

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHEMTRONICS USA, INC.,
Petitioner,

v.

FLATFROG LABORATORIES AB,
Patent Owner

Case: IPR2024-00014

U.S. Patent No. 11,281,335

PATENT OWNER'S PRELIMINARY RESPONSE

Mail Stop **Patent Board**
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

TABLE OF CONTENTS

	Page(s)
I. INTRODUCTION	1
II. BACKGROUND	2
A. Overview of the ’335 Patent Invention	2
B. Relevant ’335 Patent Prosecution History	9
1. First Rejection, Mar. 26, 2020, based on Wassvik and RYU	11
2. Second Rejection, Oct. 9, 2020, based on Kukulj and Wassvik	13
3. Third Rejection, Mar. 22, 2021, based on Kukulj and Northcott	15
4. Fourth Rejection, July 6, 2021, based on Kukulj and Liu	16
5. Request for Continued Examination (RCE) Providing Promethean Invalidity Claim Charts Against Related Claims	19
C. Summary of Petitioner’s Proposed Grounds of Unpatentability and the References Cited	26
III. DISCRETIONARY FACTORS FAVOR DENIAL OF INSTITUTION	27
A. 35 U.S.C § 325(d) Weighs in Favor of Denying Institution	28
1. Part 1: The Same And/Or Substantially The Same Art/Arguments Were Previously Presented To The Office	31
a. Petitioner’s Key Reference for Both Grounds (Han) Was Previously Considered by the Office	31
b. Petitioner’s Additional Reference Cao, Zhao, and Shin, Were Also Previously Considered By The Office	38
c. Petitioner’s Arguments Are The Same Or Substantially The Same As Those Previously Considered By The Office	43

2.	Part 2: Petitioner Fails To Demonstrate A Material Error By The Office.....	52
IV.	CONCLUSION.....	53

TABLE OF AUTHORITIES

	Page(s)
 Cases	
<i>Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH,</i> IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020).....	<i>passim</i>
<i>Albany Int’l Corp. v. Kimberly-Clark Worldwide, Inc.,</i> PGR2021-00019, Paper 22 (PTAB June 22, 2021).....	52, 53
<i>Becton, Dickinson & Co. v. B. Braun Melsungen AG,</i> IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017)	<i>passim</i>
<i>Ironsource Ltd. v. Digital Turbine Inc.,</i> PGR2021- 00096, Paper 14 (PTAB Jan. 6, 2022).....	31
<i>Nokia of America Corp. v. Alexander Soto and Walter Soto,</i> IPR2023-00681, Paper 10 (PTAB Nov. 3, 2023).....	44
<i>Vital Connect, Inc. v. Bardy Diagnostics, Inc.,</i> IPR2023-00381, Paper 7 (PTAB July 11, 2023).....	53
 Statutes	
35 U.S.C. § 103	26
35 U.S.C. § 325(d)	<i>passim</i>

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

PATENT OWNER'S EXHIBIT LIST

No.	Reference	Referred To As
2001	Promethean's Invalidity Contentions	Promethean Invalidity Contentions
2002	Exhibit 2 Claim Chart, Promethean Invalidity Contentions	Exhibit 2 Claim Chart, Promethean Invalidity Contentions

I. INTRODUCTION

Patent Owner Flatfrog Laboratories AB (“Patent Owner”) respectfully requests that the Board deny institution because Petitioner Chemtronics USA, Inc. (hereinafter “Petitioner” or “Chemtronics”) has failed to demonstrate a reasonable likelihood of success in its Petition challenging claims 1-5 (the “challenged claims”) of U.S. Patent No. 11,281,335 (“the ’335 Patent”).

The Board should decline to institute under 35 U.S.C. § 325(d) because the Petition lacks merit and merely rehashes the same art and arguments previously considered by the USPTO Examiner. First, **all** of Petitioner’s Grounds rely on references **previously considered** by the USPTO during examination—Han, Shin Cao, and Zhao. Second, all of Petitioner’s Grounds utilize **the same prior art arguments** expressly considered—and overcome—before the Examiner. Indeed, the Examiner considered obviousness combinations of one reference allegedly describing a touch screen display device and frame elements (e.g., Kukulj) with references allegedly describing a touch surface that is curved relative to a flat plane defined in part by a short edge and a long edge and that varies according to a concave curve function (e.g., Wassvik, Northcott, and Liu). The inventors overcame such a combination as not obvious, as the Examiner recognized the patentability of the claims over such arguments.

Despite this prosecution history, Petitioner utilizes previously-considered art, and follows the same arguments that the Examiner previously rejected. Petitioner offers no references that allegedly anticipate any claims of the '335 Patent. Instead, Petitioner offers the same obviousness arguments previously considered—combining one reference allegedly describing a touch screen display device and frame elements (e.g., Cheng in Grounds 1 and 3, or Cao in Ground 2) with alleged teachings of a touch surface that is curved relative to a flat plane defined in part by a short edge and a long edge and that varies according to a concave curve function (e.g., Han in view of Zhao in Grounds 1 and 2, or Han in view of Shin in Ground 3). Thus, this Petition is wholly duplicative of arguments already considered by the Office.

For at least these reasons, Petitioner has failed to meet its burden of showing a reasonable likelihood of prevailing and the Board should exercise its discretion to deny institution.

II. BACKGROUND

A. Overview of the '335 Patent Invention

The '335 Patent relates to the field of optical touch sensitive systems, such as those used in large screen interactive displays or “touch screens,” which allow multiple users to work together on a large display. More specifically, the '335 Patent

relates to optical touch sensitive panels that utilize light, such as infrared lights, and direct light paths above the touch surface between light emitters and receivers in order to detect touch. *See* Ex. 1031, '335 Patent at 1:15-22, 1:26-46.

Touch sensitive panels, called above surface optical touch systems, can contain a plurality of optical emitters and optical receivers arranged around the periphery of a touch surface to create a grid of intersecting light paths above the touch surface. *Id.* at 1:26-31. An object (such as a pen or finger) that touches the touch surface will block certain ones of the light paths. *Id.* at 1:31-33. Based on the identity of the receivers detecting a blocked light path, a processor can determine the location of the intercept between the blocked light paths, and thus detect the location of the one object (single-touch detection). *Id.* at 1:33-38.

The '335 Patent inventors recognized that existing optical touch systems lacked the accuracy necessary for finer tasks, such as writing. For example, with conventional touchscreens, the user experienced unintended visual artifacts when writing with a pen, stylus, or finger, such as “hooks” that appeared at the beginning of a written character and “tails” that appeared at the end of a character. Existing touchscreens also registered unintended touches (called “pre-touch” and “false touch”). The '335 Patent describes prior approaches that failed to provide adequate solutions. For example, bringing the light closer to the touch surface to improve

accuracy was generally not possible because the touch surface was typically a glass plate. *Id.* at 1:56-63. Directing the light closer to the glass plate touch surface causes distortions in the plate having a large effect on the light signal, making such plates unsuitable for increasing accuracy. *Id.*

Additionally, frames for assembling the plate of the optical touch sensitive system and a panel, such as an LCD panel, were known to introduce distortion in the form of uncontrolled warpage to an intended flat plate, i.e., an undesired twist or curve in the plate can be introduced even if it is usually flat. *Id.* at 1:64-2:4. The uncontrolled warpage may distort or even block the light transmitted across the plate, due to uncontrolled twisting of the frame when it is attached to the panel. *Id.* Existing methods to minimize glass warpage were unsuitable for touch sensitive systems because they typically require bulky frames at the border of the glass and/or pressure points closer to the center of the panel that intruded on the glass surface, causing distortions or break of light. *Id.* at 2:5-17.

In order to solve the many issues in these conventional systems, the inventors of the '335 Patent created an improved frame assembly for holding a plate of an optical touch sensitive system relative to a panel, allowing for improved precision, increased compactness, cost-effectiveness, and controlled curvature. Notably, the '335 Patent inventors recognized that inducing concave curvature where all of the

edges (long and short edges) of the top surface of the plate are curved can create a touch panel having a concave shaped touchscreen that is conducive to transmitting as much light as possible to the detectors, thus having far superior performance compared to conventional systems with flat or convex touchscreens. *Id.* at 2:18-25. This inventive concave touchscreen (or “glass”), facilitates a lower Contact Detection Light (CDH) and improves contact detection, lift-off detection, and overall system performance, virtually eliminating the problems that plagued prior systems.

The inventors of the '335 Patent also discovered that the curvature and other claimed elements of its invention prevents distortions and results in a significant increase in the amount of light signal received by the detectors, which greatly enhances system performance and improves the ability of the system to intelligently distinguish between different pens, erasers, palms, and fingers on the screen. *Id.* at 3:8-20; 3:24-34; 6:14-21; Fig. 1. The claimed invention is thus directed to such touch sensing apparatus that includes a frame assembly where the plate (e.g., glass) has a concave curvature where all of the edges (long and short edges) of the top surface of the plate are curved. *Id.* at Claim 1; 3:33-35; 10:35-39; 12:19-26; 16:8-13; 16:18-27; 16:56-62; 17:13-25; 19:48-67.

The '335 Patent explains that its claimed invention includes a touch surface

that is curved relative to a flat plane defined in part by a short edge and a long edge and that varies according to a concave curve function. *See id.* at Claim 1. For example, Figures 12a and 12b of the '335 Patent illustrate an embodiment where the touch plate 10 is curved in a concave direction relative to the x-axis and y-axis that are defined along the long edges and short edges of the rectangle, and where all edges of the top surface of the plate are curved. *Id.* at 16:63-65. Figures 12a and 12b are reproduced below:

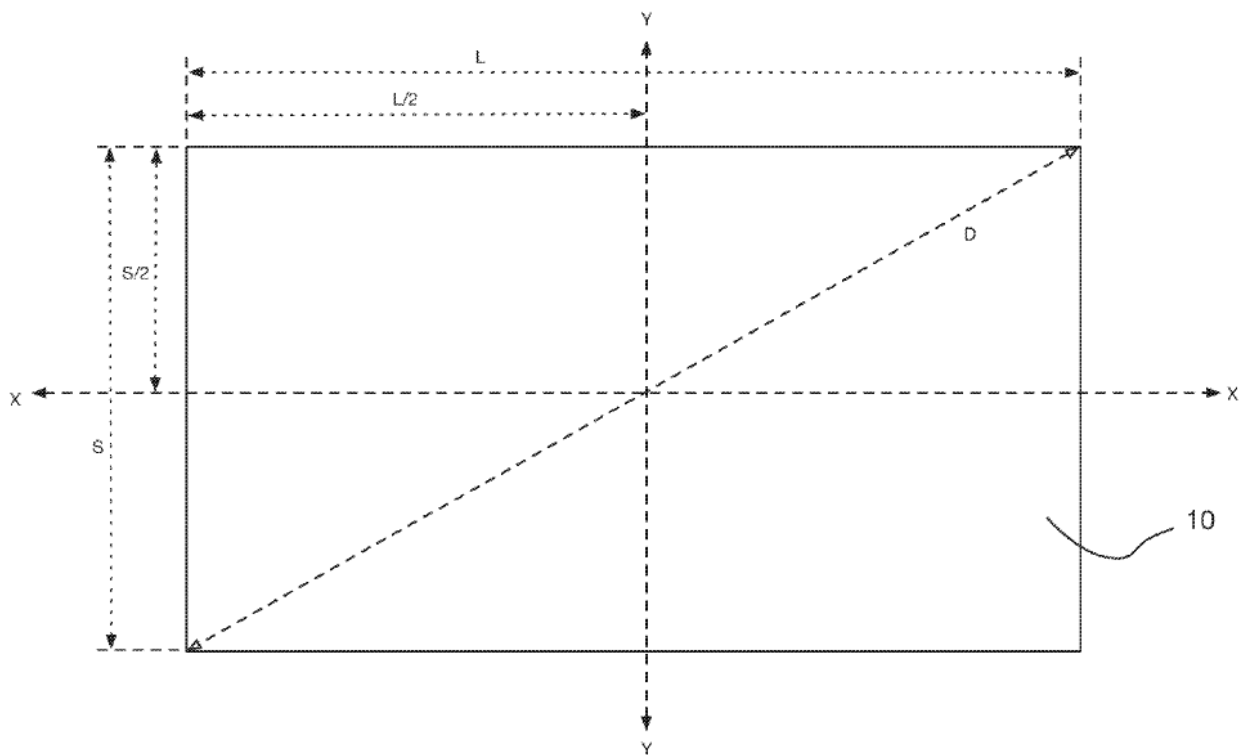


Figure 12a

Id. at Fig. 12a (showing a top plan view of touch plate 10).

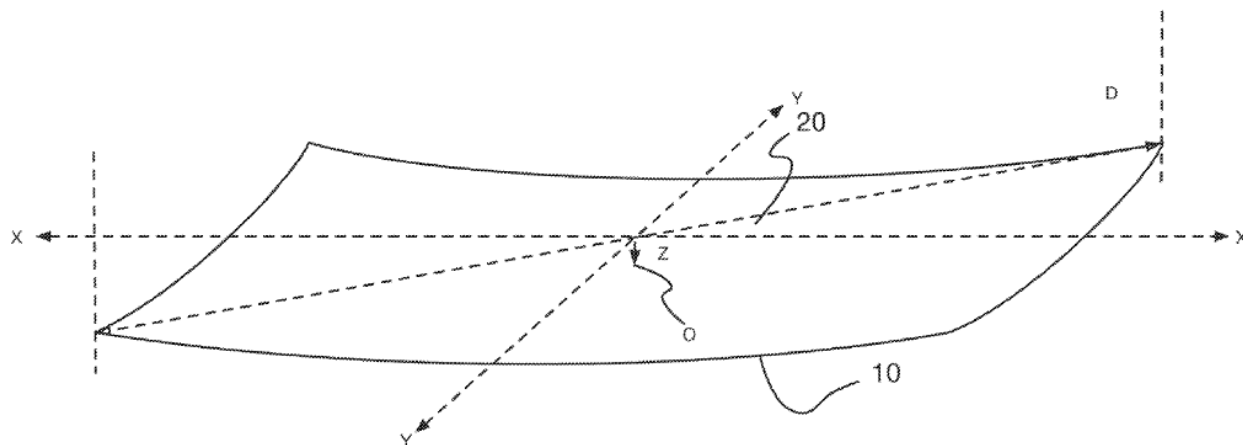


Figure 12b

Id. at Fig. 12b (showing an isometric view of touch plate 10).

As shown, the plate is curved in a concave direction relative to the x-axis which is defined as the axis running parallel to and equidistant from the pair of long edges of the rectangle and passing over the center point O on the touch surface. *Id.* at 16:67-17:-6. Similarly, the plate is curved in a concave direction relative to the y-axis, which is defined as the axis running parallel to and equidistant from the pair of short edges of the rectangle and passing over the center point O on the touch surface. *Id.* at 17:8-13. As described and shown, all edges (long edges and short edges) of the top surface of the plate are curved. *Id.*; Fig. 12-13.

Figures 12c and 12d additionally illustrate the respective section views along the x-axis (long edges) and y-axis (short edges) of the touch plate 10 of Figures 12a and 12b above. *Id.* at 17:14-16. In the example described, the glass is shaped such that the touch surface follows a concave curve on all the edges of the top surface

of the plate. *Id.* at 17:18-20. The figures are reproduced below:

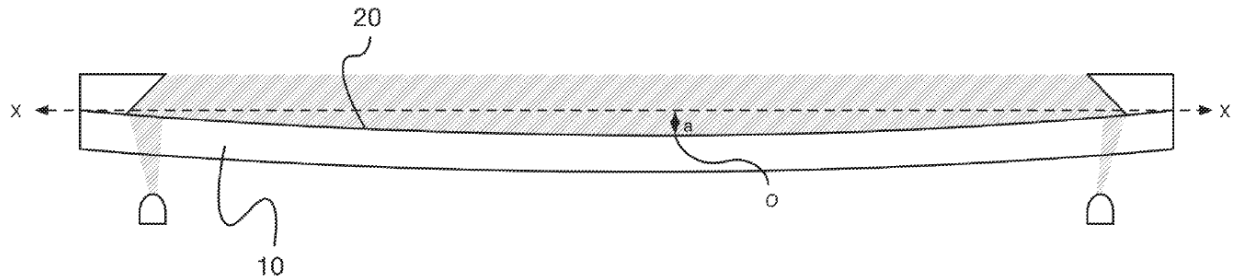


Figure 12c

Id. at Fig. 12c (showing a section view along the x-axis running parallel to the pair of long edges).

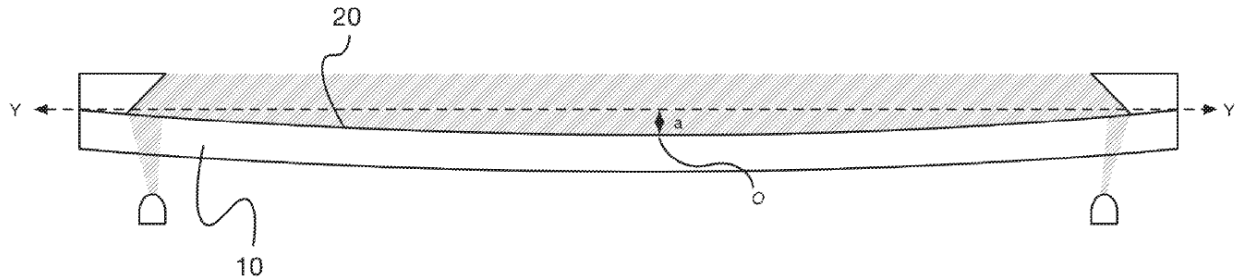


Figure 12d

Id. at Fig. 12(d) (showing a section view along the y-axis running parallel to the pair of short edges); *id.* at 17:20-25.

This curvature is also described by Figure 8 of the '335 Patent, where long edge 203c is curved and short edge 410 is also curved, as illustrated below.

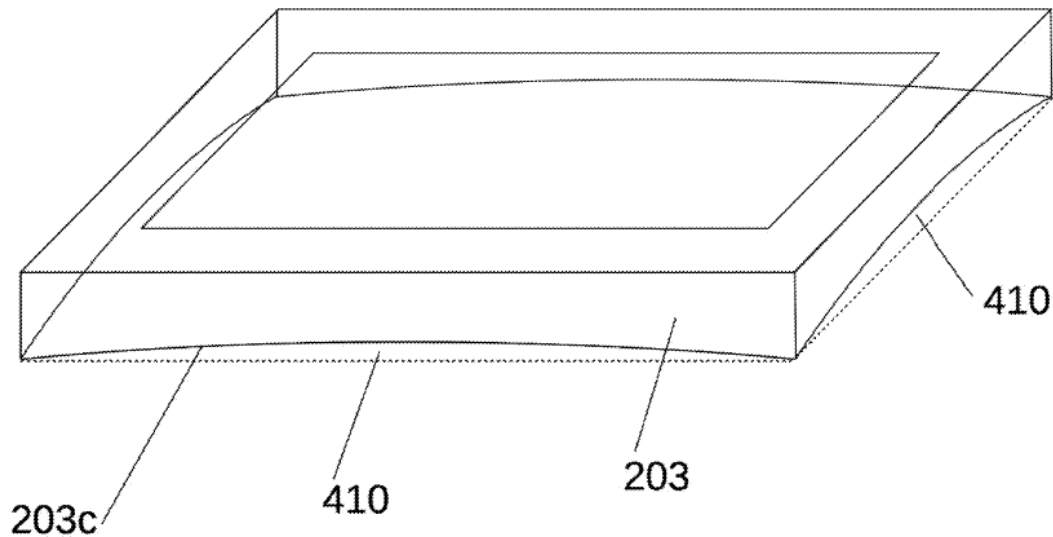


Figure 8

'335 Patent, Fig. 8.

Such described invention prevents distortion and results in a significant increase in the amount of light signal received by the detectors, which greatly enhances system performance and improves the ability of the system to intelligently distinguish between fine objects on the screen.

B. Relevant '335 Patent Prosecution History

During prosecution of the application that led to the '335 Patent, there were *four* office actions prior to allowance of the claims. Several references were cited by the Examiner as a basis for one or more of these rejections, as follows:

- US Patent/PGPub. No. 20120223916 ("Kukulj") (Ex. 1014);
- CN 102117155 ("Liu");

- US Patent/PGPub. No. 20160334942 (“Wassvik”) (Ex. 1034) ;
- US Patent/PGPub. No. 10860142 (“Northcott”) (Ex. 1035);
- US Patent/PGPub. No. 20160295711 (“RYU”) (Ex. 1015).

Although Applicant reached allowance on some claims as early as the first office action on March 26, 2020, the Examiner maintained multiple rejections based on whether the cited prior art met the limitations directed to the claimed “curvature” formed on each “edge.” Claim 1[j]; *see also* 1[h] and 1[j]. This curvature requirement of all edges, including the long edge and short edge, is shown in Figure 8 below (cited by Applicant in remarks to the first office action):

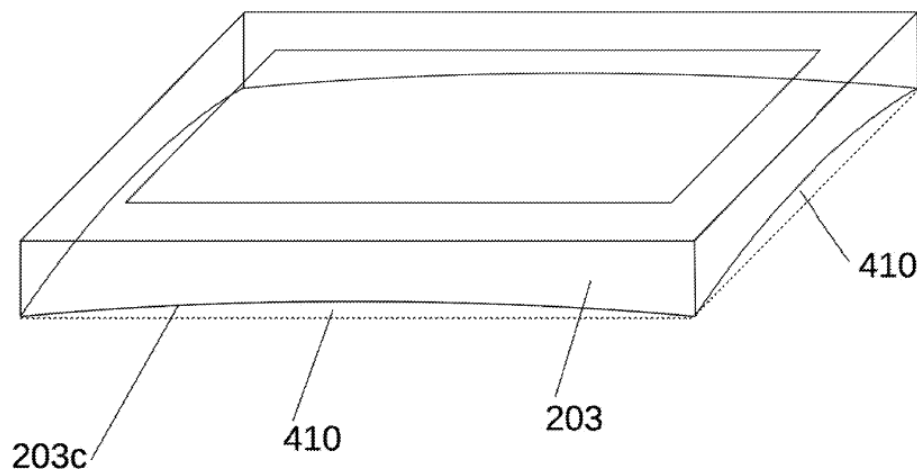


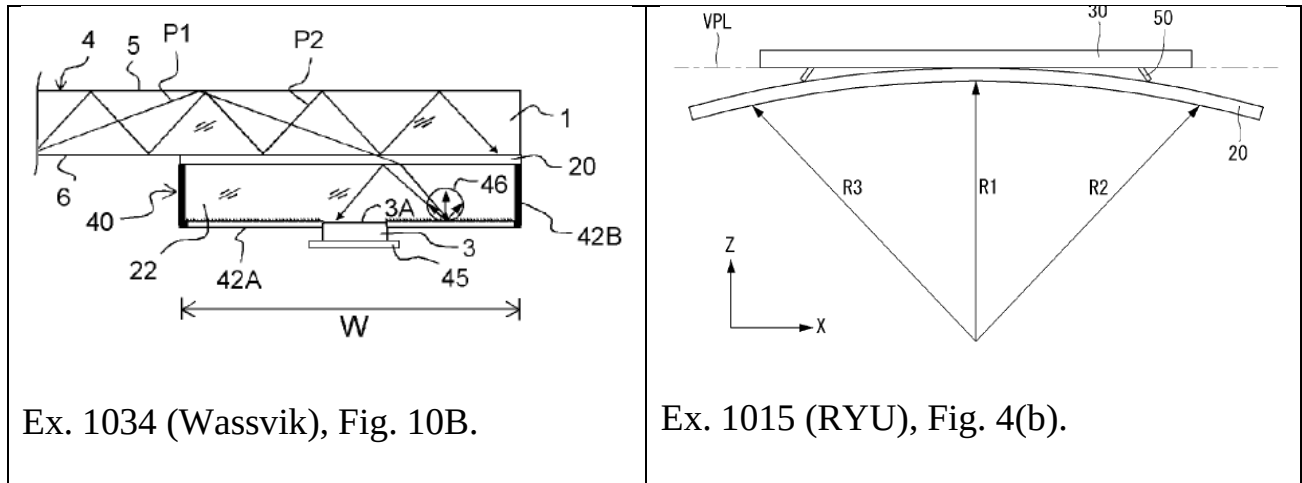
Figure 8

'335 Patent, Fig. 8. For example, one “edge” on the figure above that is curved is edge 203c, which is curved with respect to the dotted straight line. *See* Ex. 1032 ('335 Patent Prosecution History) at 673-74. But all other edges are also curved.

Starting with the March 26, 2020 Office Action, the Applicant repeatedly overcame the Examiner's rejections by distinguishing the prior art cited based on the edge and curvature limitations found in the '335 Patent that are formed in relation to each edge and in a particular manner. The Examiner acknowledged Applicant's arguments to the cited art, but subsequently issued new rejections relying on new prior art for substantially similar arguments—i.e., to meet the specific parabolic or curvature aspect of the invention. Applicant overcame each and every rejection by providing arguments and amending the claims, ultimately obtaining allowance. A summary of each rejection is below.

1. *First Rejection, Mar. 26, 2020, based on Wassvik and RYU*

The Examiner rejected claims based on Wassvik, stating that Fig. 10 of Wassvik shows that walls 42A, 42B may be a parabolic curve. Ex. 1032 ('335 Patent Prosecution History) at 1038. The Examiner also rejected the claims based on Wassvik in combination with RYU stating that RYU teaches a first and second curvature on its display unit 20 in Figs. 4(a) and 4(b). *Id.* at 1042-43. The Figures of Wassvik and RYU relied on by the Examiner are shown below:



In response, Applicant amended the claims to clarify the curvature and edge requirements to recite “an edge portion configured to contact at least a first corner and a second corner of the rectangular plate, wherein the edge portion is curved such that a distance between the edge portion and a straight line between the first corner and the second corner varies according to a parabolic function.” See Ex. 1032 at 673. The Applicant noted that the wall 42A of Wassvik is also not “configured to enable curvature in the rectangular plate” as claimed. *Id.* at 674.

In response, on May 29, 2020, Applicant provided an Information Disclosure Statement (IDS) specifically citing the Han reference:

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	16/403283
	Filing Date	May 3, 2019
	First Named Inventor	Aleksander Kocovski
	Art Unit	2621
(Multiple sheets used when necessary)	Examiner	Lam, Vinh Tang
SHEET 1 OF 2	Attorney Docket No.	FFOG.053C3

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	2015/0373864 A1	12-24-2015	Jung	
	2	2013/0321740 A1	12-5-2013	An et al.	
	3	2016/0154533 A1	06-02-2016	Eriksson et al.	
	4	2011/0080361 A1	04-07-2011	Miller et al.	
	5	2019/0235701 A1	08-01-2019	Han et al.	
	6	9,024,896 B2	05-05-2015	Chen	
	7	4,751,379	06-14-1988	Sasaki et al.	
	8	2013/0234991 A1	09-12-2013	Sparf	

Ex. 1032 at 1032.

2. Second Rejection, Oct. 9, 2020, based on Kukulj and Wassvik

On October 9, 2020, the Examiner cited to a new reference, Kukulj, for substantially similar arguments. *Id.* at 632. The Examiner cited Kukulj's alleged teachings contained in Fig. 3 for the limitation of an edge portion that is curved and varies according to a parabolic function and wherein the curved edge portion is configured to enable curvature in the rectangular plate. *Id.* at 633-34. The Figure of Kukulj relied on by the Examiner is shown below:

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

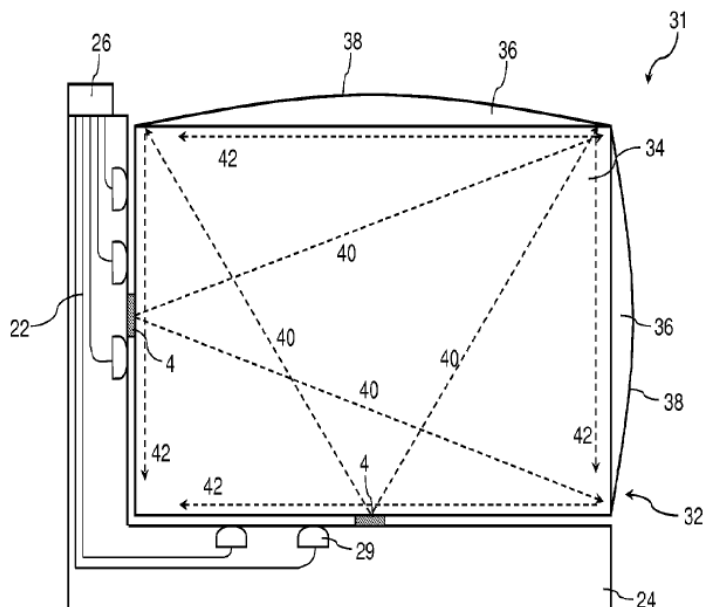


Fig 3

Ex. 1014 (Kukulj), Fig. 3. Along with the rejection, the Examiner expressly considered the Han reference:

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number <i>Number - Kind Code (if known)</i> Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	2015/0373864 A1	12-24-2015	Jung	
	2	2013/0321740 A1	12-5-2013	An et al.	
	3	2016/0154533 A1	06-02-2016	Eriksson et al.	
	4	2011/0080361 A1	04-07-2011	Miller et al.	
	5	2019/0235701 A1	08-01-2019	Han et al.	
	6	9,024,896 B2	05-05-2015	Chen	
	7	4,751,379	06-14-1988	Sasaki et al.	
	8	2013/0234991 A1	09-12-2013	Sparf	

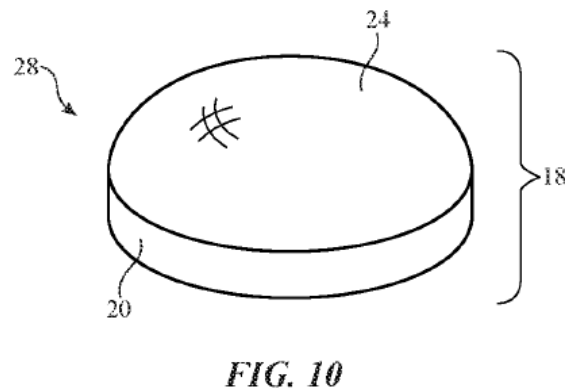
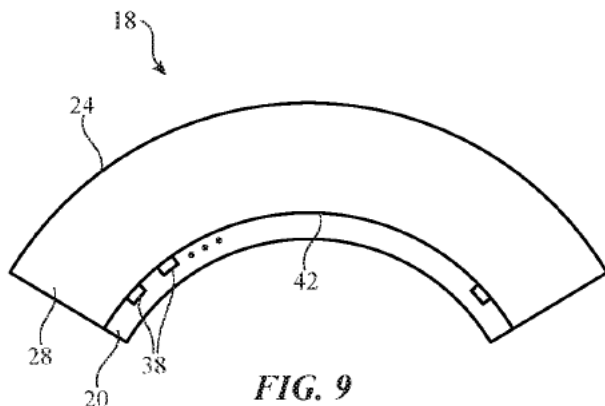
Examiner Signature /VINH T LAM/	Date Considered 10/05/2020
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	
T¹ - Place a check mark in this area when an English language Translation is attached.	
ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.T.L./	

Ex. 1032 at 649.

In response, Applicant again amended the claims to clarify the curvature and edge requirements such that “the touch surface is curved relative to a second flat plane **defined in part by the short edge and the long edge**” and “**wherein the first, second, third, and fourth edges are curved.**” See Ex. 1032 at 619-20 (emphasis added). Applicant explained that Kukulj does not teach the claimed curvature. *Id.* at 622.

3. Third Rejection, Mar. 22, 2021, based on Kukulj and Northcott

On March 22, 2021, the Examiner cited the Northcott reference as allegedly disclosing the limitations related to the curvature and edges being curved. *Id.* at 570. The Examiner stated that Northcott teaches “the first, second, third, and fourth edges . . . are curved” because its Figures allegedly show that “each 1/4 of a circle intersected by a lateral plane and ‘hemispherical surface 24’” of Fig. 10 are curved at a 90 degree arc. *Id.* at 574. The Figure of Northcott relied on by the Examiner is shown below:



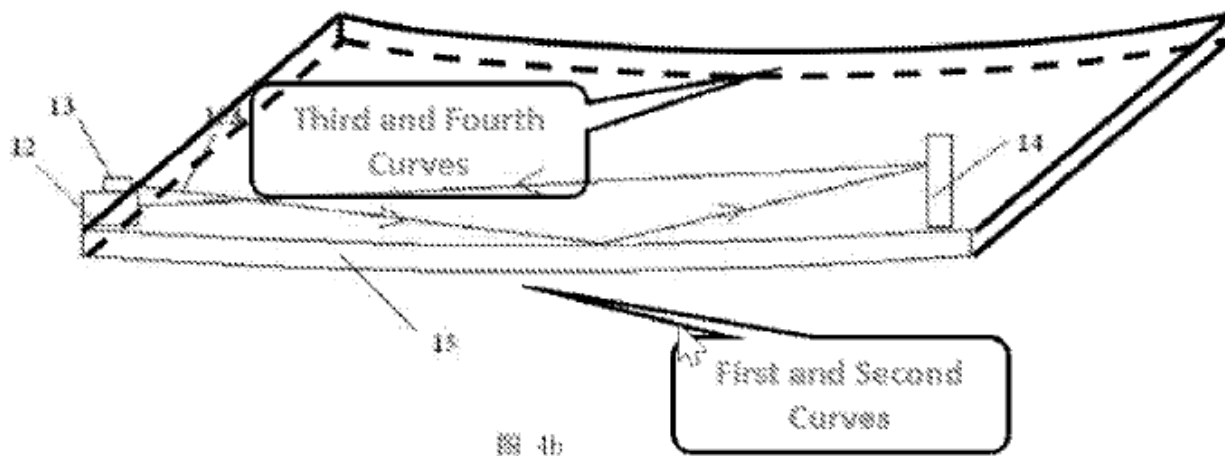
Ex. 1035 (Northcott), Figs. 9-10.

In response, Applicant argued that Kukulj and Northcott do not teach the '335 Patent claimed element of “wherein the curved edge portion is configured to enable curvature in the rectangular plate” and pointed to Figure 3 of Kukulj to show that, although Kukulj discloses a curvature, the edge in the rectangular plate is not curved. *Id.* at 558.

4. Fourth Rejection, July 6, 2021, based on Kukulj and Liu

On July 6, 2021, the Examiner rejected the claims based on the Liu reference in combination with Kukulj for similar reasons. *Id.* at 499. In particular, the Examiner relied on Liu's alleged teachings of a touch surface curved relative to a flat plane defined in part by the short edge and the long edge. Ex. 1032 at 501-02. Notably, the Examiner provided a marked illustration of Liu's Figure 4(b) for its alleged teachings that “the first, second” edges are curved by “Fig. 4b, i.e. front on

page” and alleged teachings that the “third, and fourth edges . . . are curved” by “FIG. 4b, i.e. parallel to page” as shown below:



Ex. 1032 ('335 Patent Prosecution History) at 502.

In response, the Applicant provided additional arguments again highlighting to the Examiner that *the cited prior art teaches only a curvature in one direction*, and that Liu does not teach a “first edge and a second edge adjacent to the short edge; and a third edge and a fourth edge adjacent to the long edge” . . . “wherein the first, second, third, and fourth edges are curved.” Specifically, Applicant stated:

According to the Examiner's interpretation of “third and fourth curves” in his annotation, Liu only shows that its long edges are curved. In contrast, Claim 2 teaches that the “first edge” and the “second edge” which are adjacent to the “short edge” are “curved.” Liu does not teach or suggest that its short edges are curved.

Id. at 491 (emphasis added).

The Examiner then issued a Notice of Allowance agreeing with Applicant's arguments and withdrawing all rejections. *Id.* at 453. In the Reasons for Allowance, the Examiner stated that the subject matter not found was a touch device including the claim limitations shown below:

"...a first edge and a second edge adjacent to the short edge; and a third edge and a fourth edge adjacent to the long edge;

wherein the touch surface is curved relative to a flat plane defined in part by the short edge and the long edge;

wherein a distance between a first curved line drawn on the touch surface and a second straight line drawn on the flat plane varies according to a concave curve function; wherein the first, second, third, and fourth edges are curved." (Claim **1**),

"...a longitudinal edge portion configured to contact at least a first corner and a second corner of the rectangular plate, wherein the longitudinal edge portion is curved such that a distance in a vertical plane between the longitudinal edge portion and a straight line between the first corner and the second corner varies according to a concave curve function and wherein the curved edge portion is configured to enable curvature in the rectangular plate..." (Claim **13**),

Id. at 454-55.

5. ***Request for Continued Examination (RCE) Providing
Promethean Invalidity Claim Charts Against Related Claims***

At the time Applicant was prosecuting the '335 Patent, Promethean, Inc. ("Promethean") challenged the validity of the related '935 Patent (a continuation of the '335 Patent) in district court. On April 23, 2021, Promethean served Invalidity Contentions alleging several grounds of invalidity against the '935 Patent claims, specifically including references Han, Shin, Zhao, and Cao, now relied on by Petitioner. *See* Ex. 2001 (Promethean Invalidity Contentions) at 5, reproduced below:

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

a. Prior Art Patent Applications, Patents, and Utility Models

Defendants hereby identify the following prior art patent applications and patents, copies of which are being served herewith, that anticipate and/or render obvious the '935 Asserted Claims under 35 U.S.C. §102 (post-AIA) and/or 35 U.S.C. § 103 (post-AIA):

Reference No.	Named Inventor(s)
U.S. Patent No. 4,751,379	Sasaki et al.
U.S. Pre-Grant Pub. No. 2019/0235701	Han et al.
U.S. Pre-Grant Pub. No. 2015/0256658	Shin et al.
U.S. Patent No. 9,291,845	Shin et al.
U.S. Pre-Grant Pub. No. 2017/0123257	Zhao
Pub. Int'l App. No. WO 2014/130515	Allan et al.
U.S. Pre-Grant Pub. No. 2016/0202841	Christiansson et al.
International App. Pub. No. WO 2014/098742	Wassvik et al.
U.S. Pre-Grant Pub. No. 2011/0080361	Miller et al.
China Pub. App. No. 104808843	Kang
U.S. Pre-Grant Pub. No. 2019/0004668	Jeong et al.
U.S. Patent No. 9,366,802	Lee et al.
U.S. Patent No. 9,207,800	Eriksson et al.
U.S. Patent No. 8,581,884	Fahraeus et al.
International App. Pub. No. WO 2006/095320	Van De Wijdeven
International App. Pub. No. WO 2016/130074	Wassvik et al.
Taiwan Utility Model No. M517370U	Lee et al.
China Published App. No. 102117155A	Cheng et al.
U.S. Pre-Grant Pub. No. 2017/0308245	Goertz
Korea Pub. App. No. 10-2015-0125374	Lee
Korea Patent No. 10-1081586	Joung
U.S. Patent No. 8,319,729	Choi et al.
International App. Pub. No. WO 2017/099657	Christiansson et al.
U.S. Pre-Grant Pub. No. 2019/0025984	Weilbacher et al.
U.S. Patent No. 9,983,626	Cao et al.
Japanese Pub. App. No. 2015-158831	Yano et al.
U.S. Pre-Grant Pub. No. 2013/0222344	Lu et al.
U.S. Patent No. 9,983,626	Cao et al.

Ex. 2001 at 5 (emphasis added).

Although the Examiner already considered many of the cited references listed in the Promethean Invalidity Claim Charts, in an abundance of care, the Applicant filed a Request for Continued Examination (after Allowance) and provided the

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

Examiner with an additional IDS containing references relied on by Promethean, including Shin and Cao.

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number <i>Number - Kind Code (if known)</i> Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	2020/0012408	01-09-2020	Drumm et al.	
	60	2019/0004668	01-03-2019	Jeong et al.	
	61	4,868,550	09-19-1989	Hiroaki et al.	
	62	5,729,250	03-17-1998	Bishop et al.	
	63	8,319,729	11-27-2012	Choi et al.	
	64	9,001,086	04-07-2015	Saini, Amrinder Pal Singh	
	65	9,207,800	12-08-2015	Eriksson et al.	
	66	9,291,845	03-22-2016	Shin et al.	
	67	9,366,802	06-14-2016	Lee et al.	
	68	9,983,626	05-29-2018	Cao et al.	
	69	10,282,035	05-07-2019	Kocovksi et al.	
	70	10,649,585	05-12-2020	van Beek et al.	

Ex. 1032. at 78.

Applicant also cited and provided the Examiner with a copy of Promethean's Invalidity Contentions including all of the Invalidity Claim Charts containing citations and arguments substantially similar to those made in the Petition:

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	93	Defendants' Initial Invalidation Contentions, FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	

95	Exhibit 2: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. U.S. Pre-Grant Pub. No. 2019/0235701 to Han et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
----	--

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

102	Exhibit 5A: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
103	Exhibit 5B: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
104	Exhibit 5C: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.

115	Exhibit 12: Invalidity Claim Chart Against U.S. Patent No. 10,739,916 Based on Chinese Utility Model No. 203786708 U to Cao, FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
-----	---

Ex. 1032 at 80-82.

The Applicant further clarified the language of the claims, amending “wherein all of the first, second, third, and fourth edges of the top surface of the plate are curved” to recite “wherein all of the edges of the top surface of the plate are curved,” as shown below:

wherein the second frame element ~~including~~ <u>includes</u> a first surface <u>portion arranged against extending over an edge portion</u> of the plate and a second surface <u>portion</u> arranged <u>substantially parallel to a surface of the plate that defines the plate thickness, the touch surface,</u> ~~the touch surface including:~~ ~~a first edge and a second edge adjacent to the short edge; and a third edge and a fourth edge adjacent to the long edge;~~ wherein a distance between a first curved line drawn on the touch surface and a second straight line drawn on the flat plane varies according to a concave curve function; <u>and</u> wherein <u>all of the first, second, third, and fourth edges of the top surface of the plate</u> are curved.

Id. at 93.

Notably, the Promethean Invalidity Contentions also included the Claim Chart specifically directed to Han—the main reference now cited by Petitioner for the '335 Patent limitations of a touch sensing device “wherein the touch surface is curved relative to a flat plane defined in part by the short edge and the long edge,” and “wherein a distance between a first curved line drawn on the touch surface and a second straight line drawn on the flat plane varies according to a concave curve function.” See Ex. 2002 (Promethean Invalidity Contentions Exhibit 2 – Invalidity Claim Chart Based on Han). Applicant **also** provided Claim Charts directed to the Cao reference, which is utilized by Petitioner as the primary reference in Ground 2. Ex. 1032 at 80-82.

After considering all of the newly cited prior art filed with the RCE, including the Promethean Invalidity Contentions and Han and Cao Claim Charts, the Examiner issued a renewed Notice of Allowance for all claims. *Id.* at 20-28. In the Reasons of Allowance, the Examiner specifically stated that the prior art of record still did not disclose a touch surface that is curved according to the claimed limitations, as shown below:

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

"...the second frame element includes a first surface portion extending over an edge portion of the plate and a second surface portion arranged substantially parallel to a surface of the plate that defines the plate thickness ...

...wherein a distance between a first curved line drawn on the touch surface and a second straight line drawn on the flat plane varies according to a concave curve function; and

wherein all of the edges of the top surface of the plate are curved." (Claim 1),

Id. at 26-27.

Along with the Notice of Allowance, the Examiner expressly considered Shin, Cao, and the Promethean Invalidity Contentions along with all Invalidity Claim Charts provided by the Applicant. *Id.* at 59-61. The Examiner's express consideration of the references and claim chart arguments are shown below:

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	2020/0012408	01-09-2020	Drumm et al.	
	60	2019/0004668	01-03-2019	Jeong et al.	
	61	4,868,550	09-19-1989	Hiroaki et al.	
	62	5,729,250	03-17-1998	Bishop et al.	
	63	8,319,729	11-27-2012	Choi et al.	
	64	9,001,086	04-07-2015	Saini, Amrinder Pal Singh	
	65	9,207,800	12-08-2015	Eriksson et al.	
	66	9,291,845	03-22-2016	Shin et al.	
	67	9,366,802	06-14-2016	Lee et al.	
	68	9,983,626	05-29-2018	Cao et al.	
	69	10,282,035	05-07-2019	Kocovksi et al.	
	70	10,649,585	05-12-2020	van Beek et al.	

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

Examiner Signature	/VINH T LAM/	Date Considered	11/29/2021
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
T¹ - Place a check mark in this area when an English language Translation is attached		Chemtronics v. FlatFrog Chemtronics Exhibit 1032 Page 57	
ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.T.L./			

Id. at 57.

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ¹
	93	Defendants' Initial Invalidity Contentions, FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	94	Exhibit 1: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on Prior Public Use and/or Commercial Offer for Sale of Defendant Promethean Inc.'s ActivPanel 4.5 Product, FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	95	Exhibit 2: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. U.S. Pre-Grant Pub. No. 2019/0235701 to Han et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	96	Exhibit 3A: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 4,751,379 to Sasaki et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	97	Exhibit 3B: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 4,751,379 to Sasaki et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	98	Exhibit 3C: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 4,751,379 to Sasaki et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	99	Exhibit 4A: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Pre-Grant Pub. No. 2019/0004668 to Jeong et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	100	Exhibit 4B: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Pre-Grant Pub. No. 2019/0004668 to Jeong et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	101	Exhibit 4C: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Pre-Grant Pub. No. 2019/0004668 to Jeong et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	102	Exhibit 5A: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	103	Exhibit 5B: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
	104	Exhibit 5C: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	

Examiner Signature	/VINH T LAM/	Date Considered	11/29/2021
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
T¹ - Place a check mark in this area when an English language Translation is attached		Chemtronics v. FlatFrog Chemtronics Exhibit 1032 Page 59	
ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.T.L./			

Id. at 59.

C. Summary of Petitioner's Proposed Grounds of Unpatentability and the References Cited

Petitioner contends that claims 1-5 would have been obvious under pre-AIA 35 U.S.C. § 103. The Petition raises these grounds of alleged obviousness based on the following references:

1. Chinese Patent No. 20338618 (“Cheng”);
2. U.S. Patent Publication No. 2019/0235701 (“Han”);
3. U.S. Patent Application Publication No. 2017/0123257 (“Zhao”);
4. U.S. Patent No. 9,291,845 (“Shin”);
5. U.S. Patent No. 9,983,626 (“Cao”).

The Petition asserts the following grounds of alleged invalidity under 35 U.S.C. § 103:

Ground	'335 Patent Claim(s)	Primary Reference	Secondary Reference(s)
1	1-5	Cheng	Han and Zhao
2	1-5	Cao	Han and Zhao
3	1-4	Cheng	Han and Shin

Petitioner relies on primary references Cheng (Grounds 1 and 3) and Cao (Ground 2) for allegedly teaching a touch screen device with a frame supporting a touch screen panel and a method for assembling it. In combination, Petitioner relies

on Han in further view of Zhao (Grounds 1 and 2) or Shin (Ground 3) for allegedly teaching a touch surface that is curved as required by the claims.

III. DISCRETIONARY FACTORS FAVOR DENIAL OF INSTITUTION

The Petition should be denied pursuant to 35 U.S.C. § 325(d). Employing a framework that “reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown,” the Director will discretionarily deny institution when: (1) “the same or substantially the same art previously was presented to the Office” *or* “the same or substantially the same arguments previously were presented to the Office”; and (2) the petitioner does not “demonstrate[] that the Office erred in a manner material to the patentability of challenged claims.” *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH*, IPR2019-01469, Paper 6, 8 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”).

Within this two-part framework, the Board considers a number of non-exclusive factors in evaluating whether to exercise its discretion under § 325(d). *See Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first para.) (“*Becton, Dickinson*”); *see also Advanced Bionics* at 9–11. The factors set forth in *Becton, Dickinson* are as follows:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art;
- (e) whether petitioner has pointed out sufficiently how the examiner erred in its evaluation of the asserted prior art; and
- (f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson at 17–18.

For Part 1 of the *Advanced Bionics* framework, the Board first evaluates *Becton, Dickinson* factors (a), (b), and (d). *Advanced Bionics* at 10. If it is determined that the same or substantially the same art or arguments were previously presented to the USPTO, then under Part 2 the Board considers factors (c), (e), and (f) to assess “whether the petitioner has demonstrated a material error by the Office” in its prior consideration of that art or arguments. *Id.*

A. 35 U.S.C § 325(d) Weighs in Favor of Denying Institution

The Petition should be denied pursuant to 35 U.S.C. § 325(d) because the Petition’s key references for all Grounds were previously considered by the Office, *and* because the obviousness arguments are substantially the same as those

considered during examination. *Advanced Bionics*, at 8. As such, Part 1 is clearly met and Petitioner fails to even address Part 2. More specifically, the Petition relies on Han, ***expressly considered by the Office during prosecution***, for claim limitations related to the claimed touch surface curvature. *See, e.g.*, Pet. at 31-32 (“It would have been obvious for a POSA to combine the touch screen display device and frame elements of Cheng, with the parabolically curved touch screen elements of Han and the curvature inducing frame elements of Zhao.”).¹ The Petition further relies on Cao and Shin—***references that were also considered by the Office during prosecution***. *See* Pet. at 64 (Ground 2), 97 (Ground 3).

Additionally, the Petition merely rehashes substantially ***the same arguments*** previously rejected by the patent examiner—that is, combining a primary reference for its teachings of a frame assembly of a touch-sensitive apparatus (Kukulj) with a secondary reference (or references) for their teachings of a touch surface that is curved relative to a flat plane defined in part by a short edge and a long edge and that varies according to a concave curve function (Wassvik, Northcott, and Liu).

¹ The Petitioner appears to copy and paste this “curvature inducing” language from their related ’935 Patent IPR2024-00015 Petition, but the ’335 Patent does not recite such claim limitation.

Compare Ex. 1032 at 633-34 (Wassvik), 570-74 (Northcott), 501-02 (Liu) *with* Pet. at 31-36, 46-49, 52-54 (Ground 1), 64-69, 81, 84, 86-88 (Ground 2), 97-102, 112-115, 117-119 (Ground 3).

Petitioner's claim that the Grounds raised by this Petition, including those under Han, Cao, and Shin, have not been previously considered during the '335 Patent's prosecution is contradicted by the clear record. *See* Pet. at 23. As discussed in Section II.B above, Han, Cao, and Shin, were all specifically cited in Information Disclosure Statements and expressly signed off by the Examiner as considered prior to allowance. Additionally, Petitioner's obviousness arguments presented are substantially the same as those the Applicant overcame during prosecution. *See* Section II.B above (citing Ex. 1032 at 633-34 (Wassvik), 570-74 (Northcott), 501-02 (Liu)). Petitioner fails to even attempt to address how the Office materially erred in its prior consideration of Han, Cao, Shin, or in its obviousness arguments.

Simply put, the Petition is a rehash of the art, rejections, arguments, and reasons for allowance already considered during the prosecution of the '335 Patent, making this Petition ripe for denial of institution under § 325(d).

1. ***Part 1: The Same And/Or Substantially The Same Art/Arguments Were Previously Presented To The Office***

a. Petitioner's Key Reference for Both Grounds (Han) Was Previously Considered by the Office

As discussed in Section II.B above, Han was specifically cited in an IDS, and expressly signed off by the Examiner as considered before allowance. “Previously presented art includes art made of record by the Examiner, and art provided to the Office by an applicant, such as on an Information Disclosure Statement (IDS), in the prosecution history of the challenged patent.” *Advanced Bionics*, 7-8. The Board has construed “previously presented” in 35 U.S.C. § 325(d) to refer to art and arguments presented to the Office *prior to* the filing of the petition at issue. *Ironsource Ltd. v. Digital Turbine Inc.*, PGR2021- 00096, Paper 14 at 52 (PTAB Jan. 6, 2022).

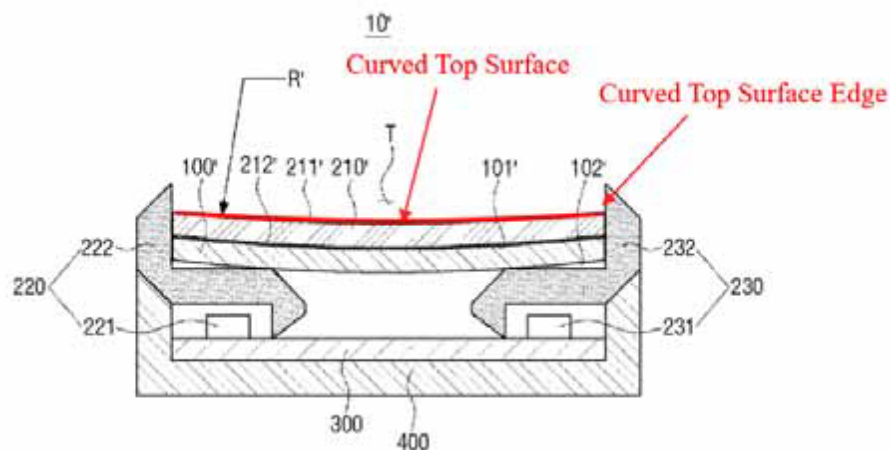
Han is relied on by Petitioner under all Grounds as allegedly disclosing certain claim limitations because Han allegedly discloses “parabolically curved touch screen elements.” Pet. at 31 (Ground 1), 64 (Ground 2), 97 (Ground 3). That is, Petitioner utilizes these alleged teachings of Han to meet claim limitations such as those requiring that “the touch surface is curved relative to a flat plane **defined in part by the short edge and the long edge**” where it “varies according to a **concave curve** function” and “**all of the edges of the top surface of the plate are curved.**” ’335 Patent Claim 1 (emphasis added).

For example, with regard to claim element 1[h], requiring that “the touch surface is curved relative to a flat plane defined in part by the short edge and the long edge,” the Petition argues that Han discloses this element and “[i]t would have been obvious to a POSA to modify Cheng’s plate to incorporate Han’s parabolic touch screen curvature along Ax and Ay directions to improve touch detection accuracy.” See Pet. at 46 (Ground 1), 80 (Ground 2), 111 (Ground 3). As alleged by Petitioner, modifying all Grounds with Han would yield a “device [that] has curved short and long edges.” *Id.* at 48 (Ground 1), 82 (Ground 2), 113 (Ground 3).

Similarly, with regard to claim element 1[i], requiring that the touch surface’s “flat plane varies according to a concave curve function,” the Petition alleges that the combination with Han discloses this element because “Han discloses parabolically curved touch surface on cover glass 210 Plotting Han’s disclosed curvature yields a curve described by a parabolic function. A POSA would have been motivated to adopt the same parabolic (concave) curvature of Han in Cheng’s modified plate to achieve improved touch performance.” Pet. at 50-51 (Ground 1), 84-85 (Ground 2), 115-16 (Ground 3).

Regarding claim element 1[j], requiring that “all of the edges of the top surface of the plate are curved,” the Petition alleges that Han discloses this element because Han discloses “a plate having a top surface with curved edges” and the modified

touch-screen device would have a “curved plate up to its edges along both long and short edges” where “its edges would match the edges of Han’s plate [or cover glass 210] curved along both Ax and Ay directions.” *Id.* at 52-53 (Ground 1), 86-87 (Ground 2), 117-19 (Ground 3). The Petition also relies on Han’s Figure 7.



Id. (citing Han, Fig. 7).

In summary, despite being expressly considered by the Examiner, Petitioner repeatedly uses Han ***in all Grounds*** for these claim limitations because, as acknowledged by the Petition, neither Cheng (Grounds 1 and 3) nor Cao (Ground 2)—the primary references cited for each Ground—disclose these elements on their own. See Pet. at 50-51 (Ground 1), 84-85 (Ground 2), 115-16 (Ground 3).

As discussed in Section II.B, the claim limitations requiring that the touch surface be curved relative to a flat plane defined in part by the short edge and the long edge varies according to a concave curve function, and having all of the edges

of the top surface of the plate curved, were part of the Examiner's focus throughout prosecution, including the four rejections and arguments made in response to overcome them. *See supra* Section II.B.1 - II.B.4. And in the Examiner's Statement of Reasons for Allowance, the Examiner explained that the subject matter not found in the prior art was a touch device including these limitations as to the curvature along both the short edge and the long edge. *See* Ex. 1032 ('335 Prosecution History) at 454-55, 26-27. Specifically:

"...the second frame element includes a first surface portion extending over an edge portion of the plate and a second surface portion arranged substantially parallel to a surface of the plate that defines the plate thickness ...

...wherein a distance between a first curved line drawn on the touch surface and a second straight line drawn on the flat plane varies according to a concave curve function; and

wherein all of the edges of the top surface of the plate are curved." (Claim 1),

Id. at 455, 27.

Yet, as discussed in Section II.B, Applicant provided an IDS specifically citing Han early on in prosecution, in a response to the Examiner's first office action. *Id.* at Ex. 1032 at 1032. Han remains the **same reference** primarily relied on by Petitioner to make **same arguments** against what was previously considered by the

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

Patent Office in multiple rejections and responses that led to allowance. As clearly shown below, the Examiner expressly considered Han:

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number <i>Number - Kind Code (if known)</i> Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	2015/0373864 A1	12-24-2015	Jung	
	2	2013/0321740 A1	12-5-2013	An et al.	
	3	2016/0154533 A1	06-02-2016	Eriksson et al.	
	4	2011/0080361 A1	04-07-2011	Miller et al.	
	5	2019/0235701 A1	08-01-2019	Han et al.	
	6	9,024,896 B2	05-05-2015	Chen	
	7	4,751,379	06-14-1988	Sasaki et al.	
	8	2013/0234991 A1	09-12-2013	Sparf	

Examiner Signature /VINH T LAM/	Date Considered 10/05/2020
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. T¹ - Place a check mark in this area when an English language Translation is attached. ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.T.L/	

Ex. 1032 at 649.

In addition, as discussed in Section II.B, Applicant provided detailed invalidity contentions and claim charts utilizing Han in Promethean's Invalidity Contentions (see Ex. 2001 at 5) for similar claim elements in the related '935 Patent. See Ex. 1032 ('335 Prosecution History) at 80-82. The Examiner again confirmed these references were expressly considered at the time of allowance:

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	93	Defendants' Initial Invalidity Contentions, FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

95	Exhibit 2: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. U.S. Pre-Grant Pub. No. 2019/0235701 to Han et al. FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
----	---

Examiner Signature /VINH T LAM/	Date Considered 11/29/2021
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

T¹ - Place a check mark in this area when an English language Translation is attached. Chemtronics v. FlatFrog
Chemtronics Exhibit 1032 Page 59
ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.T.L/

Ex. 1032 at 80-82, 59; see Ex. 2002 (Promethean Invalidity Contentions Exhibit 2 – Invalidity Claim Chart Based on Han).

Notably, the Invalidity Claim Chart based on Han, and considered by the Examiner, contains the very arguments that Petitioner now repeats in the Petition.

For example, as shown below, the arguments made in Promethean's Invalidity Claim Chart based on Han mirror the arguments now being made by the Petition:

Promethean Invalidity Contentions (Ex. 2002 at 4) (emphasis added)	Petition Arguments (Pet. at 31-32, 52) (emphasis added)
Han discloses a parabolic curvature in the touch surface relative to a first axis and relative to a second axis perpendicular to the first axis, said first axis is parallel to a line between the first end point and the second end point and said second axis is parallel to a line between the second end point and the third end point. See, e.g., Han, at ¶¶ 0074-78, 0083-0100, Figs. 2-4, 7. At the time of the alleged invention, it would have been obvious to one of ordinary skill in the art to modify the	Han discloses a parabolically curved touch surface on cover glass 210. Ex. 1005, [0074-77], [0093-95]. Plotting Han's disclosed curvature yields a curve described by a parabolic function. Cheng in view of Han and Zhao disclose ["wherein all of the edges of the top surface of the plate are curved."]. A POSA would have been motivated to adopt the same parabolic (concave) curvature of Han in Cheng's modified

device of Han, or in the alternative the device of a combination of Han and any of Sasaki ‘379, Jeong, Cao ‘626, or the AP4.5 product, so that the frame assembly of Han induces the parabolic curvature in the plate of Han when the step of configuring the frame assembly to support the plate is performed. It would have been obvious to do so, for example, based on the disclosures to use frame assemblies in the prior art to control plate curvature, e.g. as disclosed by . . . Shin et al., . . . Zhao, the AP4.5 product, or the ‘935 Admitted Prior Art. <i>See, e.g.</i>, Han, at Figs. 2-4, 7; . . . Shin ‘658, at ¶¶ 0051-52, 0154, 0157-163, 206- 207, & Figs. 2-14; Zhao, at ¶¶ 45-57 & Figs. 1-4; . . .	plate to achieve improved touch performance. Ex. 1033, ¶176. Pet. at 32. It would have been obvious for a POSA to combine the touch screen display device and frame elements of Cheng, with the parabolically curved touch screen elements of Han. Pet. at 31.
--	---

Ex. 2002 (Promethean Invalidity Contentions Exhibit 2 – Invalidity Claim Chart Based on Han) at 4-5.

In summary, both the Han reference *and related arguments* have been extensively considered by the Office during prosecution, both early and at the time of allowance. As such, the Board should defer to the Office’s evaluations and decline to revisit. At bottom, Petitioner’s reliance on Han to meet claim elements in all Grounds indisputably satisfies Part 1 under *Advanced Bionics*.

b. Petitioner's Additional Reference Cao, Zhao, and Shin,
Were Also Previously Considered By The Office

In addition to Han, Applicant also already presented, and the Office previously considered, ***the additional references being relied on by the Petition—Cao, Zhao, and Shin.***

First, the Applicant presented Shin and Cao to the Examiner in an IDS. Ex. 1032 at 78. The Examiner stated in the Notice of Allowance that both references were specifically considered prior to allowance:

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	2020/0012408	01-09-2020	Drumm et al.	
	60	2019/0004668	01-03-2019	Jeong et al.	
	61	4,868,550	09-19-1989	Hiroaki et al.	
	62	5,729,250	03-17-1998	Bishop et al.	
	63	8,319,729	11-27-2012	Choi et al.	
	64	9,001,086	04-07-2015	Saini, Amrinder Pal Singh	
	65	9,207,800	12-08-2015	Eriksson et al.	
	66	9,291,845	03-22-2016	Shin et al.	
	67	9,366,802	06-14-2016	Lee et al.	
	68	9,983,626	05-29-2018	Cao et al.	
	69	10,282,035	05-07-2019	Kocovksi et al.	
	70	10,649,585	05-12-2020	van Beek et al.	

Examiner Signature	/V\NH T LAM/	Date Considered	11/29/2021
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
*1 - Place a check mark in this area when an English language Translation is attached			
Chemtronics v. FlatFrog Chemtronics Exhibit 1032 Page 57 ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /V.T.L./			

Id. at 57.

Second, the Promethean Invalidity Contentions—containing Cao, Shin and Zhao arguments and citations—were also provided by Applicant and expressly considered by the Examiner:

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	93	Defendants' Initial Invalidity Contentions FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.	
Examiner Signature		/VINHT LAM/	Date Considered 11/29/2021
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			

Id. at 59. Indeed, the Promethean Invalidity Contentions list Han, Shin, Zhao, and Cao, as prior art against the related '935 Patent, as shown below:

a. Prior Art Patent Applications, Patents, and Utility Models

Defendants hereby identify the following prior art patent applications and patents, copies of which are being served herewith, that anticipate and/or render obvious the '935 Asserted Claims under 35 U.S.C. §102 (post-AIA) and/or 35 U.S.C. § 103 (post-AIA):

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

Reference No.	Named Inventor(s)
U.S. Patent No. 4,751,379	Sasaki et al.
U.S. Pre-Grant Pub. No. 2019/0235701	Han et al.
U.S. Pre-Grant Pub. No. 2015/0256658	Shin et al.
U.S. Patent No. 9,291,845	Shin et al.
U.S. Pre-Grant Pub. No. 2017/0123257	Zhao
Pub. Int'l App. No. WO 2014/130515	Allan et al.
U.S. Pre-Grant Pub. No. 2016/0202841	Christiansson et al.
International App. Pub. No. WO 2014/098742	Wassvik et al.
U.S. Pre-Grant Pub. No. 2011/0080361	Miller et al.
China Pub. App. No. 104808843	Kang
U.S. Pre-Grant Pub. No. 2019/0004668	Jeong et al.
U.S. Patent No. 9,366,802	Lee et al.
U.S. Patent No. 9,207,800	Eriksson et al.
U.S. Patent No. 8,581,884	Fahraeus et al.
International App. Pub. No. WO 2006/095320	Van De Wijdeven
International App. Pub. No. WO 2016/130074	Wassvik et al.
Taiwan Utility Model No. M517370U	Lee et al.
China Published App. No. 102117155A	Cheng et al.
U.S. Pre-Grant Pub. No. 2017/0308245	Goertz
Korea Pub. App. No. 10-2015-0125374	Lee
Korea Patent No. 10-1081586	Joung
U.S. Patent No. 8,319,729	Choi et al.
International App. Pub. No. WO 2017/099657	Christiansson et al.
U.S. Pre-Grant Pub. No. 2019/0025984	Weilbacher et al.
U.S. Patent No. 9,983,626	Cao et al.
Japanese Pub. App. No. 2015-158831	Yano et al.
U.S. Pre-Grant Pub. No. 2013/0222344	Lu et al.
U.S. Patent No. 9,983,626	Cao et al.

Ex. 2001 (Promethean Invalidity Contentions) at 5 (emphasis added).

Third, the Applicant provided Promethean Invalidity Contentions Claim Charts disclosing citations and arguments to Cao, Shin and Zhao for the similar limitations now being challenged by Petitioner, as shown below by example:

95	Exhibit 2: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. U.S. Pre-Grant Pub. No. 2019/0235701 to Han et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
----	--

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

102	Exhibit 5A: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
103	Exhibit 5B: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
104	Exhibit 5C: Invalidity Claim Chart Against U.S. Patent No. 10,775,935 Based on U.S. Patent No. 9,983,626 to Cao et al., FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.
115	Exhibit 12: Invalidity Claim Chart Against U.S. Patent No. 10,739,916 Based on Chinese Utility Model No. 203786708 U to Cao, FLATFROG LABORATORIES AB v. PROMETHEAN LTD. and PROMETHEAN INC., C.A. No. 1:19-cv-02246-MN, dated April 23, 2021, in 26 pages.

See Ex. 1032 at 80-82 (showing Promethean Invalidity Contentions Exhibits 102, 103, 105 and 115, directed to Cao all in combination with Han, Shin and/or Zhao, being ***relied on for their alleged concave curvature and edge teachings***).

U.S. Patent No. 10,775,935 Claim 1	US 2019/0235701 to Han et al.
[1.5] wherein configuring the frame assembly to support the plate includes inducing a parabolic curvature in the touch surface relative to a first axis and relative to a second axis perpendicular to the first axis, said first	Han discloses a parabolic curvature in the touch surface relative to a first axis and relative to a second axis perpendicular to the first axis, said first axis is parallel to a line between the first end point and the second end

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

axis is parallel to a line between the first end point and the second end point and said second axis is parallel to a line between the second end point and the third end point.	point and said second axis is parallel to a line between the second end point and the third end point. <i>See, e.g.</i>, Han, at ¶¶ 0074-78, 0083-0100, Figs. 2-4, 7. At the time of the alleged invention, it would have been obvious to one of ordinary skill in the art to modify the device of Han, or in the alternative the device of a combination of Han and any of Sasaki '379, Jeong, Cao '626, or the AP4.5 product, so that the frame assembly of Han induces the parabolic curvature in the plate of Han when the step of configuring the frame assembly to support the plate is performed. It would have been obvious to do so, for example, based on the disclosures to use frame assemblies in the prior art to control plate curvature, e.g. as disclosed by U.S. Pre-Grant Pub. No. 2015/0256658 to Shin et al., U.S. Patent No. 9,291,845 to Shin et al, U.S. Pre-Grant Pub. No. 2017/0123257 to Zhao, the AP4.5 product, or the '935 Admitted Prior Art. <i>See, e.g.</i>, Han, at Figs. 2-4, 7; Shin '658, at ¶¶ 0051-52, 0154, 0157-163, 206-207, & Figs. 2-14; Shin '845, at 4:56-67, 18:5-22:63 & Figs. 2-7; Zhao, at ¶¶ 45-57 & Figs. 1-4; the AP4.5 product, at Exhibit 1; '935 Patent, at 1:26-2:17.
---	---

See Ex. 2002 at 4-5 (emphasis added) (showing Shin, Cao, and Zhao, being relied on for their alleged teachings of a concave curvature in the touch surface—***the same arguments now repeated by Petitioner***).

U.S. Patent No. 10,775,935 Claim 2	US 2019/0235701 to Han et al.
[2] The method of claim 1, wherein the first edge is curved and the second edge is curved.	At the time of the alleged invention, this limitation would have been obvious to one of ordinary skill in the art based on the combination of Han and any of Shin ‘658, Shin ‘845, Zhao, or the AP4.5 product, as described with respect to Claim 1 above. Alternatively, this limitation would have been obvious to one of ordinary skill in the art based on the combination of Han and any of Sasaki ‘379, Jeong, Cao ‘626, and the AP4.5 product, and further in view of any of Shin ‘658, Shin ‘845, Zhao, or the AP4.5 product, as described with respect to Claim 1 above.

See Ex. 2002 at 5 (emphasis added) (showing Shin, Cao, and Zhao, being relied on for their alleged teachings that the first edge and second edge are curved—***the same arguments now repeated by Petitioner***).

Accordingly, in addition to Han, the additional references relied on by the Petition—Cao, Shin, and Zhao—have also already been considered by the Office during prosecution and presented again now by Petitioner. This further satisfies Part 1 under *Advanced Bionics*.

c. Petitioner’s Arguments Are The Same Or Substantially The Same As Those Previously Considered By The Office

Not only was the ***same art*** considered by the Examiner, but the ***same arguments*** considered by the Examiner are now repeated by Petitioner. Thus, Part 1 is further met because the Petition argues the “same or substantially the same art [or arguments] previously [] presented to the Office.” *Advanced Bionics*, IPR2019-

01469 at Paper 8; *Nokia of America Corp. v. Alexander Soto and Walter Soto*, IPR2023-00681, Paper 10, 23 (PTAB Nov. 3, 2023) (denying institution as obviousness arguments were substantially the same as previously evaluated by the Office). The overlap between the IPR-asserted references and those evaluated during prosecution also satisfies Part 1 of the two-part *Advanced Bionics* framework, which also considers the similarities and material differences between the two sets of art, the cumulative nature of the art, and the extent of the overlap between the arguments. *Becton, Dickinson & Co.*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph) (factors (a), (b), and (d)).

Petitioner relies on Cheng (Grounds 1 and 3) or Cao (Ground 2) for their alleged teachings of a “touch screen display device and frame elements” (see Pet. at 31) and “infrared touch device including plate with touch surface, display, and a frame with a reduced thickness.” See Pet. at 32. Then Petitioner combines Han in further view of Zhao (Grounds 1 and 2) or Shin (Ground 3) for the argument that Han combined with Zhao or Shin teach the claim limitations requiring “a touch surface that is curved relative to a flat plane defined in part by a short edge and a long edge and that varies according to a concave curve function wherein all of the edges of the top surface of the plate are curved.” *Id.* at 31, 64, 97. Specifically, the Petition alleges, “[i]t would have been obvious for a POSA to combine the touch

screen display device and frame elements of [Cheng / Cao], with the parabolically curved touch screen elements of Han and the curvature-inducing frame elements of [Zhao / Shin].” *Id.* at 31, 64, 97.

But the Office has already considered and rejected this very argument. For example, as discussed in Section II.B, during prosecution the Examiner relied on Kukulj as a primary reference for its teachings of a touch screen device with a frame assembly having multiple edges and supporting a display panel. *See* Ex. 1013 (’335 Patent File History) at 632-34. The Examiner then combined Kukulj with references Wassvik (First and Second Rejection), Northcott (Third Rejection), and Liu (Fourth Rejection) for their alleged teachings of a touch surface that is curved according to the claim limitations. *Id.* at 632-34, 570-74, 499-502. The Examiner then relied on these combined teachings to reject the claimed invention before ultimately confirming that the combinations do not teach or render obvious the claimed invention. *Id.*

For example, the Examiner relied on the teachings of Northcott and Liu as follows:

It would have been obvious to a person having ordinary skill in the art at the time the invention's effective date was filed to modify **Kukulj** teaching of an optical sensing device having a flat surface with **Northcott et al.** teaching of teaching of an optical sensing device having a curved surface *to effectively select different desired touch screen by designing curved surface (Northcott et al.'s Col. 6, Ln. 16-22).*

Id. at 574 (emphasis added).

It would have been obvious to a person having ordinary skill in the art at the time the invention's effective date was filed to modify **Kukulj** teaching of an optical sensing device having a flat surface with **LIU et al.** teaching of teaching of an optical sensing device having a curved surface *to effectively enhance sensitivity and detection accuracy by designing curved surface (LIU et al.'s [0014]).*

Id. at 503 (emphasis added).

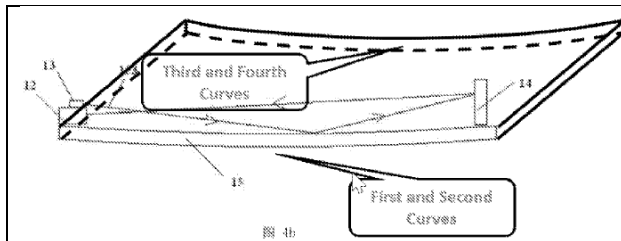
Petitioner now repeats this very argument, while substituting Kukulj with Cheng (Grounds 1 and 3) or Cao (Ground 2) for their alleged teachings of a frame assembly of a touch-sensitive apparatus, and substituting Wassvik, Northcott, and Liu, with Han and Zhao (Grounds 1 and 2) or Han and Shin (Ground 3) for their alleged teachings of a touch surface that is curved relative to a flat plane defined in part by a short edge and a long edge and that varies according to a concave curve function.

In particular, Petitioner relies on Han for its alleged concave curvature of the touch surface in the same manner that the Examiner relied on Wassvik, Northcott, and Liu. But like Wassvik, Northcott, and Liu, Han discusses curving just the “front” side of the glass, whereas the claims require that “the touch surface [be] curved relative to a flat plane defined in part by the short edge and the long edge” and that “all of the edges of the top surface of the plate are curved.” *See, e.g.,* Han, Figs. 3 and 7 (showing that its curvature is not along all edges of the top surface). ***The Examiner has already considered prior art with touched screens having a curvature on their front side of the glass, such as Wassvik, Northcott, and Liu, and acknowledged that such references do not teach a curvature on the short edge and the long edge or that all of the edges of the top surface of the plate are curved.*** *See* Ex. 1013 (’335 Patent File History) at 454-55, 26-27. Thus, merely substituting the teachings of a single-edge curved screen as disclosed by Wassvik, Northcott, and Liu, with the single-edge curve screen of Han, or with Han combined with Zhao or Shin for their “curvature-inducing frame elements,” does nothing to advance any different set of arguments than those already considered by the Office.

As examples, the below table shows example similarities of the disclosures of Northcott and Liu relied on by the Examiner (left) in combination with Kukulj versus

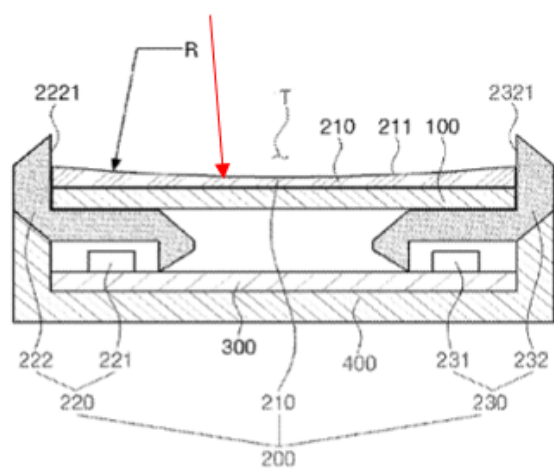
those of Han combined with Zhan and/or Shin now relied on by Petitioner (right) in combination with Cheng or Cao:

Northcott or Liu (Examiner cites) (emphasis added)	Han, Zhan, or Shin (Petitioner cites) (emphasis added)
“The embodiment of the present invention provides a concave optical touch screen. The embodiment of the concave optical touch screen will be described below with reference to FIGS. 2 to 4b. . . . Fig. 4 b is that concave surface optical touch screen of the present invention light reflection in actual applications returns synoptic diagram.” Ex. 1032 (’335 Patent Prosecution History) at [0024]-[0030] (Liu) (emphasis added). The “third, and fourth edges . . . are curved” by “FIG. 4b, i.e. parallel to page” as shown below:	“Han discloses that a cover plate of a touch screen display apparatus can be concavely curved according to a radius, i.e., so that the touch surface curves along a portion of a circle, along either or both of the directions in which light moves” and “teaches that a parabolic curvature is one advantageous shape of a touch surface.” Pet. at 4-5. “The ’335 Patent claims the same parabolic, concave curvature in the cover plate of a touch sensing method and apparatus.” <i>Id.</i> at 5.



Id. at 502 (citing Liu).

Concavely Curved
Touch Surface



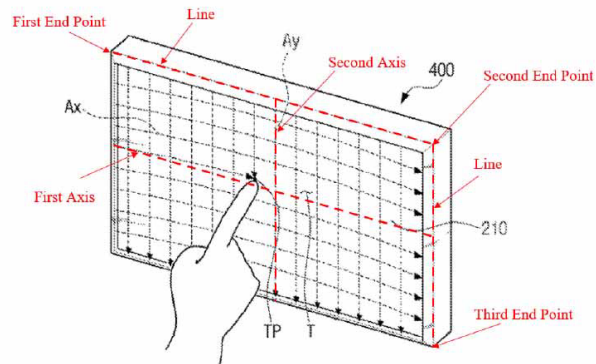
Id. at 5 (citing Han, Fig. 3).

“Northcott et al. teaching of [] an optical sensing device having a curved surface to effectively select different desired touch screen by designing curved surface (Northcott et al.’s Col. 6, Ln. 16-22). [(“If desired, **outer surface 24 may have a compound curvature**, as shown by illustrative **hemispherical surface 24** of light guide array 28 of FIG. 10. **Display 20 may, if desired, be planar**

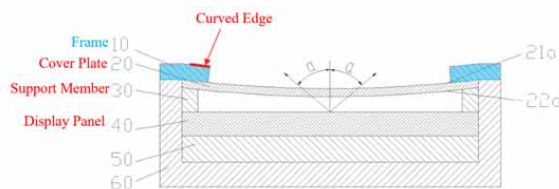
“Cheng in view of Han and Zhao discloses [the touch surface is curved . . . by the short edge and the long edge].” Petition. at 46 (element 1[h]). “It would have been obvious to a POSA to modify Cheng’s plate to **incorporate Han’s parabolic touch screen curvature along Ax and Ay directions** to improve touch detection accuracy.” Pet. at 46. (citing Han, Fig. 2 below).

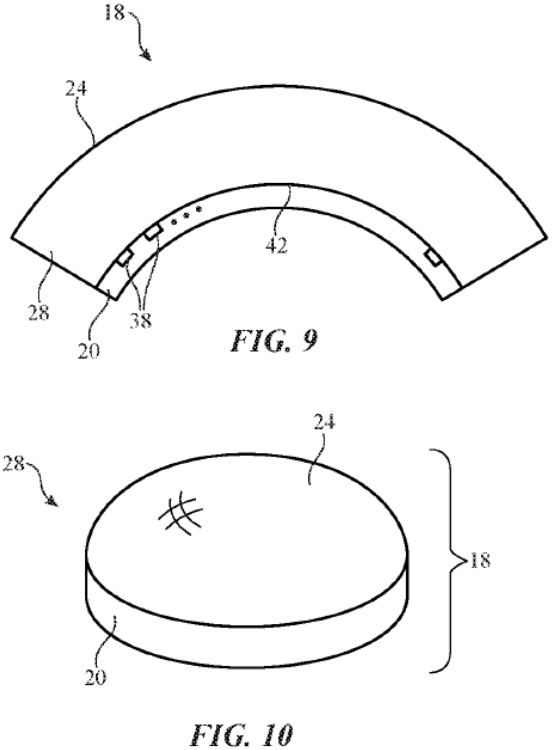
or may be bent about a single axis, whereas outer surface 24 may, in general, be planar, **may be bent about a single axis, or may exhibit a compound curvature as illustrated by illustrative surface 24 of FIG. 10.** Ex. 1035 (Northcott, 6:16-22) (emphasis added)]. Ex. 1032 at 574.

“[Northcott teaches] **the first, second, third, and fourth edges . . . are curved**” because its Fig. 10 (also shown by Fig. 9) shows that “**each 1/4 of a circle intersected by a lateral plane and ‘hemispherical surface 24’**” of **Fig. 10 are curved at a 90 degree arc.**” *Id.*



“**The modified Cheng device has curved short and long edges.** Cheng’s frame 20 includes semi-enclosed cavity 21 and engagement groove 23 for supporting the circuit board 30 and infrared element 40 . . . **Additionally, curved first and second edges in the modified Cheng device would have been obvious based on Zhao’s curved frame 10.**” *Id.* at 49.



 FIG. 9 is a perspective view of a curved frame assembly 18. It includes a curved frame 20 with a curved first edge 24 and a curved second edge 28. A curved plate touch surface 38 is mounted on the frame 20. A curved frame element 42 is also shown. FIG. 10 is a perspective view of a curved frame assembly 18, showing a curved frame 20 with a curved first edge 24 and a curved second edge 28. A curved plate touch surface 38 is mounted on the frame 20. A curved frame element 42 is also shown.	“As a result, the curved frame 20 of the modified Cheng device would thus also have a curved first and second (long and short) edge.” <i>Id.</i> at 49. “Cheng’s modified curved plate touch surface would be curved relative to a flat plane defined in part by the short and long edges of frame 20. Cheng’s modified long and short edges would be curved according to Zhao.” <i>Id.</i> at 50.
--	---

Accordingly, Petitioner uses Han, Zhao, and/or Shin ***in the very same way*** as Wassvik, Northcott, and Liu—for teaching modifying the touch screen on a frame assembly structure (Cheng or Cao) with the concave curvature elements of the touch screen in Han, Zhao and Shin. *See Id.* at 31, 64, 97. But as shown, the Patent Office already considered references like Han for their “parabolically curved touch screen elements” and Zhao or Shin for their “curvature-inducing frame elements,” for this very argument.

Becton factors (a), (b), and (d) are satisfied here. Because the combination of art and arguments presented by Petitioner here and those considered extensively during prosecution are substantially the same, Part 1 is also met for each of the references relied on for Grounds 1-3.

2. *Part 2: Petitioner Fails To Demonstrate A Material Error By The Office*

Because Part 1 is met, Petitioner must demonstrate material error under Part 2. However, the Petition is silent on this point and thus fails to demonstrate “that the Office erred in a manner material to the patentability of the challenged claims,” as required under Part 2. *Advanced Bionics*, IPR2019-01469 at Paper 8. In fact, the Petition makes no mention of §325(d) at all. Petitioner’s failure to address Part 2 validates denial under § 325(d). *Albany Int’l Corp. v. Kimberly-Clark Worldwide, Inc.*, PGR2021-00019, Paper 22, 8-9 (PTAB June 22, 2021) (denying institution because “[i]f a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute [] review.”). Notably, Petitioner recognizes that Han, Cao, and Shin were all cited in an IDS (which satisfies Part 1) but fails to even address Part 2 with respect to the Office’s prior consideration of such references or similar obviousness arguments. *See* Pet. at 23.

Petitioner completely fails to address why either the prior consideration of Han, Cao, and Shin, or the combination of Kukulj with Wassvik, Northcott, and Liu, is material error. Petitioner's lack of analysis is insufficient to meet the second part of the *Advanced Bionics* test, and denial under §325(d) is appropriate.

Indeed, Petitioner does not meet its burden. To evaluate material error, the Board weighs *Becton, Dickinson* factors c, e and f. The Petition does not reference any of these factors, let alone analyze them. *Vital Connect, Inc. v. Bardy Diagnostics, Inc.*, IPR2023-00381, Paper 7, 20 (PTAB July 11, 2023) (“[W]hile there are no ‘magic words’ necessary to address material error, Petitioner’s alleged grounds of unpatentability cannot establish material error *per se* under our binding precedent. . . . Otherwise, the reasonable likelihood standard of § 314(a) and the second part of the *Advanced Bionics* framework (‘material error’) would collapse into one.”).

Accordingly, the *Advanced Bionics* framework is satisfied and the Director should exercise its discretion to deny institution. See *Advanced Bionics*, IPR2019-01469, Paper 6, 8; *Albany Int’l Corp.*, PGR2021-00019, Paper 22, 10-11.

IV. CONCLUSION

For the reasons set forth above, the Board should decline to institute *inter partes* review on the Petition Grounds pursuant to 35 U.S.C. § 325(d).

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

Dated: January 25, 2024

Respectfully submitted,

By:/ B. Clayton McCraw/
B. Clayton McCraw
Registration No. 68,258
MAYER BROWN LLP
1221 Avenue of the Americas
New York, NY 10020-1001
Telephone: (212) 506-2649
CMcCraw@mayerbrown.com

Cliff A. Maier
Registration No. 59,526
Mayer Brown LLP
3000 El Camino Real
Palo Alto, CA 94206-2112
Telephone: 650-331-2026
CMaier@mayerbrown.com

Michael A. Molano
Registration No. 39,777
Mayer Brown LLP
3000 El Camino Real
Palo Alto, CA 94206-2112
Telephone: 650-331-2035
MMolano@mayerbrown.com

Counsel for Patent Owner

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

CERTIFICATE OF SERVICE

I hereby certify that on this 25th day of January, 2024, a copy of the attached
PATENT OWNER's PRELIMINARY RESPONSE was served by electronic
mail to the attorneys of record, at the following addresses:

Matthew W. Johnson
JONES DAY
500 Grant Street, Suite 4500
Pittsburgh, PA 15219
mwjohnson@jonesday.com

Joshua R. Nightingale
JONES DAY
500 Grant Street, Suite 4500
Pittsburgh, PA 15219
jrnightingale@jonesday.com

Ashvi S. Patel
JONES DAY
500 Grant Street, Suite 4500
Pittsburgh, PA 15219
ashvipatel@jonesday.com

Stephen M. Bradley
JONES DAY
1221 Peachtree Street N.E., Suite 400
Atlanta, GA 30361
sbradley@jonesday.com

Christian A. Roberts
JONES DAY
500 Grant Street, Suite 4500
Pittsburgh, PA 15219
croberts@jonesday.com

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

Dated: January 25, 2024

Respectfully submitted,

By:/ B. Clayton McCraw/
B. Clayton McCraw
Registration No. 68,258
MAYER BROWN LLP
1221 Avenue of the Americas
New York, NY 10020-1001
Telephone: (212) 506-2649
CMcCraw@mayerbrown.com

Cliff A. Maier
Registration No. 59,526
Mayer Brown LLP
3000 El Camino Real
Palo Alto, CA 94206-2112
Telephone: 650-331-2026
CMaier@mayerbrown.com

Michael A. Molano
Registration No. 39,777
Mayer Brown LLP
3000 El Camino Real
Palo Alto, CA 94206-2112
Telephone: 650-331-2035
MMolano@mayerbrown.com

Counsel for Patent Owner

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

CERTIFICATION PURSUANT TO 37 C.F.R. § 42.24(d)

Pursuant 37 CFR 42.24(d), the undersigned certifies that this Preliminary Response complies with the type-volume limitation of 37 CFR §42.24(a). The word count application of the word processing program used to prepare this Preliminary Response indicates that the Preliminary Response contains 7,802 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

Dated: January 25, 2024

Respectfully submitted,

By:/ B. Clayton McCraw/

B. Clayton McCraw

Registration No. 68,258

MAYER BROWN LLP

1221 Avenue of the Americas

New York, NY 10020-1001

Telephone: (212) 506-2649

CMcCraw@mayerbrown.com

Cliff A. Maier

Registration No. 59,526

Mayer Brown LLP

3000 El Camino Real

Palo Alto, CA 94206-2112

Telephone: 650-331-2026

CMaier@mayerbrown.com

Case IPR2024-00014
Patent No. 11,281,335
Patent Owner's Preliminary Response

Michael A. Molano
Registration No. 39,777
Mayer Brown LLP
3000 El Camino Real
Palo Alto, CA 94206-2112
Telephone: 650-331-2035
MMolano@mayerbrown.com

Counsel for Patent Owner