

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Hangzhou Taihe Trading Co., Ltd. & Ningbo Likeju Trading Co., Ltd.
Petitioner

v.

EP Family Corp.
Patent Owner

Design Patent No. D934,012
Case No. 2023-00658

Supplemental Declaration of Paul Hatch

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1. I, Paul Hatch, declare as follows:

I. Introduction

2. I have been retained by petitioners Hangzhou Taihe Trading Co., Ltd. & Ningbo Likeju Trading Co., Ltd. as an independent expert in this proceeding before the United States Patent and Trademark Office.

3. I previously submitted a declaration on March 3, 2023, which I understand was submitted as Exhibit 1002 to the Patent Trial and Appeal Board of the United States Patent and Trademark Office in case number IPR2023-00658. I may refer to that declaration as Exhibit 1002 or my original declaration. In this supplemental declaration, I incorporate the facts and opinions set forth in my original declaration.

4. I have been asked to provide my opinions regarding the patentability of the substitute claim proposed in Patent Owner's Motion to Amend the '012 patent.

5. I am being compensated at a rate of \$450 per hour for analysis and \$500 for any deposition testimony in this proceeding. My compensation is not contingent on the outcome of any matter or the specifics of my testimony. I have no financial interest in the outcome of this matter.

6. In forming my opinions, I have reviewed and considered any material that is referred to in either this supplemental declaration or my original declaration, including the following non-exhaustive list of materials:

- The '012 patent (which I have been told is Exhibit 1001 to the petition).
- U.S Patent No. 476,400 to Morgan et al. ("*Morgan*") (which I have been told is Exhibit 1004 to the petition)
- Spanish Industrial Design No. I146513 to Muebles Bordonabe, S.A. ("*Bordonabe Furniture*") (which I have been told is Exhibit 1005 to the petition)
- U.S. Design Patent No. D424,325 to Iannaccone ("*Iannaccone*") (which I have been told is Exhibit 1006 to the petition)
- Ikea, *Table Galant* - \$149.00 / pieces ("*Galant*") (which I have been told is Exhibit 1007 to the petition)
- U.S. Patent No. 543,609 to Carter ("*Carter*") (which I have been told is Exhibit 1012 in this proceeding)
- EVANS BROS. LONDON, JOINTS IN WOODWORK (3d ed. 1920) (which I have been told is Exhibit 1013 in this proceeding)
- United States Patent No. 666,435 to Oliver ("*Oliver*") (which I have

been told is Exhibit 1014 in this proceeding)

- United States Patent No. 1,766,694 to Siskin (“*Siskin*”) (which I have been told is Exhibit 1015 in this proceeding)
- Patent Owner’s Motion to Amend

7. I have been asked to assume that Exhibits 1004-1007 and 1012 each qualify as prior art to the ’012 patent.

II. Qualifications and Background

8. I am qualified to serve as a technical expert in this matter based on my educational, personal, and work experience.

9. In my original declaration in this proceeding, filed as Exhibit 1002, I summarized my education, professional background, and qualifications. I understand that my curriculum vitae and a list of cases for which I have provided expert testimony was filed as Exhibit 1003 in this proceeding.

III. Summary of Opinions

10. After reviewing Patent Owner’s motion to amend and the materials identified in this supplemental declaration, I have formed the opinion that (1) the substitute claim only adds elements that are purely functional in nature, (2) the substitute claim includes internally inconsistent figures such that an ordinary observer would not understand the scope of the substitute claim, and (3) the

substitute claim is obvious in view of the prior art. I address each of these opinions in the paragraphs below under the heading “Detailed Analysis.”

IV. Legal Standards

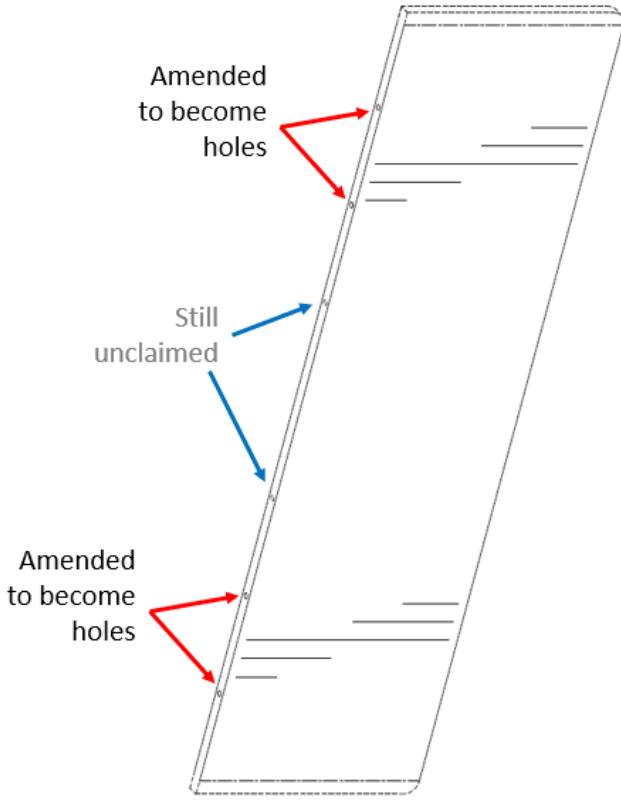
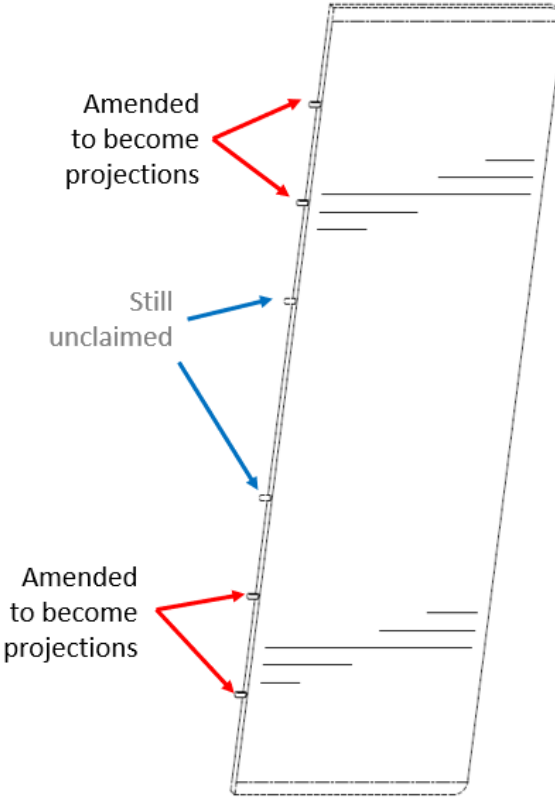
11. My understanding of the legal standards that were provided to me is described in my original declaration. Ex. 1002 at ¶¶ 18-32.

12. In addition to these legal standards, I have been informed by counsel as to the legal standard for indefiniteness. I have been informed that a design patent may be indefinite under 35 U.S.C. § 112 if one skilled in the art, viewing the design as would an ordinary observer, would not understand the scope of the design with reasonable certainty based on the claim and visual disclosure. I have also been informed that the claim in a design patent may be indefinite if the visual disclosure includes multiple internally inconsistent drawings.

V. Overview of Motion to Amend and Substitute Claim

13. I have reviewed Patent Owner’s Motion to Amend, which I understand proposes to amend figures 1, 6, 8, 9, and 14 to change certain broken lines in the original figures into solid lines. (Motion at pages 6-7.) I have reviewed Patent Owner’s proposed amendments to the figures, which appear on pages 8-12 of the motion in the form of side-by-side comparisons between the original, unamended figures, and the amended figures.

14. The amended figures change four holes in figures 1, 6, 9, and 14 and four projections in figure 8 from broken lines into solid lines. I note that the original figures include 6 holes and projections and only a subset of those (specifically the holes/projections closest to the edge of the table) have been changed into solid lines.

Table 1: Only a subset of the originally unclaimed projections and holes have been changed into solid lines.	
Amended Figure 1	Amended Figure 8
 Amended to become holes Still unclaimed Amended to become holes	 Amended to become projections Still unclaimed Amended to become projections

15. Because I understand that the solid lines in the figures, as opposed to the broken lines, defines the scope of the claim of a design patent, I understand that the amendments seek to change the scope of the claim to require four holes (figures 1, 6, 9, and 14) and four projections (figure 8) that were previously not required.

VI. Claim Construction

16. In my original declaration, I explained in detail the manner in which I interpreted the claim of the '012 patent. Ex. 1002 at ¶¶ 41-52. In particular, I explained that I rely primarily on the solid lines in the figures of the '012 patent for the scope of the claimed design. I continue to rely primarily on the solid lines for my understanding of the substitute claims.

17. In my original declaration, I also explained that I use two alternative understandings of the widths of the boards claimed in the '012 patent. Ex. 1002 at ¶¶ 47-52. Although the '012 patent figures show two boards having different widths, I considered an understanding where the scope of the '012 patent's claimed design includes tabletops with boards having the same width, resulting in a tabletop with the seam down the middle. I used this construction after being informed that the Patent Owner had accused products having equal-width boards. Ex. 1002 at ¶ 50. I also applied an understanding where the claimed design covers only tables with unequal-width boards.

18. I note that in Patent Owner’s motion to amend, Patent Owner appears to apply a construction based on the first understanding; that the claim encompasses but does not require equal-width boards. Specifically, Patent Owner states that “the distances between the top and bottom edges of the top and bottom portions, i.e., the widths of the top and bottom portions are not limited to unequal embodiments as shown in the drawings.” (Motion at page 4.) Patent Owner states that this understanding is because the “top and bottom edges of the top and bottom portions are connected by dot-dash dashed lines.”

19. I do not agree with this understanding because even though the solid line edges of the table boards may be connected by dashed lines, the spacing between the solid lines shown in the figures is still different between the top and bottom portion.

20. Nonetheless, because Patent Owner states that it is construing the claims to encompass equal-width boards, I continue to apply that construction—as one of my two understandings—in my analysis.

21. For that reason, grounds 1-4 specifically address why the prior art renders obvious the substitute claim in a situation where the substitute claim includes (but does not require) equal width boards (the first understanding). Grounds 3-6 address why the prior art renders obvious the substitute claim in a situation where the claim requires unequal-width boards. I note that because the

first understanding encompasses both equal and unequal width boards, grounds 3-6 would also render obvious the claimed design under the first construction.

VII. Detailed Analysis

A. The Substitute Claim Adds Only Functional Elements

22. As noted in my original declaration, I understand that a design patent does not cover aspects of a design that are purely “functional” rather than ornamental in nature. In my opinion, the newly required holes and projections are purely functional in nature and do not add to the ornamentality of the claimed design.

23. Joining material by using holes and projections is a common technique in woodworking and furniture making. Projections and recesses or holes that accommodate those projections have been used to add stability between neighboring pieces of material, such as wooden boards/planks used in a tabletop, for literally centuries. Even a brief, cursory research reveals this fact. For example, *3D Reconstruction of Furniture Fragments from the Ancient Town of Karanis*, available at <https://scholarworks.iu.edu/journals/index.php/sdh/article/view/23340/32547>, describes the use of “dowel plugs [that] were used to connect the two wooden planks that make up the table top” as early as the “Early 3rd to early 4th century.” *See id.* at Table 1 (dates for layer B). I have reproduced an image of this

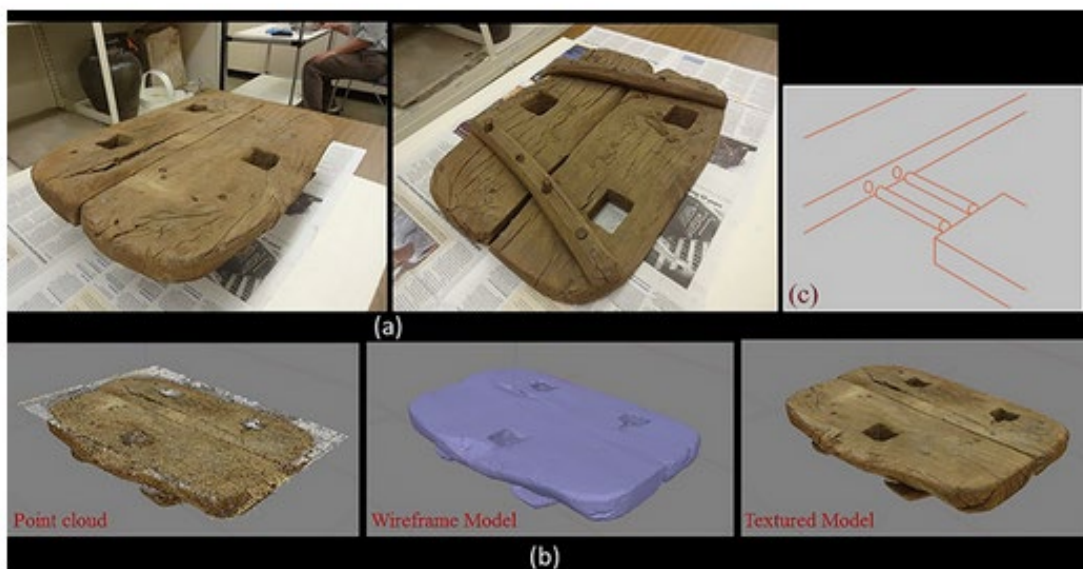
ancient, two-plank table below, which shows the actual table in panel a and a diagram of the dowels used to connect portions of the tabletop in panel c.

Table 2: Projections and recesses have been used to add stability between neighboring pieces of material for centuries

Figure 17.

Fullscreen

Focus

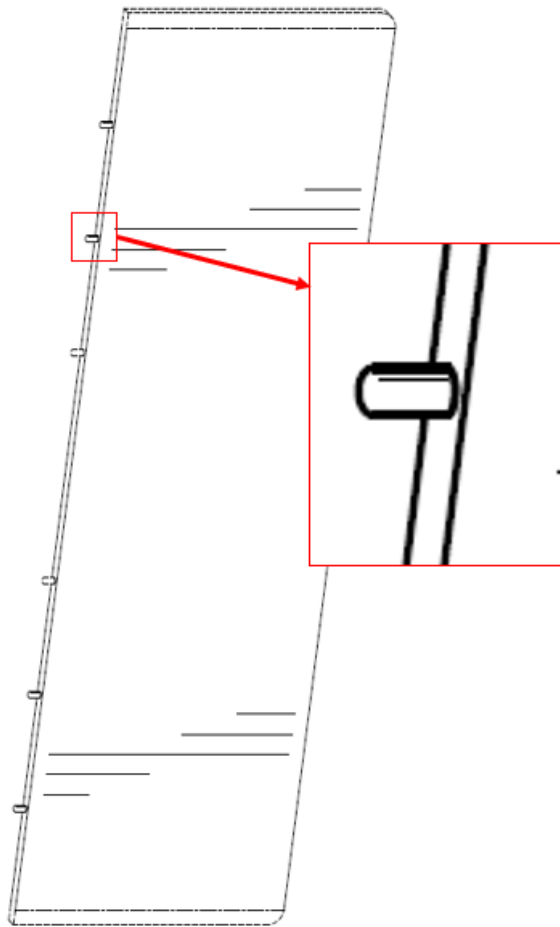


(a) rectangular table top; (b) Photogrammetric 3D model of table top; (c) illustration of the wooden dowels connecting the blocks of the table top.

24. I note that the Motion to Amend refers to the projections as “tenons.” The projections in the Motion to Amend, look like they are in the form of small, rounded cylinders. The projections only appear in a single view (Figure 8), so I cannot determine with certainty that the projections are rounded but based on the shading near the top of the projection and the rounded profile, they look like

cylindrical projections. I have reproduced a blown-up image of one of the projections in Figure 8 below:

Table 3: The newly claimed projections appear to be cylindrical



Blown-up image of one of the projections in Figure 8

25. Rounded projections like these are typically called dowels rather than tenons. As shown in EVANS BROS. LONDON, JOINTS IN WOODWORK 53 (3d ed. 1920), tenons typically refer to a solid “rectangular” projection that is formed from the piece of wood itself. In contrast, a dowel refers to using a peg that is not

formed from the piece of wood, where the peg is in the form of a cylinder (of course, the cylinder's cross section can be circular or rectangular). JOINTS IN WOODWORK at 77.

26. Throughout my declaration, I will refer to the newly claimed projections as tenons or dowels interchangeably. Although I believe dowel is a more appropriate term for the projections, the patent owner uses the term tenon and I will use that term as well. Because I understand that the scope of a design patent is defined by the solid lines in the figures (visual disclosure), the scope of the patent would not change based on whether the projection is called a “tenon” or “dowel” or some other word. I only point out this distinction in these terms because the prior art more often refers to cylindrical projections for jointing wood as dowels. As shown in JOINTS IN WOODWORK at 82, dowels create a visual impression that is identical to the added tenons/dowels in the substitute claim.

Table 4: Dowels typically create a visual impression that is identical to the added tenons/dowels in the substitute claim.

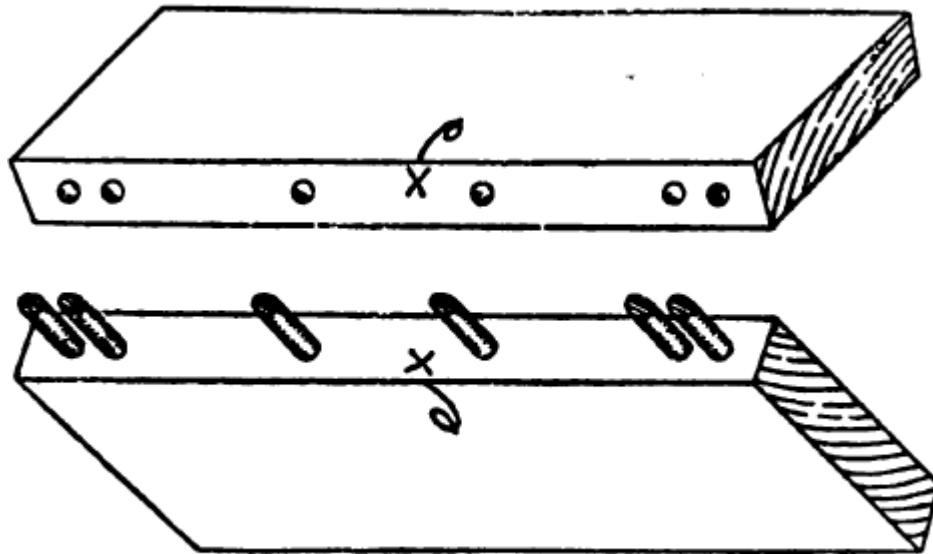


Fig. 201.—Boards ready for Glueing. **Fig**

Figure 201 from JOINTS IN WOODWORK, Page 82.

27. As noted above, even cursory historical or archaeological research will reveal that dowels and other projections have been used to join material, including two boards/planks of a tabletop, for centuries. Certainly by the early 1900s, the functional purpose of dowelling was well understood. As explained in EVANS BROS. LONDON, JOINTS IN WOODWORK 84 (3d ed. 1920), the purpose of circular tenons or dowels “is to guide the table leaf into its proper position when the leaf engages with the table proper, and to make the flat surface of the table top and leaf register correctly and thus ensure a level surface.” The insertion of a

dowel/tenon into a hole prevents the tenon from moving in a direction perpendicular to the axis of the tenon relative to the hole. This helps not only with stability, but in the case of a tabletop, assists with alignment. Holes and tenons are placed equidistant from the table surface to assure that the tabletop pieces stay even (i.e., one board is not proud of (higher than) the other). Because the surfaces of the boards are flat and the holes/tenons are the same distance from those flat surfaces, the overall tabletop formed by the jointed boards will also be flat (i.e., the planks will be in the right position relative to each other).

28. JOINTS IN WOODWORK, which was published in 1920, demonstrates that dowelling was well-understood over 100 years ago. At least it was understood well enough for a detailed guide/manual to be written. Additionally, using dowels/tenons to join tabletop planks was also described in various early United States patents, such as United States Patent No. 1,766,694 to Siskin, which describes using dowels and dowel holes to allow two boards to be “drawn together . . . into engagement, thus forming a table with a large table top.” *Siskin* at 2:96-101. United States Patent No. 666,435 to Oliver, patented in 1901, uses dowel pins and even refers to them as “the usual dowel pins,” which shows that the technique of using dowels was commonplace by the early 20th century. Finally, *Carter*, U.S. Patent No. 543,609 (Ex. 1012), which I rely on in my obviousness analysis below, uses dowels to joint planks in a folding table.

29. The above references, including JOINTS IN WOODWORK and the noted patents, show that the use of dowels to join planks is purely functional in nature. JOINTS IN WOODWORK describes and explains the well-known functional purpose (support, guiding during insertion, and even surface) of using dowels. *Siskin*, United States Patent No. 1,766,694, alludes to these purposes when it states that dowels and holes allow boards to be “drawn together” into “engagement.” And *Oliver*’s reference to dowel pins as “usual dowel pins” further supports the functional nature of dowels/holes because they are “usual” or typical in the context of multi-plank tabletops.

30. This also aligns with my personal experience and understanding of how dowels are used, from my own woodwork and from assembling ready-made cabinetry together. A Designer of Ordinary Skill in the Art would also understand the functionality of dowels to comport with the above descriptions.

31. While the above prior art references cite the functional use of dowels that match the visual disclosure in Figure 8 of the ’012 Patent, and not of “tenons,” my understanding is that tenons are also considered by an ordinary designer as a functional element as they are primarily used in joints to secure two pieces together. Therefore, even if the visually disclosed cylindrical elements of the ’012 Patent were to be considered “tenons” and not dowels, my opinion as to their functionality remains unchanged.

32. Based on the above, it is my opinion that the added tenons/dowels in the substitute claim are purely functional in nature.

33. I note that in my declaration I sometimes use the verbs “join” and “joint” interchangeably. In the woodworking and furniture-making field, the verb joint is often used to refer to the act of bringing two pieces of wood together, to form a joint. During this process, the wood is both joined (brought together) and thus becomes jointed (formed into a joint). Joint is also often used as a verb in the context of bringing two boards together to form a larger board. Before boards are brought together, one must first ensure that the sides of the boards that will be abutted against one another are totally flat. Otherwise, a curve in one board that is not matched by a complementary curve in the other, abutting board, will result in a gap between the boards. The modern tool for making sure a side of a board is completely flat is to run the board through a tool called a “jointer,” which flattens one face of the board and prepares it to be “jointed” to another board. The use of the verb “joint” to refer to joining of material in the form of a joint (noun), however, has been used for centuries, as evidenced by JOINTS IN WOODWORK, which frequently uses the term “joint” as a verb. *E.g.*, JOINTS IN WOODWORK at 2 (“used for jointing”), 4 (“When jointing”), 83 (“to be jointed” in the context of dowelling).

34. My opinion that the added dowels are functional in nature is further confirmed by the '012 patent itself. Figure 23 of the '012 patent shows the tabletop “in an environment of use.” ('012 patent at Description.) As shown below in the reproduction of Figure 23, which remains unaltered in the amended claim, the newly added holes and tenons are not visible at all. This is because when the table is being used, the two boards/planks form a continuous tabletop. In that configuration, the newly added dowels/holes are entirely hidden from view.

Table 5: The newly added holes and tenons/dowels are not visible at all when the tabletop planks are assembled.

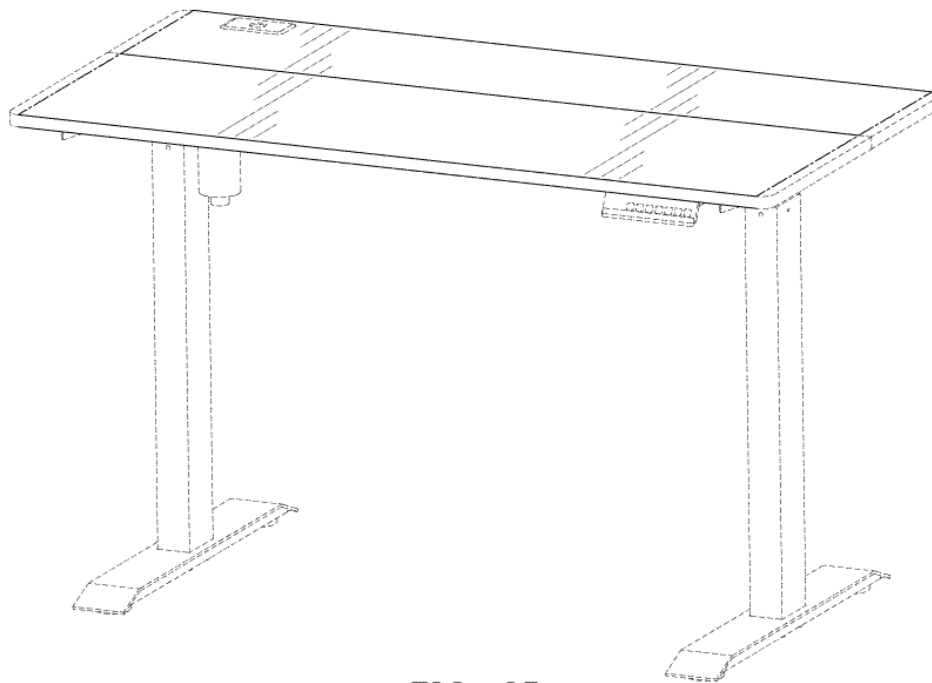


FIG. 23

Figure 23 of the '012 Patent

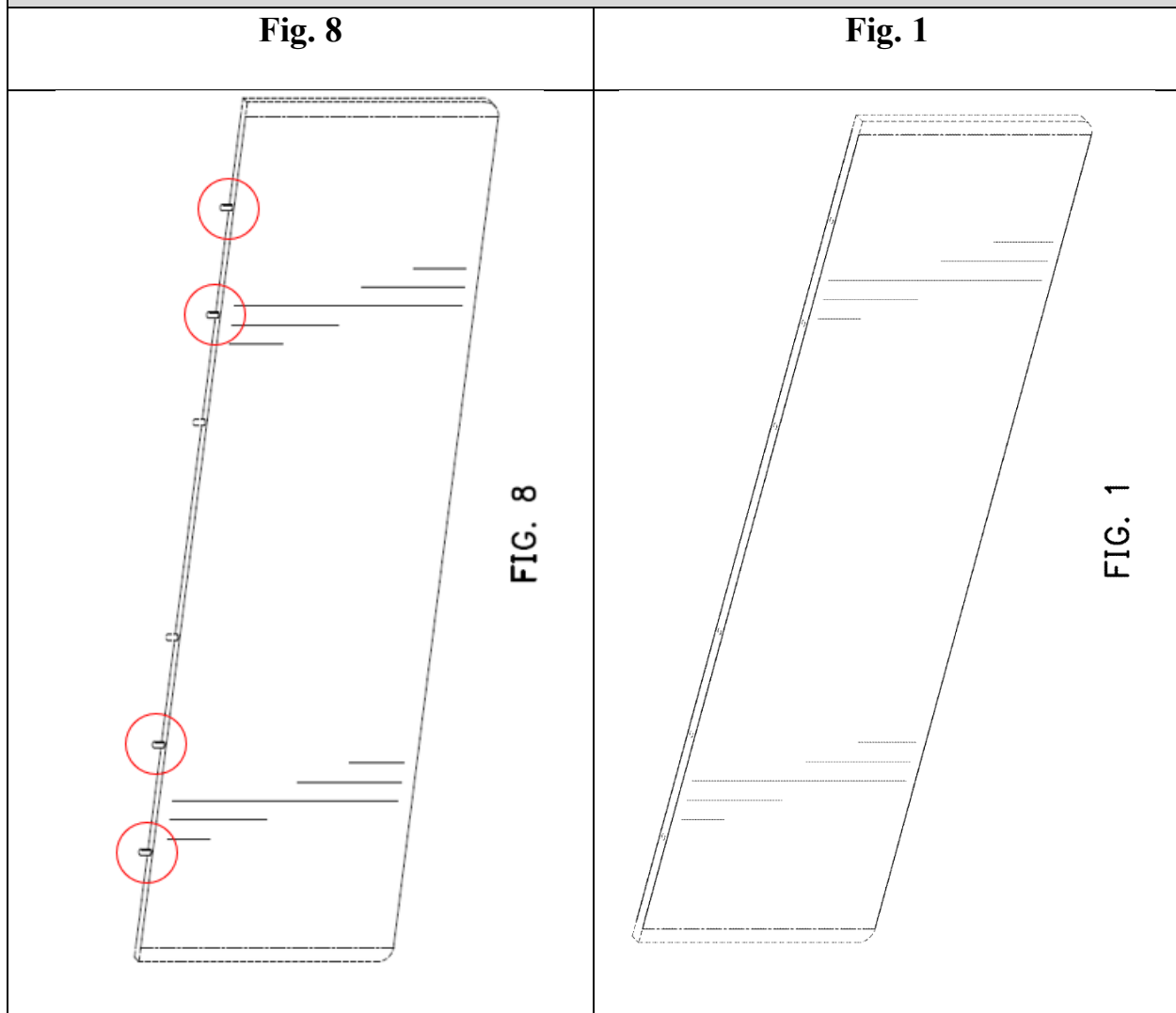
35. This is an additional reason that further supports and confirms my opinion that the added tenons/hole are purely functional in nature—and not ornamental. An ordinary observer, when using the table, will not even be able to see the tenons/holes. Rather, they are there solely to provide stability and ensure the smoothness of the joint between the planks. Thus, my opinion is that the added tenons/holes are purely functional in nature.

B. An Ordinary Observer Would Not Understand the Scope of the Substitute Claim

36. Patent Owner’s motion to amend proposes modifications only to Figures 1, 6, 8, 9, and 14. The remaining figures in the ’012 patent remain unchanged. As a result, the figures are not consistent with one another.

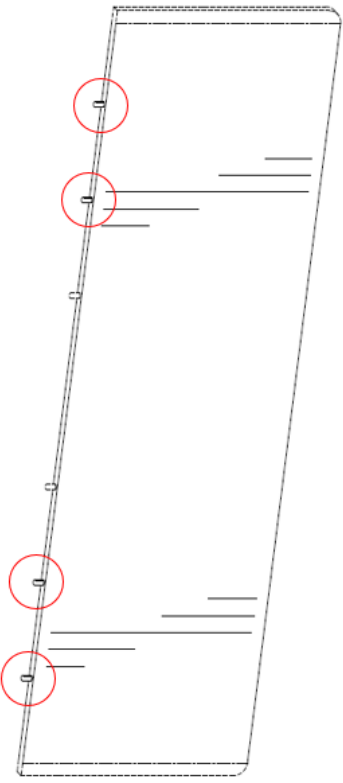
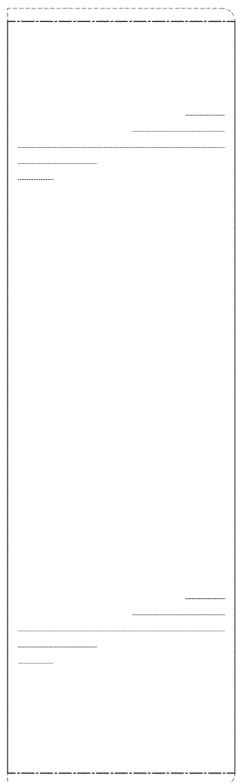
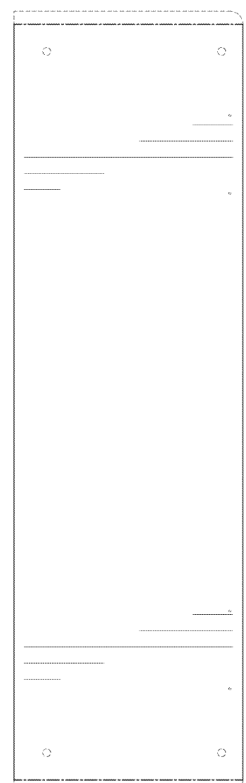
37. Figure 8 is the only amended figure that adds tenons/dowels. The description in the ’012 patent refers to Figure 1 as a “perspective view of the top portion of a table top” and Figure 8 as “another perspective view thereof.” Therefore, it is my understanding that Figure 1 and Figure 8 are perspective views of the same thing. Yet Figure 8 (amended) includes the added tenons/dowels while Figure 1 does not, as shown below:

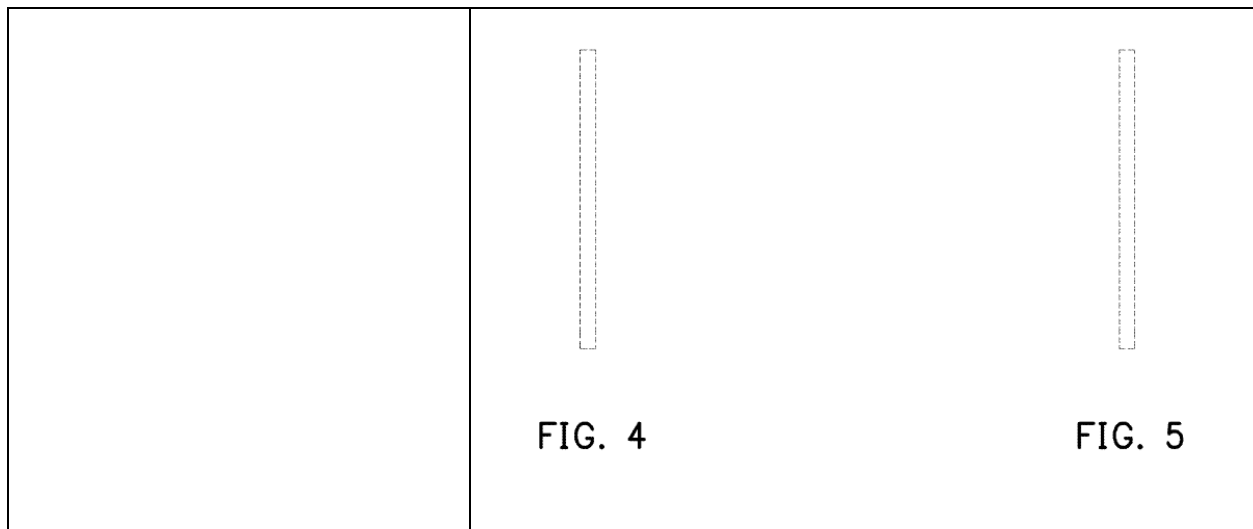
Table 6: Figure 1 of the amended Patent does not include the tenons/dowels that are claimed on the same plank shown in figure 8.



38. Similarly, Figures 2 and 3 are front and rear views of that same top portion. Because tenons/dowels are projections, one would expect them to stick out from the sides of these views. But Figures 2 and 3 remain unamended and do not show the tenons/dowels.

39. Figures 4 and 5 have the same problem because the profile of the projections/tenons should also be visible in those figures.

Table 7: Figures 2, 3, 4 and 5 of the amended Patent also do not include the tenons/dowels that are claimed on the same plank shown in figure 8.		
Amended Fig. 8	Fig. 2	Fig 3.
 FIG. 8	 FIG. 2	 FIG. 3



40. Based on these differences, there is no way to determine whether the substitute claim actually includes/requires the added tenons or not. Only one figure includes them (Figure 8), and all of the remaining figures (1-5) that illustrate this portion of the table top, omit the tenons even though one would expect the tenons to be visible in those images.

41. It is therefore my opinion that an ordinary observer would not be able to determine whether the tenons are actually required by the substitute claim and therefore would not be able to understand the scope of the substitute claim.

C. The Substitute Claim Is Unpatentable Over the Prior Art

42. In my opinion, the design claimed in the substitute claim is obvious over the prior art. My opinion is based on the assumption that the substitute claim actually requires tenons, as shown in Figure 8, even though those tenons are absent from Figures 1-5.

43. As I explained above, using tenons/dowels to join tabletop planks has been done for literally centuries and is disclosed in a treatise, JOINTS IN WOODWORK, as well as numerous early United States Patents. *Carter*, in particular, discloses using tenons/dowels to join tabletop planks as early as the 19th century in the context of a folding table that is very similar to *Morgan*.

44. Specifically, *Carter* discloses a “folding table” where the top is formed “in two hinged sections.” *Carter* at 1:12-19. *Carter*’s folding table is depicted in Fig. 1, reproduced below:

Table 8: Carter discloses a folding table that includes the use of dowel pins

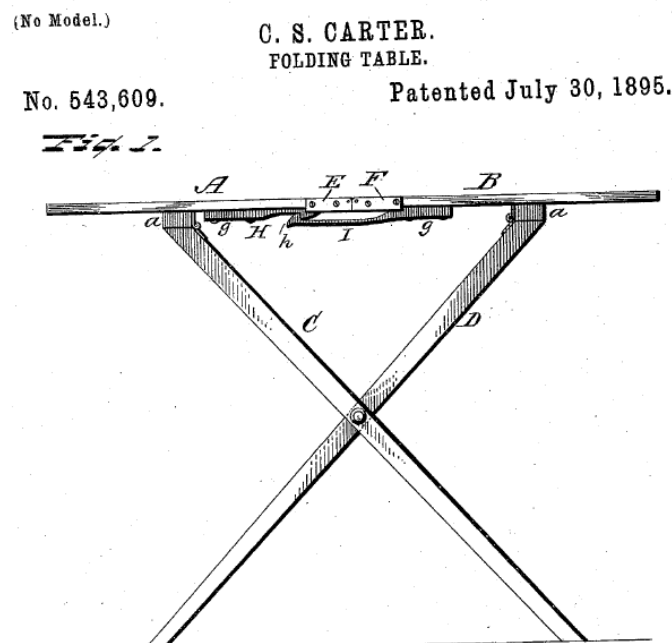
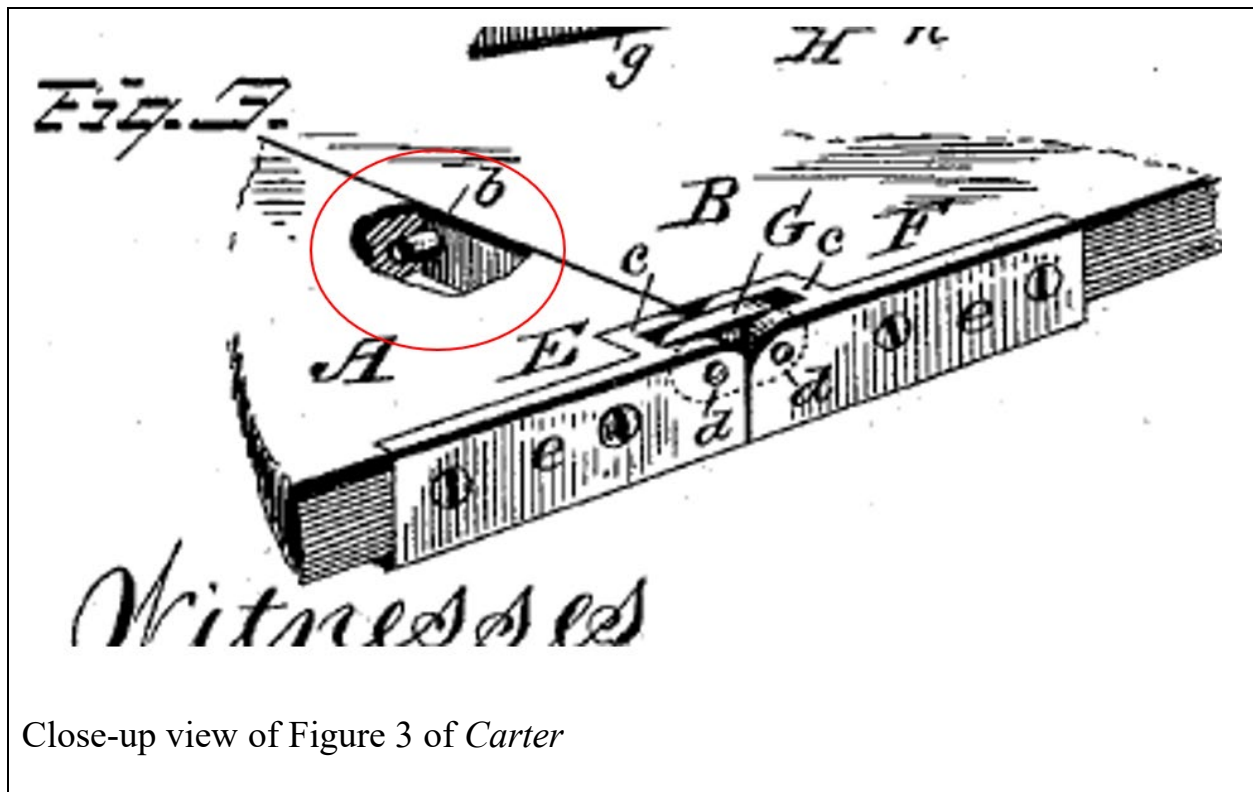


Figure 1 of *Carter*.



45. *Carter* explains that the tabletop may be of any shape and may be “round, square, octagonal, or any other shape found most preferable.” *Id.* at 1:33-37. *Carter* further discloses the use of “dowel-pins b” to “form a close joint when the contacting edges of the [tabletop] sections A [and] B come together.” *Id.* at 1:41-50. *Carter* explains that the dowel pins help to “form a close joint” and also help to “support[] the inner edges of the sections when in an extended position.” *Id.* An example of dowel pin b is shown in Fig. 3 of *Carter*, which is reproduced below with a yellow highlight identifying dowel pin b.

46. In my opinion, a designer of ordinary skill in the art would have found it obvious to use tenons/dowels to help align and join two neighboring planks in a

tabletop in view of *Carter*. This is especially the case since tenons/dowels have been used for centuries to do just that, as I explained above. *Carter* explains the purpose of dowel pins is to help “form a close joint” and also allow neighboring planks to support each other. *Carter* at 1:41-50. This technology is so ancient that it was already detailed in a treatise over 100 years ago, as in JOINTS IN WOODWORK. Ex. 1013 at 97. Additionally, as I noted above, even cursory research reveals that the technique of using dowels to join boards is actually much older than this treatise.

47. As noted in *Oliver*, a patent for a table that issued in 1901, using dowels/tenons to connect tabletop pieces together was so well known by the early 20th century that *Oliver* refers the technique as “usual.” *Oliver* at 1:64-67.

48. In my opinion, a designer of ordinary skill at the time of the '012 patent—which I understand was merely 4 years ago, in 2019—would have certainly been very familiar with this ancient and rudimentary technology. An ordinary designer would have known that dowels/tenons—or protrusions of any shape—help to align and stabilize neighboring boards/planks to ensure a flat, continuous surface when the planks are joined together. As I explained above, this was done by ensuring the dowels and holes are the same distance from the flat surface of the plank, which ensures that when the dowel is inserted into the hole, the two flat surfaces of the planks are level with each other. An ordinary designer

would have also understood that dowels/tenons are usually positioned in areas where the planks need to be aligned.

49. With this background in mind, a designer of ordinary skill would have been motivated to use dowels/tenons to join the neighboring planks in a tabletop. In my opinion, doing so would have predictably ensured that the tabletops have the desired smooth surface such that one plank is not proud of another (i.e., one board does not sit higher than the other). Doing so would have also predictably provided stability by ensuring that the tabletop planks are joined together to form a single piece. Because the tenons/dowels prevent movement of the planks in the direction perpendicular to the axes of the dowels, the planks are more stable relative to each other. As shown in JOINTS IN WOODWORK , a designer of ordinary skill would have also known that using dowels/tenons was one of several known options for jointing planks together. *See* JOINTS IN WOODWORK at 39 (tongue and groove), 173 (corrugated fasteners), 1-3 (glue). Using dowels was the typical approach for tabletops (i.e., creating a flat surface rather than an angled joint) and at a minimum was obvious to try.

50. In my opinion, a designer of ordinary skill would have been motivated to select a reasonable number of dowels/tenons to add, with a minimum of two and a maximum that depends on the length of the overall table. JOINTS IN WOODWORK at 82 (Figure 201) shows an example of spacing dowels. Spacing dowels/tenons

along the length of the plank predictably ensures that any point along the length of the plank is relatively close to a nearby dowel. This helps ensure the planks remain lined up and the table surface remains smooth/continuous along the entire length of the table. It was well-known at the time that with a single dowel would not keep the planks' surfaces aligned as a single dowel would allow the boards to rotate relative to one another. With a minimum of two dowels, two points would be stabilized. But it was understood by woodworkers that wood tends to move with changes in temperature and humidity. Wood warps and bends slowly over time. Thus, it was well-understood that dowels/tenons need to be spaced along the entire length of the joint to ensure that tabletop remains smooth/flat across the entire seam/joint. Spacing dowels/tenons across the entire joint would help to resist wood movement and ensure that the entire seam remains smooth/flat. All of this has been well-known for centuries.

51. JOINTS IN WOODWORK at 81 provides an example of a “safe rule for the spacing of dowels when jointing sideboard tops” as 9-10 inches apart. It was understood that the spacing would be varied depending on the application and cost considerations. Fewer dowels would be used if cost were a concern or if the material being used was less likely to move with changes in temperature and humidity. For example, manmade wood products such as plywood and medium-density fiber (MDF) boards were known to be more stable dimensionally and

therefore would require fewer dowels/tenons. A greater number of dowels/tenons (i.e., less space between the dowels) would be used if the designer wanted to ensure the tabletop remains absolutely smooth across the entire length. A great example of that knowledge is the tongue and groove joint, which is functionally similar to having many square-shaped dowels without any space in between (i.e., the projections have no gaps at all and are across the entire length). *See JOINTS IN WOODWORK* at 39 (tongue and groove). While a greater number of dowels/tenons would provide the best resistance to one board becoming proud of the other (higher than the other) over time, it would also add to the complexity of the tabletop and increase costs. These tradeoffs in selecting the appropriate number of dowels/tenons were well known, as evidenced by *JOINTS IN WOODWORK*, which by the early 1900s already discusses a “safe rule” of thumb for dressing tables and sideboard tops.

52. In my opinion, based on the above considerations, for a typical tabletop size like those of the tabletops in *Morgan*, *Bordonabe Furniture*, *Galant*, or *Iannaccone*, using between four and ten dowels would have been typical. Fewer than four dowels would have been approaching the lower limit of two and been less stable. Greater than 10 dowels would have resulted in very little space between neighboring dowels and would involve unnecessary cost and effort. At

that point or beyond, the designer would probably have considered other joints (like a tongue and groove) to avoid any gaps at all between projections.

53. In my opinion, adding dowels/tenons would have led to predictable results. There is nothing unpredictable about adding a hole in one plank and a protrusion (tenon/dowel) in the other plank to ensure that the two line up with each other. There is also nothing unpredictable about the fact that a protrusion or a series of protrusions will add to the stability of two boards because the protrusions will ensure that the boards do not move relative to one another, unless of course the protrusion somehow breaks. These are rudimentary results that flow from using dowels/tenons as described in detail in JOINTS IN WOODWORK and the early patents I noted above.

54. Moreover, an ordinary designer would have had a reasonable expectation of success in adding dowels in the context of the folding tables in *Morgan and Iannaccone*. As explained in JOINTS IN WOODWORK, details of making dowels including rounding the corners and adding a countersink to the dowel holes were well known. JOINTS IN WOODWORK at 80-81 (discussing the “dowel rounder”), 80 (Fig. 196, showing dowels with countersinks). For instance, it was well known over 100 years ago that dowels would need to be rounded off (e.g., with the dowel rounder disclosed in JOINTS IN WOODWORK) to aid with insertion. It was also known that the holes could be countersunk to aid with

insertion (wider hole openings allow more leeway for the entering dowel). These were known, predictable details for making and using dowels that an ordinary designer would have been familiar with.

55. In the context of folding tables, like *Morgan* and *Iannaccone*, a designer of ordinary skill would have found it obvious to make appropriate modifications to the dowel (e.g., additional tapering or rounding) and the holes (e.g., larger countersink) to enable the dowel to enter the corresponding hole. Such changes may have been necessary (depending on the tolerances and leeway provided by the folding mechanism) to accommodate the angle of insertion of the dowel that results from the table's folding mechanism. In my opinion, an ordinary designer would have been able to make such changes with predictable results. My opinion is confirmed by *Carter*, which shows using dowel pins in the context of a folding table very similar to *Morgan*. Given that dowels were already used in the context of folding tables so long ago, a designer of skill would have had no trouble making any necessary modifications to the dowels/holes added to *Morgan* or *Iannaccone* to enable insertion.

1. Ground 1—The Substitute Claim Is Obvious Over *Carter* and *Morgan*

56. In my opinion, based on the first construction, which encompasses (but does not require) equal-width boards, the substitute claim is obvious in view

of *Carter* and *Morgan* and the common knowledge of a designer having ordinary skill in the art.

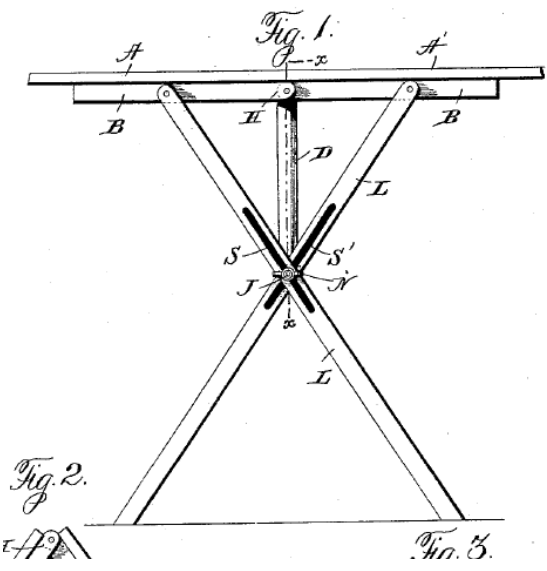
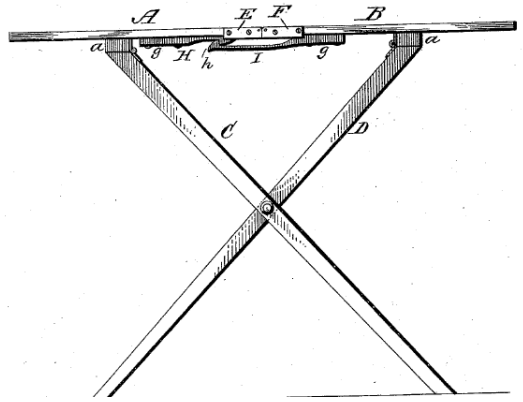
57. As I explained in my original declaration, *Morgan* creates basically the same visual impression as the claimed design. Ex. 1002 at ¶ 60. The addition of the holes/tenons to the substitute claim does not alter my conclusion because the overall visual impression created by the substitute claim remains the same: that of two planks abutted against each other. The added holes/tenons are not a substantial difference or major modification that changes the overall appearance of the substitute claim such that *Morgan* would no longer create the same visual impression as the substitute claim in the same way it created the same visual impression as the unamended claim.

58. Under the “Legal Standards” I outlined in my original declaration, I am to ascertain the differences between the prior art (*Morgan*) and the substitute claim. I addressed any such differences in my original declaration. The only other difference introduced by the substitute claim is the addition of holes/tenons, which I have assumed in this section are required by the claimed design.

59. As I explained above, using holes and tenons to joint boards together to form a tabletop was a well-known, obvious technique. A person of ordinary skill in the art would have been motivated to use holes/dowels in *Morgan* in view of the *Carter*, which also uses holes/dowels to join boards in a similar tabletop.

60. I have been informed that the secondary reference, here *Carter*, needs to be so related to the primary reference that the appearance of certain ornamental features in one would suggest the application of those features to the other. While I do not believe the jointing projections/holes here are ornamental, I am of the opinion that *Carter* is so related to *Morgan* that the appearance of features in *Carter* would suggest the application of those features to *Morgan*. They could not be more related. Not only do both references relate to tables and their tabletops, but *Carter* relates to a folding table, just like *Morgan*. The folding tabletops are very similar in both appearance and design, both having similar X-shaped legs when unfolded and both having a tabletop formed from two equal-width planks. As shown in the side-by-side comparison below, the *Morgan* and *Carter* folding tables are very similar both visually and in their structural design.

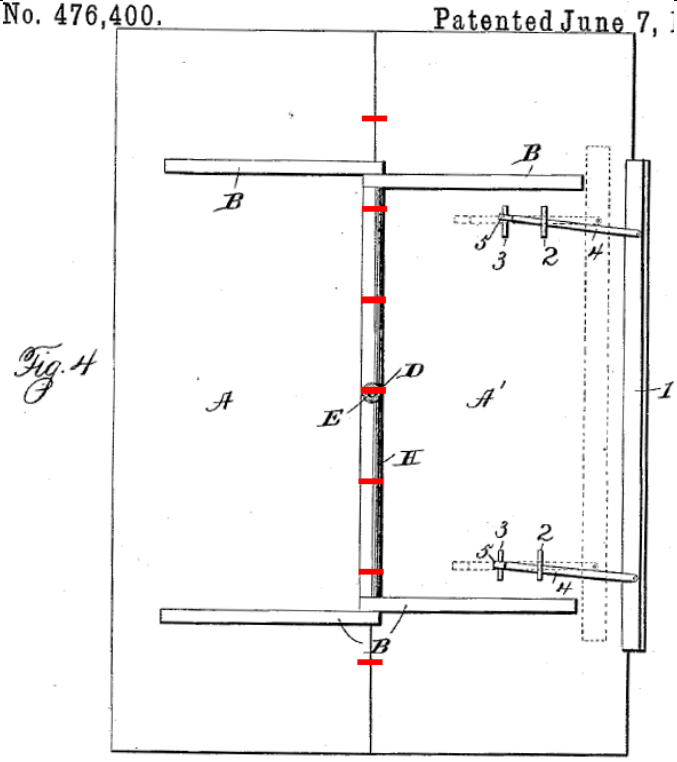
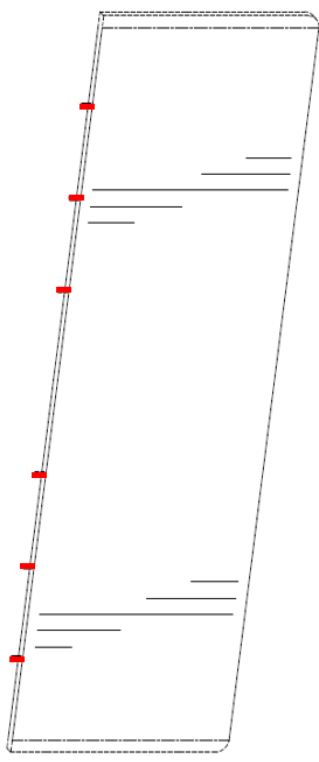
Table 9: Morgan and Carter disclose closely related folding tables

Morgan	Carter
 Fig. 1. Fig. 2.	(No Model.) C. S. CARTER. FOLDING TABLE. No. 543,609. Patented July 30, 1895.  Fig. 1.

61. In my opinion, a designer of ordinary skill would have found it obvious and been motivated to use tenons/dowels to help align and join two neighboring planks in a tabletop in view of *Carter* for the reasons I explained above paragraphs 42-53. And a designer of ordinary skill would have expected predictable results in adding such tenons/dowels (along with their corresponding holes) to *Morgan* for the reasons I identified in those same paragraphs.

62. The resulting tabletop would have dowels spaced along one tabletop plank and corresponding holes spaced along the other plank to allow the planks to be joined together with a smooth surface. As I explained above, a designer of ordinary skill would have found it obvious and predictable to select a reasonable

number of dowel pins between four and ten for a typical tabletop. With seven dowel pins used to join the tabletop planks, the resulting tabletop of *Morgan*, as modified by *Carter*, would have a design that has the same overall visual appearance as the substitute claim. I show this below in the side-by-side comparison between substitute Fig. 8 and *Morgan*—where I have added red boxes showing added dowels. The dowels/tenons in the combination would have the same visual impression as that of the substitute claim.

Table 10: Morgan with the dowels of Carter create a substantially similar impression to the substitute figure 8.	
<i>Morgan</i> Figure 4	Substitute Figure 8
No. 476,400. Patented June 7, 1911  Fig. 4	 FIG. 8

	(Red added to highlight position of claimed and unclaimed tenon/dowels.)
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63. I note that while the seven added dowels in the *Morgan/Carter* combination are greater in number than the four claimed in substitute claim 8, they nonetheless create the same visual impression as the substitute claim. This is my opinion because substitute claim 8 permits two additional unclaimed dowels/tenons, with spacing like that of the claimed dowels. There is also space in the substitute claim for an additional dowel/tenon at the center of the table, which would result in seven equally-spaced dowels. I therefore do not view the substitute claim's requirement of four dowels/holes as a difference because the substitute claim contemplates and permits additional holes/dowels to be included.

64. Even if the substitute claim excluded other dowels, it is my opinion that an ordinary observer would have regarded the combination as creating the same overall visual impression as that of the substitute claim: i.e., that of two boards/planks abutted against each other with two dowels/tenons close to each end. Although the combination includes additional tenons that are absent (or unclaimed) in the substitute claim, an ordinary observer would have regarded this as only a slight difference in design that does not detract from the overall visual similarity

created by two boards with tenons/holes. My opinion is informed by the relative size of the tenons and holes, which appear on only the side of the planks. My opinion is also informed by the fact that the tenons/dowels are not even visible during the ordinary use of the tables as they are hidden from view when the planks are abutted against each other. As a result, an ordinary observer would not have regarded the number (or precise position) of the tenons/holes as a significant, distinguishing design feature.

65. Because the resulting tabletop creates the same overall visual appearance as the substitute claim—including the two equal-width planks under the first construction (see my original declaration) and the added dowel/tenons (discussion above)—it is my opinion that an ordinary observer would have been deceived into believing the two tabletops have the same design.

2. Ground 2—The Substitute Claims Is Obvious Over *Carter, Galant, and Morgan*

66. In my opinion, based on the first construction, which encompasses (but does not require) equal-width boards, the substitute claim is obvious over *Carter, Galant, and Morgan* and the common knowledge of a designer having ordinary skill in the art.

67. As I explained in the previous section, *Carter* and *Morgan* render obvious the substitute claim. I noted in my original declaration that the only

potential difference between *Morgan* and the claimed tabletop (before addition of tenons/holes) relates to the overall proportions of the tabletop, which would have been obvious without an additional reference. Ex. 1002 at ¶¶ 62-63. In the event more evidence is needed that the claimed tabletop proportion in the substitute claim would have been obvious to an ordinary designer, *Galant* renders those proportions obvious for the reasons I outlined in my original declaration. Ex. 1002 at ¶¶ 64-72 (explaining why it would have been obvious to implement *Morgan* as a 2x1 tabletop in view of *Galant*).

3. Ground 3—The Substitute Claims Is Obvious Over *Carter* and *Bordonabe Furniture*

68. In my opinion, whether based on the first construction or a construction that excludes equal-width planks, the substitute claim is obvious over *Carter* and *Bordonabe Furniture* and the common knowledge of a designer having ordinary skill in the art.

69. As I explained in my original declaration, *Bordonabe Furniture* creates basically the same visual impression as the claimed design. Ex. 1002 at ¶ 83. The addition of the holes/tenons to the substitute claim does not alter my conclusion because the overall visual impression created by the substitute claim remains the same: that of two planks abutted against each other. The added holes/tenons are not a substantial difference or major modification that changes the

overall appearance of the substitute claim such that *Bordonabe Furniture* would no longer create the same visual impression as the substitute claim in the same way it created the same visual impression as the unamended claim.

70. Under the “Legal Standards” I outlined in my original declaration, I am to ascertain the differences between the prior art (*Bordonabe Furniture*) and the substitute claim. I addressed those differences in my original declaration. Ex. 1002 at ¶¶ 73-81 (addressing both Design A (equal width) and Design B (unequal width)). The only other difference introduced by the substitute claim is the addition of holes/tenons, which I have assumed in this section are required by the claimed design.

71. As I explained above, using holes and tenons to joint boards together to form a tabletop was a well-known, obvious technique. A person of ordinary skill in the art would have been motivated to use holes/dowels in *Bordonabe Furniture* in view of *Carter*, which also uses holes/dowels to joint boards in two-plank tabletop.

72. I have been informed that the secondary reference, here *Carter*, needs to be so related to the primary reference that the appearance of certain ornamental features in one would suggest the application of those features to the other. While I do not believe the jointing projections/holes here are ornamental, I am of the opinion that *Carter* is so related to *Bordonabe Furniture* that the appearance of

features in *Carter* would suggest the application of those features to *Bordonabe Furniture*. This is because both references relate to tables and tabletops. Further, both references relate to tabletops formed from two neighboring boards/planks abutted against each other. Moreover, in my opinion, a designer of ordinary skill would have understood the teachings of *Carter* to apply to *Bordonabe Furniture* because using dowels/tenons to join two boards/planks was well-known, ancient technology, as evidenced by JOINTS IN WOODWORK and *Oliver*.

73. In my opinion, a designer of ordinary skill would have found it obvious and been motivated to use tenons/dowels to help align and join two neighboring planks in a tabletop for the reasons I explained above in paragraphs 42-53. And a designer of ordinary skill would have expected predictable results in adding such tenons/dowels (along with their corresponding holes) to *Bordonabe Furniture* for the reasons I identified in those same paragraphs.

74. The resulting tabletop would have dowels spaced along one tabletop plank and corresponding holes spaced along the other plank to allow the planks to be joined together with a smooth surface. As I explained above, a designer of ordinary skill would have found it obvious and predictable to select a reasonable number of dowel pins between four and ten for a typical tabletop. With seven dowel pins used to join the tabletop planks, the resulting tabletops of *Bordonabe Furniture* (designs A and B), as modified by *Carter*, would have designs with the

same overall visual appearance as the substitute claim, whether under the first construction (design A) or both constructions (design B).

75. I note that in my analysis above for *Morgan*, I included a side-by-side comparison of Substitute Figure 8 with *Morgan*. But because *Bordonabe Furniture* (designs A and B) are shown only in perspective view, I have not included such a comparison here. But the comparison would create the same basic effect because designs A and B of *Bordonabe Furniture* have tabletops formed from two planks/boards, just like *Morgan*.

76. I note that while the seven added dowels in the *Bordonabe Furniture/Carter* combination are greater in number than the four claimed in substitute claim 8, they nonetheless create the same visual impression as the substitute claim. This is my opinion because substitute claim 8 includes two additional unclaimed dowels/tenons, with spacing like that of the claimed dowels. There is also space in the substitute claim for an additional dowel/tenon at the center of the table, which would result in seven equally spaced dowels. I therefore do not view the substitute claim's requirement of four dowels/holes as a difference because the substitute claim contemplates and permits additional holes/dowels to be included.

77. Even if the substitute claim excluded other dowels, it is my opinion that an ordinary observer, would have regarded the combination as creating the

same overall visual impression as that of the substitute claim: i.e., that of two boards/planks abutted against each other with two dowels/tenons close to each end. Although the combination includes additional dowels/tenons that are absent (or unclaimed) in the substitute claim, an ordinary observer would have regarded this as only a slight difference in design that does not detract from the overall visual similarity. My opinion is informed by the relative size of the tenons and holes, which appear on only the side of the planks. My opinion is also informed by the fact that the tenons/dowels are not even visible during the ordinary use of the tables as they are hidden from view when the planks are abutted against each other. As a result, an ordinary observer would not have regarded the number (or precise position) of the tenons/holes as a significant, distinguishing design feature.

78. Because the resulting tabletop creates the same overall visual appearance as the substitute claim—including the two equal-width planks under the first construction for design A and two unequal-width planks under either construction for design B (see my original declaration)—along with the added dowel/tenons (discussion above)—it is my opinion that an ordinary observer would have been deceived into believing the tabletops have the same design.

4. Ground 4—The Substitute Claims Is Obvious Over *Carter, Galant, and Bordonabe Furniture*

79. In my opinion, based on either construction, the substitute claim is unpatentable over *Carter, Galant, and Bordonabe Furniture* and the common knowledge of a designer having ordinary skill in the art.

80. As I explained in the previous section, *Carter* and *Bordonabe Furniture* render obvious the substitute claim. I noted in my original declaration any potential differences between *Bordonabe Furniture* and the claimed tabletop (before addition of tenons/holes) and explained why those differences would have been obvious without reference to additional references. Ex. 1002 at ¶¶ 85-94. In the event more evidence is needed that the claimed tabletop proportion in the substitute claim would have been obvious to an ordinary designer, *Galant* renders those proportions obvious for the same reasons I outlined in my original declaration. Ex. 1002 at ¶¶ 95-104 (explaining why it would have been obvious to implement *Bordonabe Furniture* as a 2x1 tabletop in view of *Galant*).

5. Ground 5—The Substitute Claims Is Obvious Over *Carter and Iannaccone*

81. Under either construction, both of which encompass unequal-width boards, the substitute claim is obvious over *Carter* and *Iannaccone* and the common knowledge of a designer having ordinary skill in the art.

82. As I explained in my original declaration, *Iannaccone* creates basically the same visual impression as the claimed design. Ex. 1002 at ¶¶ 108-10, 114. The addition of the holes/tenons to the substitute claim does not alter my conclusion because the overall visual impression created by the substitute claim remains the same: that of two planks abutted against each other. The added holes/tenons are not a substantial difference or major modification that changes the overall appearance of the substitute claim such that *Iannaccone* would no longer create the same visual impression as the substitute claim in the same way it created the same visual impression as the unamended claim.

83. Under the “Legal Standards” I outlined in my original declaration, I am to ascertain the differences between the prior art (*Iannaccone*) and the substitute claim. I address any such differences in my original declaration. The only other difference introduced by the substitute claim is the addition of holes/tenons, which I have assumed in this section are required by the claimed design.

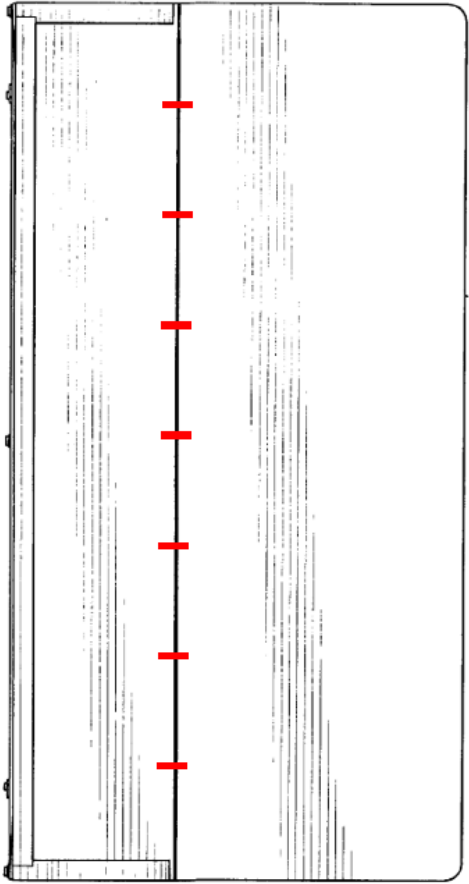
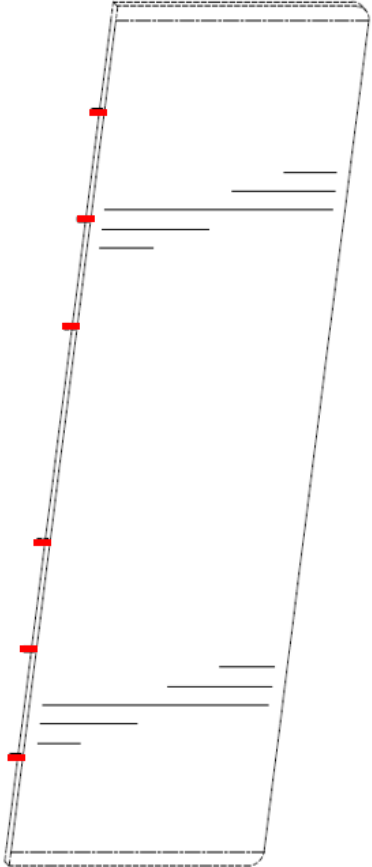
84. As I explained above, using holes and tenons to joint boards together to form a tabletop was a well-known, obvious technique. A person of ordinary skill in the art would have been motivated to use holes/dowels in *Iannaccone* in view of the *Carter*, which also uses holes/dowels to joint boards in the context of a folding table.

85. I have been informed that the secondary reference, here *Carter*, needs to be so related to the primary reference that the appearance of certain ornamental features in one would suggest the application of those features to the other. While I do not believe the jointing projections/holes here are ornamental, I am of the opinion that *Carter* is so related to *Iannaccone* that the appearance of features in *Carter* would suggest the application of those features to *Iannaccone*. Not only do both references relate to tables and their tabletops, but *Carter* relates to a folding table, just like *Iannaccone*. Moreover, both folding tabletops use two boards/planks abutted against each other to form the resulting larger tabletop surface. Moreover, in my opinion, a designer of ordinary skill would have understood the teachings of *Carter* to apply to *Iannaccone* because using dowels/tenons to join two boards/planks was well-known, ancient technology, as evidenced by JOINTS IN WOODWORK and *Oliver*.

86. In my opinion, a designer of ordinary skill would have found it obvious and been motivated to use tenons/dowels to help align and join two neighboring planks in a tabletop in view of *Carter* for the reasons I explained above in paragraphs 42-55. And a designer of ordinary skill would have been met with predictable results in adding such tenons/dowels (along with their corresponding holes) to *Iannaccone* for the reasons I identified in those same paragraphs.

87. The resulting tabletop would have dowels spaced along one tabletop plank and corresponding holes spaced along the other plank to allow the planks to be joined together with a smooth surface. As I explained above, a designer of ordinary skill would have found it obvious and predictable to select a reasonable number of dowel pins between four and ten for a typical tabletop. With seven dowel pins used to join the tabletop planks, the resulting tabletop of *Iannaccone*, as modified by *Carter*, would have a design that has the same overall visual appearance as the substitute claim. I show this below in the side-by-side comparison between substitute Fig. 8 and *Iannaccone*—where I have added red boxes showing added dowels. The dowels/tenons in the combination would have the same visual impression as that of the substitute claim.

Table 11: Iannaccone with the dowels of Carter create a substantially similar impression to the substitute figure 8.

<i>Iannaccone</i> Figure 5	Substitute Figure 8
 FIG. 5	 FIG. 8 (Red added to highlight position of claimed and unclaimed tenon/dowels.)

88. I note that while the seven added dowels in the *Iannaccone/Carter* combination are greater in number than the four claimed in substitute claim 8, they nonetheless create the same visual impression as the substitute claim. This is my

opinion because substitute claim 8 permits two additional unclaimed dowels/tenons, with spacing like that of the claimed dowels. There is also space in the substitute claim for an additional dowel/tenon at the center of the table, which would result in seven equally spaced dowels. I therefore do not view the substitute claim's requirement of four dowels/holes as a difference because the substitute claim contemplates and permits additional holes/dowels to be included.

89. Even if the substitute claim excluded other dowels, it is my opinion that an ordinary observer would have regarded the combination as creating the same overall visual impression as that of the substitute claim: i.e., that of two boards/planks abutted against each other with two tenons close to each end. Although the combination includes additional tenons that are absent (or unclaimed) in the substitute claim, an ordinary observer would have regarded this as only a slight difference in design that does not detract from the overall visual similarity created by two boards with tenons/holes. My opinion is informed by the relative size of the tenons and holes, which appear on only the side of the planks. My opinion is also informed by the fact that the tenons/dowels are not even visible during the ordinary use of the tables as they are hidden from view when the planks are abutted against each other. As a result, an ordinary observer would not have regarded the number (or precise position) of the tenons/holes as a significant, distinguishing design feature.

90. Because the resulting tabletop creates the same overall visual appearance as the substitute claim—including the two unequal-width planks under either construction (see my original declaration) and the added dowel/tenons (discussion above)—it is my opinion that an ordinary observer would have been deceived into believing the two tabletops have the same design.

6. Ground 6—The Substitute Claims Is Obvious Over *Carter*, *Galant*, and *Iannaccone*

91. In my opinion, based on either construction, the substitute claim is unpatentable over *Carter*, *Galant*, and *Iannaccone* and the common knowledge of a designer having ordinary skill in the art.

92. As I explained in the previous section, *Carter* and *Iannaccone* render obvious the substitute claim. I noted in my original declaration any potential differences between *Iannaccone* and the claimed tabletop (before addition of tenons/holes) and explained why those differences would have been obvious without reference to additional references. Ex. 1002 at ¶¶ 116-27 (discussing overall proportions and proportioning between the boards). In the event more evidence is needed that the claimed tabletop proportion in the substitute claim would have been obvious to an ordinary designer, *Galant* renders those proportions obvious for the same reasons I outlined in my original declaration. Ex. 1002 at

¶¶ 132-39 (explaining why it would have been obvious to implement *Iannaccone* as a 2x1 tabletop in view of *Galant*).

VIII. Conclusion

93. Having reviewed Patent Owner's Motion to Amend the '012 patent and the relevant prior art, it is my conclusion that:

94. The substitute claim adds holes and projections that are purely functional in nature.

95. An ordinary observer would not understand the scope of the substitute claim because the figures contain inconsistent views, with some showing the added projections and some omitting them.

96. Under the first construction, the substitute claim is rendered obvious by *Carter* and *Morgan*.

97. Under the first construction, the substitute claim is rendered obvious by *Carter*, *Galant*, and *Morgan*.

98. Under the first construction, the substitute claim is rendered obvious by *Carter* and *Bordonabe Furniture* design A.

99. Under both constructions, the substitute claim is rendered obvious by *Carter* and *Bordonabe Furniture* design B .

100. Under the first construction, the substitute claim is rendered obvious by *Carter*, *Bordonabe Furniture* design A, and *Galant*.

101. Under both constructions, the substitute claim is rendered obvious by *Carter*, *Bordonabe Furniture* design B, and *Galant*.

102. Under both constructions, the substitute claim is rendered obvious by *Carter* and *Iannaccone*.

103. Under both constructions, the substitute claim is rendered obvious by *Carter*, *Iannaccone*, and *Galant*.

104. In signing this declaration, I understand that the declaration will be filed as evidence in a contested proceeding before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I hereby acknowledge that I could be subject to cross-examination in this proceeding and that cross-examination will take place within the United States of America. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross examination.

105. I declare that all statements made herein of my knowledge are true, that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: 2-16-24

By:



Paul Hatch