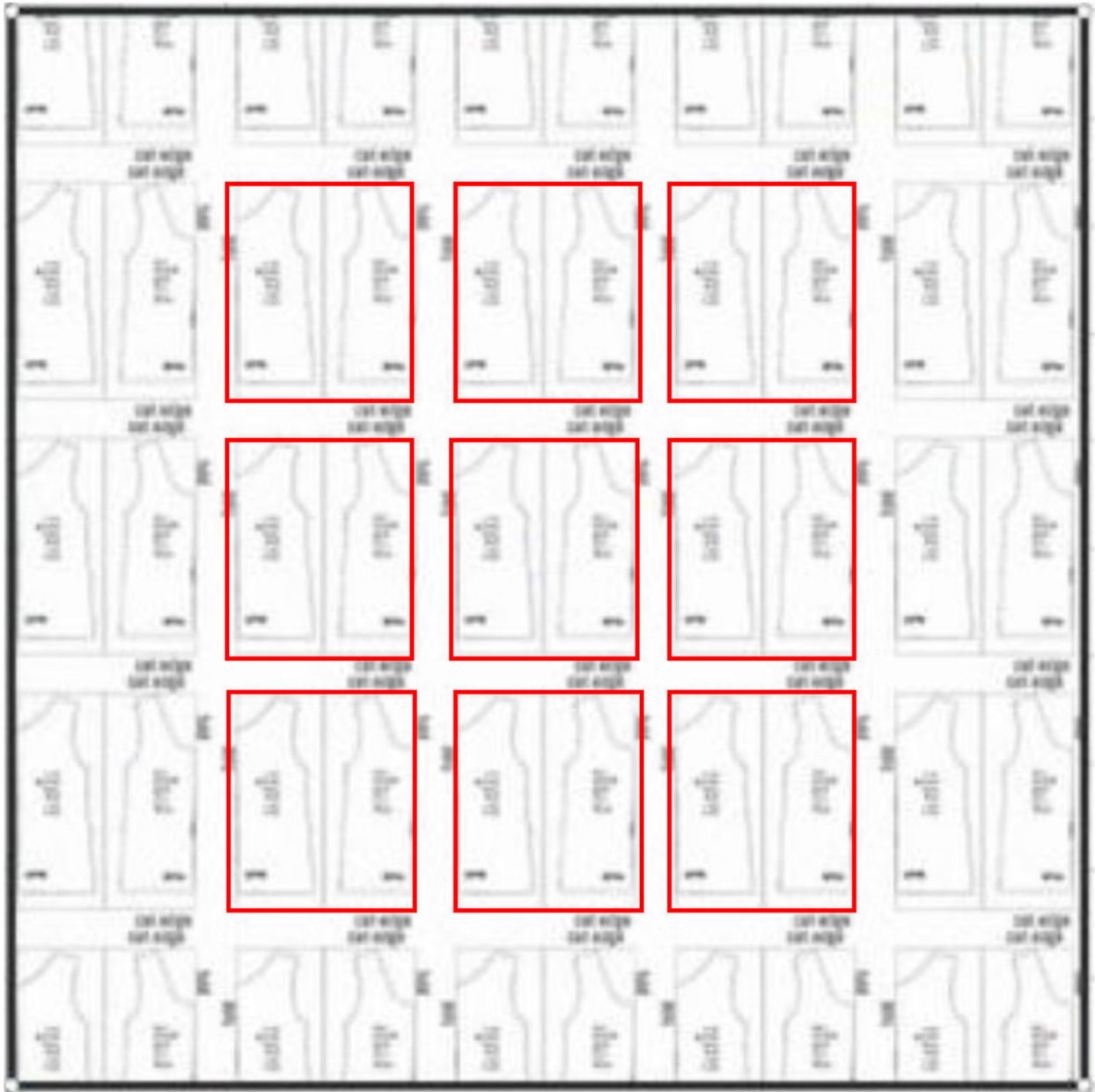


EX1004, 20:29 (annotated); EX2001, ¶122

The same would happen if other patterns are selected to be sewn together. The Petition acknowledges that one of several types of patterns can be selected. (Petition, p.22.) Many of these patterns (highlighted in red) have first and second sew segments that are not identical in shape. Because these first and second segments are not purely vertical and are not identical in shape, Corel's horizontal dynamic guideline would therefore **not** suggest a candidate ending point that would

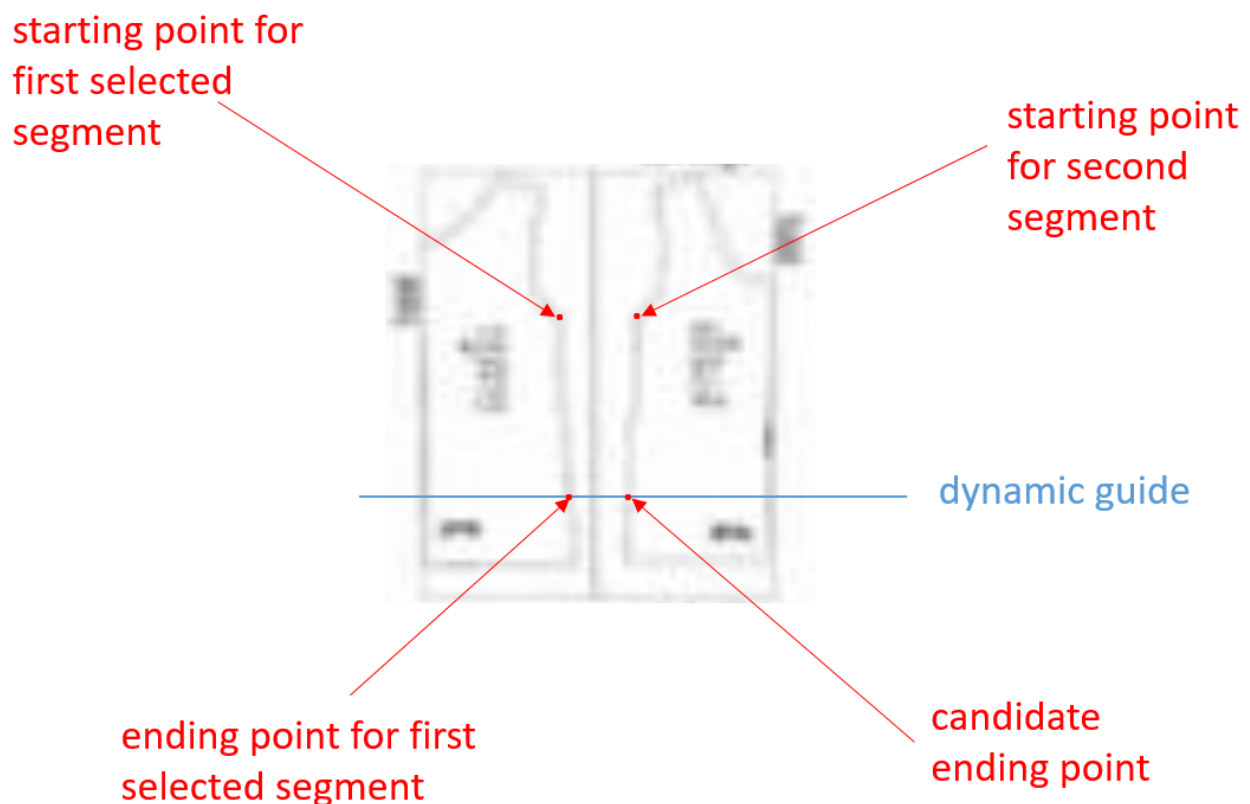
make the second selected segment equal in length to the first selected segment.

EX2001, ¶123.



Petition, p.22; EX1004, 1:16-1:45; EX2001, ¶123

Take one of these patterns as an example. Assume a user wishes to sew part (but not all) of the side of the shirt to create a “flared” look at the bottom of the shirt. The user would select the starting point and ending point of the first segment as shown, as well as a starting point for the first segment. Corel’s horizontal dynamic guide, if implemented here, would display a candidate ending point that is horizontally aligned with the ending point for the first selected segment. EX2001, ¶124. However, this candidate ending point would yield a second selected segment that is *not* equal in length to the first selected segment due to the first and second selected segments having different shapes. *Id.*



EX1004, 1:16-1:45 (annotated); EX2001, ¶124

A POSITA would likewise not have a reasonable expectation of success in implementing Corel's dynamic guides into the EZBRUSH's clothing software. As explained above, it makes EZBRUSH unworkable. Additionally, the first and second selected segments would have to be the same shape and length with horizontally-aligned starting points. EX2001, ¶125. This is a product of clothing design software versus basic CAD software. Simple, static CAD software for right angles and parallel lines (such as Corel) would not lead to a reasonable expectation of success in displaying a candidate ending point for seam lines that are different shapes and/or have starting points that are not horizontally aligned. EX2001, ¶125.

Finally, Patent Owner notes that a party seeking to invalidate a patent based on obviousness must demonstrate that **both** (a) a POSITA would have been motivated to combine the teachings of the prior art references **and** (b) the POSITA would have had a reasonable expectation of success in doing so. *Eli Lilly and Co. v. Teva Pharma., Intl. GmbH*, 8 F.4th 1331, 1344. "A finding by the Board that a patent Petitioner has demonstrated a motivation to combine references does not necessarily imply that the challenger has also met its burden of showing a reasonable expectation of success in achieving a claimed method." *Id.* Here, the Petition is completely silent regarding why a POSITA would have had a reasonable expectation of success in implementing Corel's dynamic guides into EZBRUSH's virtual clothing software

to achieve a candidate ending point that makes the length of the second selected segment substantially equal to the length of the first selected segment.

B. Petitioner’s Proposed Motivation to Modify EZBRUSH Based on Corel and Thoemmes is Legally Deficient

In view of the deficiencies of the EZBRUSH-Corel combination, Petitioner’s enumerated motivations to combine the additional references unravel and do not withstand scrutiny. The combination is pure hindsight reconstruction of the ’773 Patent based on the ’773 Patent’s own teachings.

First, Petitioner argues that Petitioner argues “a POSITA would have applied the suggestions of Corel and Thoemmes to EZBRUSH’s CAD system to supplement the snapping functionally [sic] shown in EZBRUSH, thereby achieving a rapid and precise tracking/point selection for users.” Petition, p.38. However, at the same time, Petitioner argues that EZBRUSH itself “shows several examples of a present point along a second selected line segment that is ‘snapped’ to the selected segment even when the cursor is not precisely over the segment.” *Id.* So why would a POSITA be motivated to modify the “snapping” feature that purportedly *already exists* in EZBRUSH?

Petitioner never identifies any shortcomings of EZBRUSH’s purported “snapping” feature that would lead a POSITA to seek out additional information from other references that teach similar “snapping” features. Petitioner attempts to

explain its rationale by arguing “EZBRUSH, by itself, does not provide surplus details regarding the underlying cursor actions” in the “snapping action,” so a POSITA would implement “EZBRUSH to include the additional details regarding how to implement snapping.” However, a mere lack of detail about a particular feature of a primary reference is not a basis for turning to a secondary reference for more information, especially when the particular feature is already adequately functional in the primary reference. Rather, there needs to be some sort of identifiable shortcoming of the primary reference that would lead a POSITA to combine teachings of the secondary references. *In re Anova Hearing Labs, Inc.*, 809 Fed. Appx. 840, 843 (Fed. Cir. 2020) (noting that when a primary prior art reference already provides a solution to the problem solved by the challenged patent, there must be evidence as to why there would be a motivation to modify that primary reference to include an additional or redundant solution found within a secondary reference). *See also Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F. 3d 1342, 1368-69 (Fed. Cir. 2012) (“Because each device independently operates effectively, a [POSITA], who was merely seeking to create a better device to drain fluids from a wound, would have no reason to combine the features of both devices into a single device.”)

On that same note, Petitioner never explains exactly what portion of EZBRUSH's snapping feature a POSITA supplement, or what features of Corel/Thoemmes a POSITA include in the combination. Simply arguing EZBRUSH could be modified to include "additional details" is not enough. Petitioner must explain *how* a POSITA would have modified or combined the prior art. *KSR 'Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *See also Personal Web Technologies, LLC v. Apple, Inc.*, 848 F. 3d 987, 994 (Fed. Cir. 2017) (vacating the PTAB's FWD regarding obviousness because "the Board nowhere clearly explained, or cited evidence showing, *how* the combination of the two references was supposed to work.") (emphasis in original); *Adidas AG v. Nike, Inc.*, IPR2016-00922, Paper 21 at 36 (Oct. 19, 2017) (holding that challenged claims are patentable when the "Petitioner fails to explain why *and how* a person of ordinary skill in the art would combine" two references.).

Moreover, Petitioner defined a POSITA not as having experience designing software user interfaces, but rather someone having "2-3 years of work and/or research experience in the field of computer aided design (CAD) software." Petition, p.20. Such a POSITA would not be concerned with the lack of "surplus details regarding the underlying cursor actions" in EZBRUSH and would therefore not seek out "additional details" regarding these cursor actions, as suggested by the Petition.

Petition, p.39. This attempt to connect EZBRUSH to Corel and/or Thoemmes is an exercise in hindsight.

Second, Petitioner argues “a POSITA would have been motivated to implement Corel and Thoemmes’ suggested improvements for snapping functionality in EZBRUSH’s CAD system to increase user convenience and efficiency within the CAD interface. Such snapping functionality would have allowed the user to select points along an existing line segment (*e.g.*, the edges of the patterns) without having to precisely align the cursor with the line segment.” Petition, p.40. However, similar to the argument above, Petitioner argues that EZBRUSH ***already teaches*** this sort of snapping functionality and all of its benefits, so why would a POSITA turn to Corel and/or Thoemmes to implement the same feature? *See Anova Hearing*, 809 Fed. Appx. At 843 and *Kinetic Concepts*, 688 F. 3d at 1368-69, *supra*. And here again, Petitioner fails to identify any perceived problem or shortcoming in EZBRUSH that would motivate a POSITA to turn to Corel and/or Thoemmes’ snapping feature.

Third, and particularly relevant to Elements [1.5] and [7.6], Petitioner argues “POSITA would have been motivated to modify EZBRUSH’s CAD system in a manner that implements Corel’s suggestions (for using dynamic guides and for displaying a candidate endpoint for making a second segment equal in length to a

first identified segment).” Petition, p.40. However, as explained above, a POSITA would **not** have been motivated to make such a combination due to Corel’s dynamic guides not being suitable for any virtual sewing in which the starting points of the first and second selected segments are not perfectly aligned. EX2001, ¶126.

Regardless, this entire rationale for motivation to combine is rooted in impermissible hindsight. For example, Petitioner argues that when sewing two garment patterns together using EZBRUSH’s software, “it would have been desirable to select the sewing segments to be equal in length to allow for a clean, smooth seam and prevent bunching or unintended stretching of the material.” Petition, p.41. But EZBRUSH never expresses or discloses a desire for equal-length seams to prevent bunching or stretching, and Petitioner cites to nothing in the prior art about the same. Instead, the benefits of equal-length seams is gleaned ***directly from the knowledge of the ’773 Patent***: “If the length of the first selected segment is the same as the second selected segment, the digital clothing may be sewn without the wrinkles thereon. If the lengths of the first and second selected segments are not the same, wrinkles are created on the selected segment with the longer length, thus making aesthetic effects.” EX1001, 6:16-19; 1:46-49; 7:33-37.

Yet another example is Petitioner’s argument that the combination “increases user convenience and efficiency within the CAD interface” and allows the user to

“more quickly select start and end points along the line segment and thereby complete design tasks with more rapidity and less fatigue.” Petition, p. 40. But the ’773 Patent once again provides this same reason for the invention: “The purpose of the present invention is to allow the user, during free sewing, **to easily adjust** the length of one digital pattern’s line segments to match that of another’s.” *Id.* at 1:60-62; Abstract; “the cursor is moved onto the candidate for the ending point so that the second selected segment **may be easily set** to be the same as the first selected segment” (6:54-59); “As the candidate is shown, **the ending point on the second selected segment on the pattern may be easily chosen** to be the same as the first selected segment.” (13:14-17.)

Using the ’773 Patent’s own cited advantage that is not articulated in the prior art references themselves is the epitome of hindsight bias. *See, e.g., Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996) (“To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction – an illogical and inappropriate process by which to determine patentability.” *See also Millennium Pharms., Inc. v. Sandoz, Inc.*, 862 F.3d 1356, 1367 (Fed. Cir. 2017) (“[T]he inventor’s own path itself never leads to a conclusion of obviousness; that is hindsight.” (quotation omitted)).

Finally, the remaining reasons for modifying EZBRUSH are similarly deficient. For example, Petitioner concludes by arguing “EZBRUSH does not, by itself, fully describe how the ‘snapping’ cursor action is achieved, yet both Corel and Thoemmes detail the conventional practice of doing so.” This is a conclusory, naked statement that provides no detail as to what exactly is lacking in EZBRUSH’s “snapping” functionality that would lead a POSITA to turn to Corel and/or Thoemmes, and thus *how* the features of EZBRUSH’s “snapping” would be modified. This is similar to the first articulated rationale explained above. *See supra; Personal Web Technologies*, 848 F. 3d at 994; *Adidas AG v. Nike, Inc.*, IPR2016-00922, Paper 21 at 36 (challenged claims are patentable when the “Petitioner fails to explain why *and how* a person of ordinary skill in the art would combine” two references.).

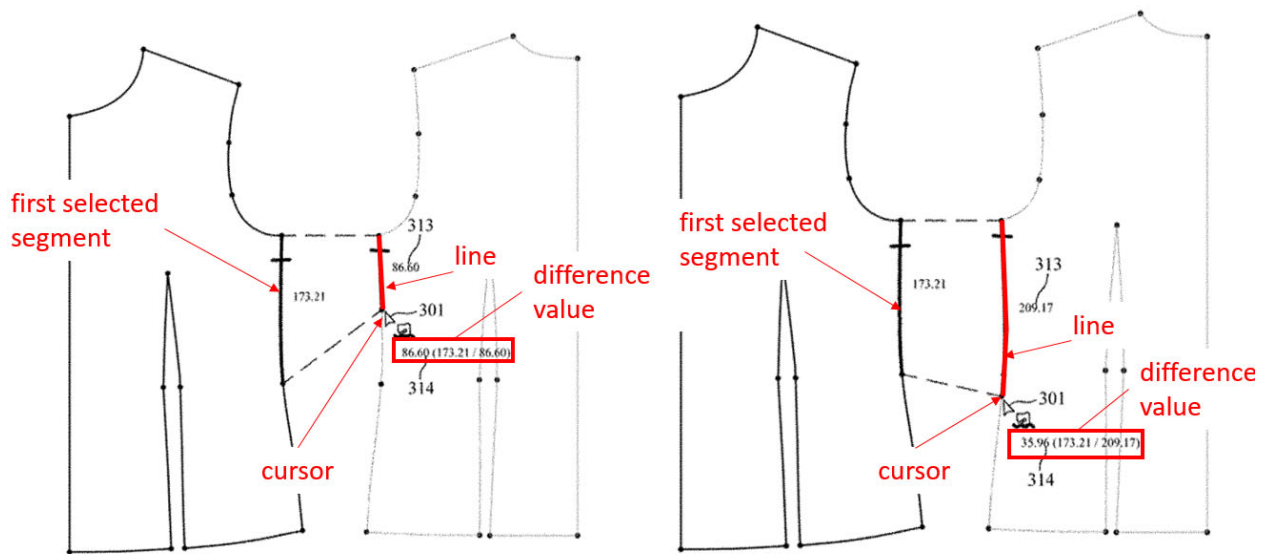
C. TUKATECH Does Not Disclose Elements [1.8] and [7.8]

The Petition completely missed an important limitation of Elements [1.8] and [7.8]. Petitioner already acknowledged that EZBRUSH does not disclose these elements; neither does TUKATECH. As such, the Petition fails to provide a *prima facie* case of obviousness.

Element [1.8] recites “displaying a difference value between the length of the first selected segment and a length of *the line*.” The recitation of “the line” refers back to “a line” of Element [1.6], which is a line that connects “the starting point [of

the second selected segment] to a *present point* on the second selected segment closest in distance to the *current cursor position*.” In other words, “the line” depends on where the cursor is. The same is true for Element [7.8]’s “*the line*” referring back to “a line” of Element [7.7]. EX2001, ¶127.

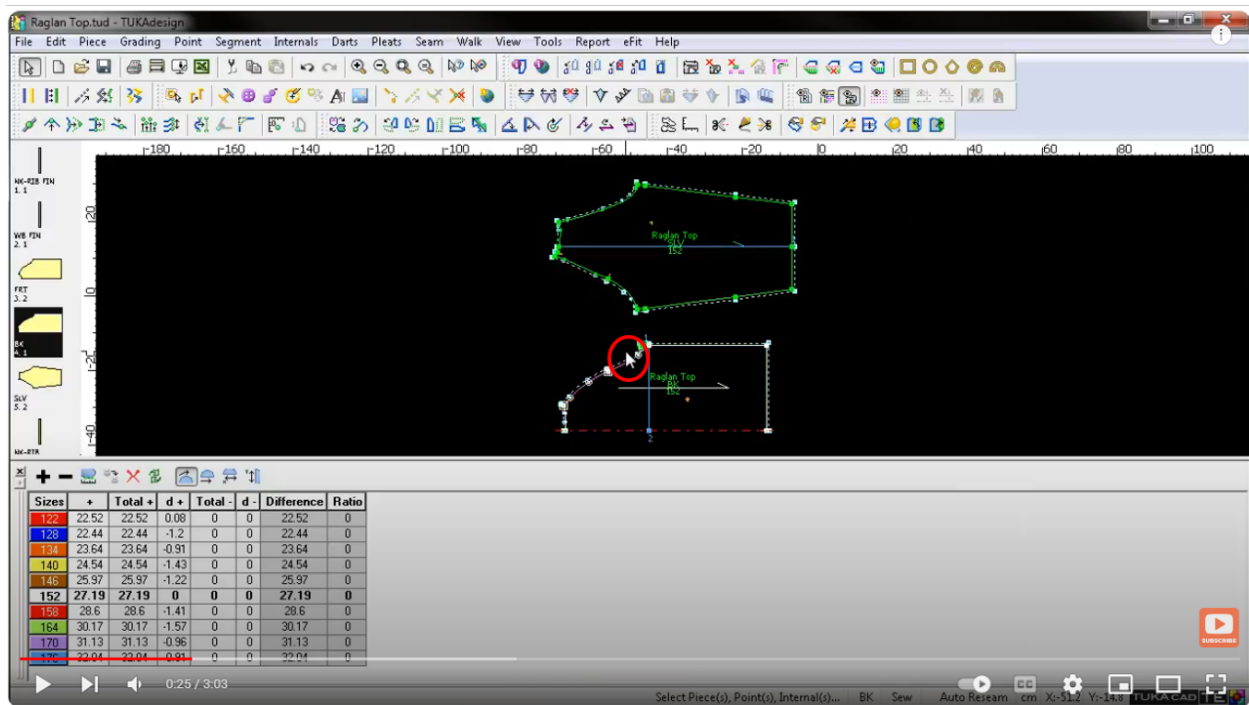
An example of this “line” is shown in FIGS. 8-9, annotated below. This “line” is “acquired by connecting the starting point, input along a second segment, to a point that is on the second segment and that is the closest in distance to the current cursor position.” EX1001, 9:60-10:1; 10:26-34. The length 313 of “the line” changes from 86.60 in FIG. 8 to 209.17 in FIG. 9 due to the cursor moving down. The difference value 314 – which represents a difference between a length of the first selected segment and the length of “the line” – likewise changes. “The length 313 [of the line] and the [difference value] 314 are *changed according to the movement of the cursor 301*.” EX1001, 9:44-49; 10:1-3; 10:34-36; EX2001, ¶128.

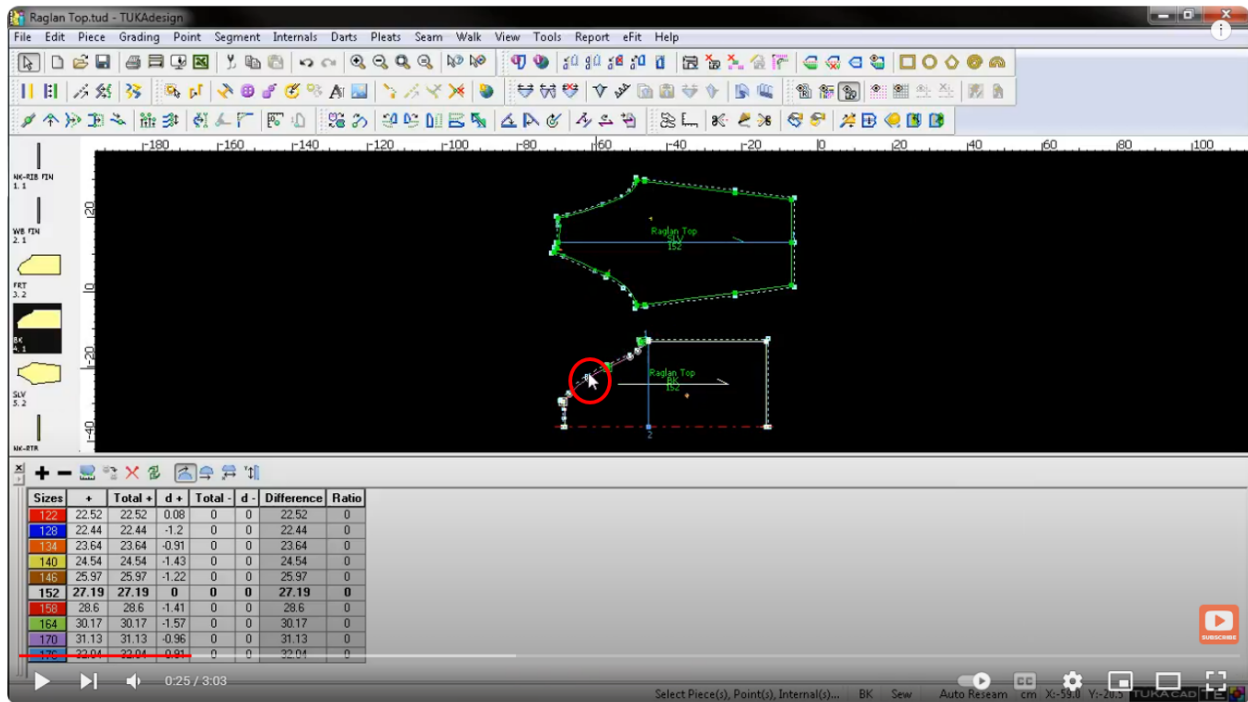


EX1001, FIGS. 8 and 9 (annotated); EX2001, ¶128

Petitioner relies on TUKATECH to fill in the missing pieces on EZBRUSH for Elements [1.8] and [7.8]. In particular, Petitioner argues as follows: “a POSITA would have been motivated to implement TUKATECH’s suggestion (e.g., to helpfully display a difference value between the lengths of two selected segments) in the EZBRUSH CAD system (as modified by Corel and Thoemmes) to achieve known and predictable benefits.” Petition, p.62. However, TUKATECH only teaches showing the difference of *two selected segments that have already been created*. It does *not* teach either (i) displaying a present point on a second segment prior to selecting the second segment, or (ii) displaying a difference between a first selected segment and *a line that changes in length as the user moves the cursor*. TUKATECH’s table is a static, frozen comparison of line segment lengths, whereas

Element [1.8] and [7.8] require a present point on a second segment and a display of a difference value that changes as the cursor moves (as does the present point on the second segment). EX2001, ¶129. TUKATECH's table (shown below in sequential screen shots) indisputably *does not change* as the user moves the mouse (circled in red).





EX1007, 0:25 (annotated); EX2001, ¶129

The Petition explains several times that TUKATECH is relied on for its teaching of “displaying the length difference between the *line segments*” of two patterns (Petition, p.35) and “providing an onscreen comparison of the lengths of *two selected line segments*” (Petition, p.42). *See also* Petition, pp. 62, 68. But the claims do not require displaying a difference between two selected line segments. Rather, they require displaying the difference between (a) the length of the first selected segment and (b) a length of **a line** between the starting point of the second selected segment and a **present point** on the second selected segment closest in distance to the current cursor position. None of Petitioner’s cited references disclose or teach displaying a difference value that *changes based on cursor position* (and

the corresponding position of present point on the second segment). EX2001, ¶130. And no combination of Petitioner's cited references can somehow create an element missing from all of them. Petitioner has not presented a *prima facie* case of obviousness with respect to claims 1 and 7.

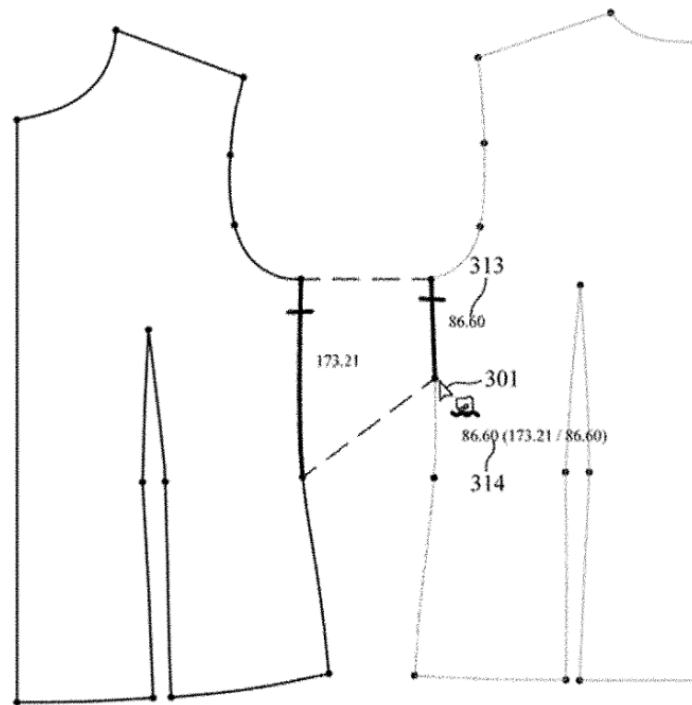
VII. GROUND 2 BASED ON EZBRUSH IN VIEW OF COREL, THOEMMES, TUKATECH, AND NITERRA IS DEFICIENT (CLAIMS 4-5 AND 10-11)

For the reasons described below, the Petitioner's Ground II challenges against Claims 4-5 and 10-11 are also deficient. Institution should be denied for these additional reasons.

A. Claims 4 and 10

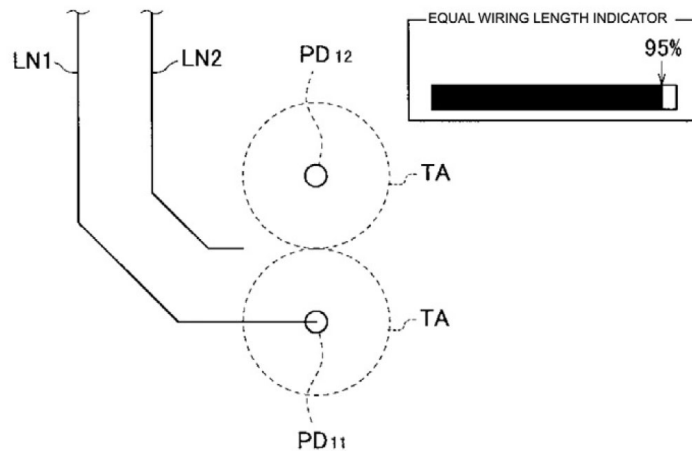
Claims 4 and 10 require displaying a warning sign in response to the difference value being greater than a third reference value. As explained in Section VII(C), *supra*, the claimed "difference value" refers to the difference between (a) the length of the first selected segment and (b) a length of a line between the starting point of the second selected segment and a present point on the second selected segment closest in distance to the current cursor position. The difference value changes as the cursor moves, and according to claims 4 and 10, a warning sign is displayed in response to this difference value exceeding a third reference value. For example, as the user moves the cursor before selecting the ending point of the second selected segment, "[i]f the difference value [314] is greater than a reference value,

the difference value [314] is displayed in red so as to show a warning sign.” EX1001, 10:12-14. This is to warn the user that “wrinkles are likely to be created” if the user were to select a point associated with the current cursor position as the ending point of the second selected segment. *Id.*, 10:10-12; EX2001, ¶131.



EX1001, FIG. 8

While Niterra discloses an “equal wiring length indicator,” that indicator has nothing to do with a current cursor position. Instead, like to TUKATECH, Niterra’s “equal wiring length indicator” is for displaying a ratio based on two *already-created* wiring lines LN1 and LN2: “the ratio of the length of wiring LN2 ... to the length of wiring LN1 ... can be expressed by an equal wiring length indicator or as a percentage.” EX1009, [0069]. EX2001, ¶132.



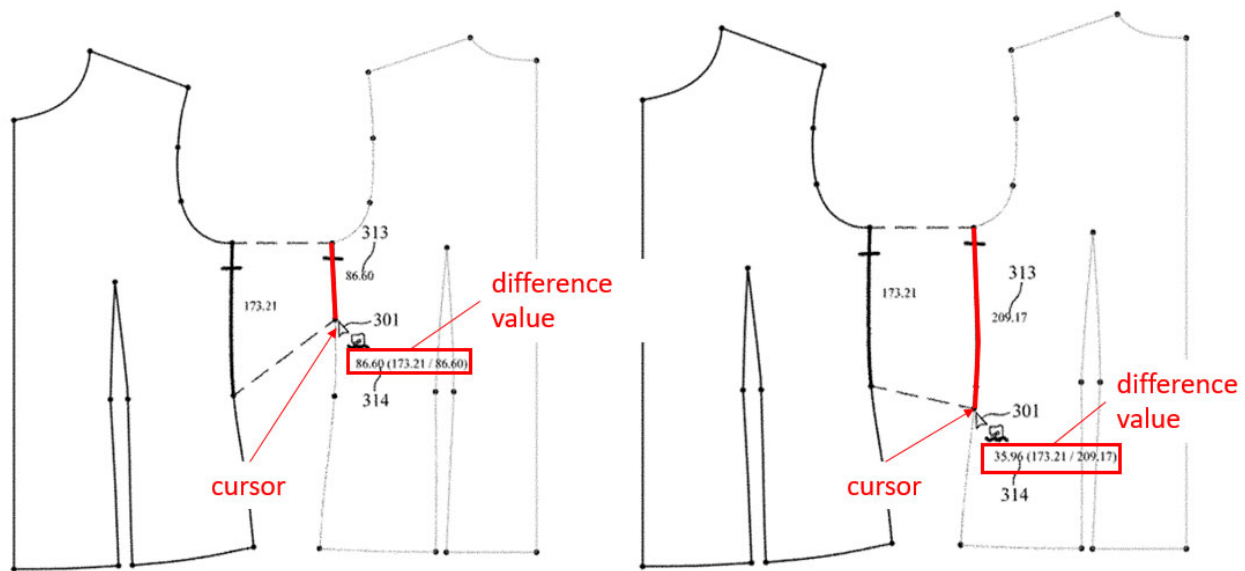
EX1009, FIG. 29

Even if Niterra’s “equal wiring length indicator” were to change as the cursor moved, Niterra does not teach that any part of the indicator would appear based on any difference exceeding a threshold. Instead, by all accounts, the equal wiring length indicator is displayed *at all times* so that “the differences in length can easily be compared” on a scale of 1-100%. EX1009, [0016]; EX2001, ¶134. Therefore, Niterra’s equal wiring length indicator is not displayed “*in response to* the difference value being greater than a third reference value,” which is required by claims 4 and 10.

But Niterra itself, and Petitioner’s attempt to combine Niterra with EZBRUSH, Corel, Thoemmes and TUKATECH, suffer from a more fatal problem. In Niterra, as explained in Section III, a user would not draw the second wiring LN2 to extend beyond the second pad PD₁₂. Doing so would create excess wiring that is

unnecessary because the electrical connection is already completed when the second wiring LN2 is connected to the second pad PD₁₂. EX2001, ¶¶135; 86-89.

In contrast, the '773 Patent is specifically suited for drawing a second line segment that is either shorter or longer than a first line segment. Figures 8 and 9 (shown below) demonstrate instances where the user moves the cursor such that the second selected segment is either shorter (FIG. 8) or longer (FIG. 9) than the first selected segment 306. Note how the difference value 314 is shown in both instances. EX1001, 9:57-10:1; 10:23-36. EX2001, ¶135.



EX1001, FIGS. 8 and 9 (annotated); EX2001, ¶135

Unlike the '773 Patent, a user in Niterra would not draw the second wiring LN2 to travel either shorter or beyond the pad PD₁₂. As explained above, doing so would be an unnecessary waste of wiring. As such, Niterra's "equal wiring length

indicator” is incapable of displaying the difference between the length of the wiring LN1/LN2 when the second wiring LN2 is greater than the first wiring LN2, or extends beyond the pad PD₁₂. Niterra’s “equal wiring length indicator” only goes up to 100%. If a user were to draw the second wiring LN2 to extend beyond the pad PD₁₂ (which he/she would not), the equal wiring length indicator would either stay at 100%, or would not provide sufficient distance information, or would malfunction. EX2001, ¶135.

This would lead to an *inoperable* outcome if incorporated into the EZBRUSH-Corel-Thoemmes combination. If an EZBRUSH user were to draft the second line segment to have a length that exceeds the first line segment, Niterra’s indicator would either stay at 100%, or would not provide sufficient distance information, or would malfunction. EX2001, ¶135.

If a proposal for modifying the prior art in an effort to attain the claimed invention causes the art to become inoperable or destroys its intended function, then the requisite motivation to make the modification would not have existed. *See In re Fritch*, 972 F.2d 1260, 1265 n.12 (“A proposed modification [is] inappropriate for an obviousness inquiry when the modification render[s] the prior art reference inoperable for its intended purpose.”). That is precisely what would happen if

Niterra’s “equal wiring length indicator” were to be incorporated into EZBRUSH. For all the reasons above, the combination would therefore not have been obvious.

B. Claims 5 and 11

Claims 5 and 11 require “displaying the warning sign by changing at least one of colors of the length of the line or the difference value.”

Petitioner relies on Niterra for these claims, specifically the following passage: “the pattern or color of the wiring length indicator displayed on the monitor, or a combination of the two, may be used to inform the operator that the amount of wiring length deviation has deviated from an acceptable value.” EX1009, [0069]. In other words, “color... may be used” by Niterra’s equal wiring length indicator. This does not mean that the color of the equal wiring length indicator *changes* in response to any threshold being met. EX2001, ¶¶137-138. The Petition does not bridge the gap between what is taught by Niterra (“color... may be used”) and what is required by the claims (changing colors). *Id.*

Moreover, claims 5 and 10 (by virtue of dependency from claims 4 and 9, respectively) require the change in color to occur in response to movement of the cursor. See Section VIII(A), *supra*. In contrast, Niterra’s equal wiring length indicator displays the difference in length between already-existing wiring lines LN1, LN2. Nothing in Niterra teaches or suggests changing color of the equal wiring

length indicator based on cursor movement, *e.g.*, when a user is deciding whether or not to select a certain ending point to create the second selected segment.

VIII. CONCLUSION

For the above reasons, Patent Owner requests that institution of this Petition for *inter partes* review be denied.

Dated: September 16, 2024

Respectfully submitted,

/James K. Cleland/

James K. Cleland, Reg. No. 44,619
DICKINSON WRIGHT PLLC
350 South Main St. Suite 300
Ann Arbor, MI 48104
(734) 436-7356
jcleland@dickinson-wright.com

Lead Counsel for Patent Owner

Michael MacCallum, Reg. No. 63,108
DICKINSON WRIGHT PLLC
2600 W. Big Beaver Road, Suite 300
Troy, MI 48084
(248) 631-2080
mmacallum@dickinson-wright.com

Backup Counsel for Patent Owner

Michael N. Spink, Reg. No. 47,107
DICKINSON WRIGHT PLLC
350 South Main St. Suite 300
Ann Arbor, MI 48104
(734) 436-7354
mspink@dickinson-wright.com

Backup Counsel for Patent Owner

CERTIFICATE OF SERVICE

The undersigned certifies that on September 16, 2024, I will cause a true and correct copy of the foregoing Patent Owner's Preliminary Response to be served via electronic mail at: IPR57721-0002IP1@fr.com, pursuant to Petitioner's consent.

Respectfully submitted,

/James K. Cleland/

James K. Cleland, Reg. No. 44,619
DICKINSON WRIGHT PLLC

Certificate of Compliance Pursuant to 37 C.F.R. § 42.24

This paper complies with the type-volume limitation of 37 C.F.R. § 42.24.

This paper contains 13,192 words, excluding the parts of the paper exempted by 37 C.F.R. § 42.24(a).

This paper also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(iii)&(iv).

Dated: September 16, 2024

Respectfully submitted,

/James K. Cleland/

James K. Cleland, Reg. No. 44,619
DICKINSON WRIGHT PLLC
350 South Main St. Suite 300
Ann Arbor, MI 48104
(734) 436-7356
jcleland@dickinson-wright.com

Lead Counsel for Patent Owner