UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

ALBANY INTERNATIONAL CORP.,	)	
Petitioner,	)	
vs.	)	Case No. IPR2025-01116
VOITH PATENT GmbH,	)	
Patent Owner.	)	
U.S. Patent No. 11,261,566	)	

June 17, 2026

9:01 a.m. ET

Deposition of DAVID S. BROOKSTEIN, held at the offices of Goodwin Procter LLP, 620 Eighth Avenue, New York, New York, before Laurie A. Collins, a Registered Professional Reporter and Notary Public of the State of New York.

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ALSO PRESENT:
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RAINER SCHMACHTEL, ESQ. (Voith)

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WITNESS:	EXAMINATION BY:	PAGE
David S. Brookstein	Attorney Kane	4

- - - - - - - - - - E X H I B I T S - - - - - - - - -

ALBANY NO.	DESCRIPTION	PAGE
Exhibit 1051, drawing of a fiber (Exhibit not attached)		106

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

D A V I D S. B R O O K S T E I N ,
called as a witness, having been duly sworn by the notary public, was examined and testified as follows:

EXAMINATION BY
ATTORNEY KANE:

Q. Good morning. Could you state your full name and address for the record?

A. Yes. My name is Dr. David Stuart, S-T-U-A-R-T, Brookstein, B-R-O-O-K-S-T-E-I-N. And my home address is 1150 Victor Lane, Fort Washington, Pennsylvania 19034.

Q. Have you been deposed before?

A. Yes.

Q. Do you know how many times?

A. At least 50, but I've lost count.

Q. Okay. So then you understand that you're under oath and you're sworn to tell the truth today?

A. I do.

Q. And you understand that your attorney may make objections but, unless instructed not to, you will answer; correct?

A. Correct.

Q. And I'll do my best to ask clear

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questions. If I don't, please ask me to clarify. If you don't ask me to clarify, I will assume that you understood my question; is that fair?

A. That's fair.

Q. Also, we have a court reporter. She's going to try to take down what we're talking about today. So please let me finish my questions before you respond, and I'll try to make sure I let you finish your answer before I ask another question. Okay?

A. That's fine.

Q. Any reason you cannot give accurate or complete testimony today?

A. Not at all.

Q. Doctor, when were you first retained by Voith?

A. I don't remember precisely. It was probably about a year ago, but I don't remember precisely.

Q. Was this IPR proceeding the first time you've worked for Voith?

A. Yes.

Q. I'm going to hand you what's been previously marked as Albany 1001 and Voith Exhibit 2001 -- 2011, sorry.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yep.
Q. And looking at Exhibit 1001, you see that's U.S. patent number 11,261,566?
A. Yes.
Q. And that's the patent that is the subject of this IPR?
A. Yes.
Q. And that's the patent that you analyzed in your work in forming your opinions on this matter?
A. Yes.
Q. And if you look at 2011, that is your declaration provided in this matter?
A. Yes.
Q. And if you turn to page 172.
A. Yes.
Q. Is that your signature?
A. It is.
Q. It's been dated March 30, 2026?
A. Correct.
Q. Do you have an approximation of the amount of time you spent working on this declaration?
A. Yes.
Q. How much?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. About a hundred hours.
Q. Can you describe generally the process for drafting the declaration?
A. Yes.
Q. Please do.
A. Okay. Since I was working for the patent owner, I looked at the patents that were asserted to try to prove that this was obvious; and I studied those patents, and I studied the declaration of the expert of the petitioner.
Q. Did you draft this document personally?
A. It was a collaborative effort between me and counsel for the patent owner.
Q. And when you say it's a collaborative effort, can you give me, again, a general description of how that works?
ATTORNEY KONSTANTAKOPOULOS: I want to caution the witness do not get into privileged communication, but you can answer.
A. I looked at the patents that were asserted; and I made my conclusions, and then I discussed them with counsel.
Q. And did counsel then proceed to provide you with drafts of the declaration for your review and editing?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yes.
Q. Turn to page 2 of 2011.
A. Yes.
Q. Look at paragraph 4.
A. Yes.
Q. It states there that in reaching the opinions provided herein, I have considered the '566 patent; correct?
A. Correct.
Q. It says you've considered the prosecution history; correct?
A. Yes.
Q. And you say, the material cited in my declaration and the appendix; correct?
A. Correct.
Q. And at the end of the document after your signature page, there is an appendix attached?
A. Yes, there is.
Q. Did you consider any materials not identified in paragraph 4 or on this appendix?
A. No.
Q. On this appendix you list 1004, which is the declaration of Dr. Pastore; correct?
A. Correct.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. And you considered that?
A. I did.
Q. Did you review the board's institution decision?
A. Yes.
Q. And have you read the patent owner's response filed by Voith on March 30th, 2026?
A. Yes.
Q. Did you see anything in the patent owner's response that you disagreed with?
A. Yes.
Q. What was that?
A. I don't recall. I'd have to go back and look at my declaration.
Q. Okay. But you're saying you saw things in Voith's response that you disagreed with?
A. With Voith's response?
Q. Yes.
A. Oh, no. No, no, nothing from Voith. I thought -- I misinterpreted what you said.
Q. Yes, the patent owner's response. Voith is the patent owner.
A. I'm sorry, I misinterpreted what you said.
Q. Understood.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. I apologize.
Q. Okay.
What did you do to prepare for your deposition today?
A. I went back and I looked at certainly the declaration and the patent and many of the items that were in the appendix.
Q. Did you do that by yourself?
A. Yes, except for when we did the preparation.
Q. When who did the preparation?
A. When I did the preparation with counsel.
Q. And when did you do the preparation with counsel?
A. We had one meeting, a Zoom meeting, last Friday, and then yesterday I came up here. We spent the day reviewing things and preparing. And then I'm here today.
Q. How long was your Zoom meeting last Friday?
A. 2 hours and 45 minutes.
Q. And how long yesterday?
A. Yesterday I was here the whole day. I don't know the exact hours, but I was here the

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

whole day.

Q. In reviewing your declaration, did you identify any errors?

A. No.

Q. Anything in your declaration that you'd like to change?

A. No. There might be a typo or two that I noticed, but nothing material.

Q. So you stand by the conclusions and analysis provided in your declaration?

A. I do.

Q. Did you talk to anyone other than lawyers in preparing your declaration?

A. No.

Q. Talk to anyone other than lawyers in preparing for this deposition?

A. No, other than my wife, saying I'm going to be deposed today.

Q. Did you conduct any experiments or generate any performance data relating to press felt fabrics in the course of your work on this IPR?

A. No.

Q. In the course of your work on this IPR, have you ever talked to anyone from Voith?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

A. No.
Q. In the course of your work on this IPR, have you seen or been provided with data generated by Voith with respect to the performance of press felt fabrics?
A. No.
Q. Did you feel that you were able to -- well, strike that.
In your work on this IPR, did you have any -- did you identify any need for data with respect to the performance of press felt fabrics?
A. No.
Q. And why not?
A. Because I could read the patent and understand what the patent was disclosing.
Q. I understand you have a doctorate in mechanical engineering; correct?
A. That's not the official title of what I have.
Q. Why don't you give me the official title. I think maybe your undergraduate was mechanical engineering?
A. No. My undergraduate degree was a bachelor of textile engineering from Georgia Tech. I have a master's in science in textile technology

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

from MIT, the Massachusetts Institute of Technology, which I will continue to refer to as MIT. And I have a doctor -- the official term is I have a doctor of science in the field of mechanical engineering from MIT.

Q. And what was your doctoral thesis -- what was the subject of your doctoral thesis?

A. On what's called draw textured yarns.

Q. And can you generally describe that thesis?

A. Yes. At the time I did my doctoral thesis, which was in the seventies, texturing was very popular for both knitted and woven fabrics. And DuPont, which sponsored my work, wanted to know what caused the process to go unstable. And I did experimental work and theoretical work that the experimental work backed up my theory.

Q. And when you say texturing was popular, what does that mean?

A. It means taking thermoplastic materials, mostly polyester, and providing what's called false twist in them, heat setting them in that false twist configuration, and then untwisting them. And then when they relaxed, they became textured. So they kind of were similar to,

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

let's say, a staple cotton yarn, something like that.

Q. Did that work involve the use of any technologies to characterize those yarns?

A. I don't quite understand your question.

Q. You mentioned that they became stable. What do you mean by "stable"? How did you determine that they were stable?

A. They retained their crimp.

Q. Could you visually observe that?

A. Yes.

Q. I understand you also worked as a professor at Georgia Tech?

A. Yes.

Q. In what areas of research did you work on when you were at Georgia Tech?

A. My work on -- I'm trying to remember exactly. It was a long time ago. From the conductivity of carbon fibers, manufacturing yarns from staple carbon fibers is work that was sponsored by Union Carbide Corporation.

Q. Did you work on weaving and fabric design?

A. At Georgia Tech?

Q. Yes.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

A. I taught it. I don't remember working in research on it, but I taught -- I taught weaving courses.

Q. And did you work with fiber-reinforced composites?

A. Yes.

Q. And can you explain your work in that field?

A. Yes.

Q. Please do.

A. Yes. We were concerned with trying to measure what the thermal conductivity of a carbon fiber was, so we embedded it in a resin and then used -- I worked with someone from the mechanical engineering department with a device called a guarded hot plate, which made sure that all the heat that was exposed to the top of the fiber went to the bottom of the fiber and none of the heat went transverse.

Q. And how did you determine that the heat was not being transmitted transversely?

A. The piece of equipment that we had was designed to -- I used the word "guarded hot plate" to prevent that from happening. I don't remember all the details of it, though.

Q. And then it looks like from 1980 to 1994 you were employed by Albany?

A. I was employed by Albany International. It started -- when I first went there it was called the Fabric Research Laboratories, and then Albany International purchased them and made it the Albany International Research Company.

Q. And you started there as a senior research associate?

A. I did.

Q. And what were your job duties as a senior research associate?

A. Well, at Albany International Research Company, approximately half our work was research for the parent company, Albany International, and the other half was contract research for the government, primarily, and also for industry.

Q. And what type of research were you doing as a senior research associate?

A. I can only talk in broad terms because a lot of it was proprietary. But one of the areas was in paper machine clothing.

Q. And what did you do -- what was your research -- what was your activities with respect to paper machine clothing?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. It was proprietary.
Q. Proprietary to Albany?
A. Yeah. They were sponsoring it. Yes, it was proprietary to Albany.
Q. You were employed by Albany; correct?
A. Yes.
Q. Can you give me a general description of your work on paper machine clothing while you were working at Albany?
A. We were looking at the effect of various parameters on water removal.
Q. And what parameters were you looking at?
A. That's proprietary.
Q. When you say "proprietary," what do you mean?
A. It means it was self-explanatory. It can't be discussed outside of Albany International.
Q. And why can't it be discussed outside of Albany International?
A. I don't know why Albany said that. I signed -- on my very first day of work, I signed a nondisclosure agreement and said I can't discuss what I'm doing.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. While you were employed at Albany, you also worked part time as an adjunct professor at Northeastern University; correct?

A. Correct.

Q. You taught classes in statics, dynamics, and mechanics of deformable bodies and material science?

A. Correct.

Q. Did any of that -- any of those courses deal with paper machine clothing?

A. No.

Q. From 1994 to 2010, you worked as a dean, professor of textile engineering, at the School of Engineering and Textiles in Philadelphia; correct?

A. That wasn't the actual name. It was the School of Material -- it started as the School of Materials Technology and Textiles, and then eventually it became the School of Engineering and Textiles.

Q. But you were employed there from 1994 to 2010?

A. Yes. I was employed 2012.

Q. Yeah, and then you were -- in 2010 you became the executive dean for research and

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

professor of mechanical engineering; correct?

A. Correct.

Q. Did you conduct research while you were in that position?

A. Yes.

Q. And what was the nature of your research?

A. Some of it was proprietary. It was for -- I said it was contract research, so it was work done for companies that had hired us to do research. And some of it was for Albany International.

Q. Did you publish any of that research?

A. Yes.

Q. What research topics did you publish on?

A. I'd have to look at my CV to tell you that. I don't remember offhand all of them.

Q. Okay. In that time frame was your research related to weaving patterns and fabric design?

A. Yes.

Q. In what way?

A. I have to talk in broad terms.

Q. Okay.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. One way you can tell also is by -- I have 13 patents, which many are either for Albany International or for our various sponsors. So I would go by my patents to tell you.

Can I look at my CV?

Q. Certainly. Is it --

A. It should be --

Q. Is it in the declaration?

A. I don't think so. No, it's not in the declaration. I think it's a separate exhibit.

Q. Okay. We'll have to do that later, then. I don't think we have it with us.

A. That's fine.

Q. We'll come back to that.

A. I do remember some of them, but I don't remember all of them.

Q. Okay. Why don't you tell me the ones you remember.

A. Okay. I worked on developing a replacement for a woven anterior cruciate ligament, anterior cruciate ligament for the knee. We got a patent on that. I worked on a woven structure that was used for at the time the Strategic Defense Initiative. It was a complex woven structure.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Was your question just about weaving?

Q. Yes.

A. Okay. Just weaving. Those are the two I recall, but there might have been others. I'd have to see my -- obviously anything that was patented is public.

Q. Sure.

Did you work on any other aspects or do any research on other aspects of paper machine clothing?

A. Yes.

Q. In what areas?

A. That's proprietary.

Q. Nothing in your patents?

A. I'd have to see my patents. I'd have to see my patents.

Q. Generally what types of topics did you work on with respect to paper machine clothing?

A. Water removal.

Q. Are you familiar with forming fabrics as a type of paper machine fabric?

A. Yes.

Q. And can you describe how -- or the purpose or function of forming fabrics?

A. Yes. As I say in my declaration here,

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

when paper is made, it's generally made from cellulosic fibers, which are from wood pulp, and it's mixed up in a slurry of water, which is predominantly water. And in forming fabrics, you're just counting on trying to remove as much water as possible before you go into the subsequent continuous processes.

Q. Where you familiar with press felts?

A. Yes, I am.

Q. Can you describe the function of press felt fabrics?

A. Yes. A press felt is relying on mechanical pressure to express the water from the sheet of material which is an intermediate sheet towards the end of paper.

It's a good -- an analogy is in your washing machine you wash clothes and you have a spin cycle. There you use centrifugal force to express the water as much as possible before you put it in the dryer and then use thermal interaction to get it to the dry state.

Q. What is the primary function of press felt fabrics?

A. To remove mechanically as much water as possible.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. And are you familiar with dryer fabrics?

A. Yes.

Q. Can you describe the function of the dryer fabrics?

A. The main purpose of the dryer fabrics is to be a conveyer belt to take them over heated -- thermally heated steam cans to reduce the paper to the final moisture content, which is usually in the range of 2 to 3 percent.

Q. What is the primary purpose of forming fabric?

A. As I answered that question, it's to reduce as much water as possible without using mechanical pressure. It's -- there's a vacuum underneath the forming fabric to pulls the water through. And then the forming fabric -- the slurry then is deposited on the forming fabric.

Q. Why is there no mechanical pressure used on the forming fabric?

A. I don't think I can answer that question. I don't think I can answer that question.

Q. You just don't know?

A. I don't know.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. What is the primary function of the press fabric?

A. The press fabric is, again, to reduce the water content using mechanical means by pressing it, because mechanical means is less expensive than thermal means. In thermal means you have to generate heat. In the press fabric you're just drawing vacuum.

Q. Press fabric you're just drawing a vacuum?

A. No, you're pressing it -- I'm sorry, you're pressing it, and as you press it, you're expressing the water through the fabric and the fabric's permeability. Then when water comes out, there's a vacuum to take that water away.

Q. And is the dryer fabric where the heat is applied?

A. Yes.

Q. So in your work at -- from 1980 to 1984, you mentioned you had been working on --

A. Did you say 1984?

Q. 1980 to 1994.

A. You said '84.

Q. I'm sorry. You said that you worked on studying parameters for removal of water?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Among other things, yes.
Q. Was that the primary purpose of your research or work?
A. It wasn't a primary research. I worked on many research projects.
Q. Okay. What other areas besides removal of water did you work on?
A. In what field?
Q. From 1980 to 1994, with respect to press felt -- with respect to PMC?
A. PMC. Removal of water, primarily.
Q. And was there a particular type of PMC fabric that you worked on?
A. I don't recall. I know what it was, and we weren't working on dryer fabrics.
Q. Were you working on forming fabrics?
A. Forming fabrics, yes.
Q. Were you working on press felt fabrics?
A. Yes.
Q. But no dryer fabrics?
A. Not that I can recall.
Q. What are the parameters that impact the removal of water from forming fabrics?
A. The permeability of the forming fabric, which is from fabric structure.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. When you say "permeability," what do you mean?
A. How easy it is for water to pass through fabric.
Q. What characteristics of the fabric impact how easy it is for the water to pass through?
A. Weave density, the size of the yarns, among other -- that is what I can remember offhand.
Q. Did your work involve looking at weave density?
A. Again, that's proprietary.
Q. Did your work involve looking at the size of the yarns?
A. Size of the yarns?
Q. Yeah.
A. That's proprietary.
Q. What characteristics of the press felt fabrics impact the permeability of the fabric?
A. Similar to the forming fabric, the permeability of the weave type. That's what I can remember.
Q. So similar to the forming fabrics, it would be the weave density and the size of the

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

yarns for press felts?

A. The weave density and the weave patterns.

Q. Okay. Not the size of the yarns?

A. Yes, the size of the yarns also.

Q. Okay. With respect to a forming fabric, what does weave density mean?

A. In textile engineering, weave density is how many -- all -- let me back off.

A woven fabric is composed of orthogonal yarns that are placed. And weave density is the way that they're interlaced, but there's an infinite range of weave patterns from what's called a plain weave, which is the simplest weave, which is one yarn over another yarn that's orthogonal, to it all the way up to what we call twill fabrics, where you have things called floats where you might have one yarn over two yarns and so on, has an effect on weave density, as is the yarn diameter.

Q. Was all the work that you did from 1980 to 1994 with respect to forming fabric -- excuse me, forming fabric -- excuse me -- strike that.

Was all the work that you did from 1980 to 1994 with respect to forming fabrics involved

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

with woven fabrics?

A. The work that I did on forming fabrics was all woven, yes.

Q. Was the work that you did on press felt fabrics also all woven?

A. All woven, correct.

Q. With respect to forming fabrics, do you recall the materials used in the yarns?

A. I recall that it's proprietary.

Q. Do you know generally what materials are used in forming fabrics in the industry?

A. Thermoplastic hydrophobic fibers, hydrophobic meaning they don't absorb water themselves.

Q. Are there some commonly used types of thermoplastic?

A. What do you mean by "commonly"?

Q. Well, I think commonly means commonly.

ATTORNEY KONSTANTAKOPOULOS: Objection. Was that a question?

A. I know a lot of it is nylon, a form of -- there are many different forms of nylon, but it was nylon.

Q. And do you know other, again, typical or commonly used forms of nylon for the use of

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

forming fabric yarns?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Not that I recall.

Q. Do you know what types of materials are used in the industry for the yarns used in the press felt fabrics?

A. I do.

Q. And what are those?

A. They're hygroscopic again -- excuse me, hydrophobic, in that they themselves don't absorb molecularly the water.

Q. Are they nylon?

A. Some are.

Q. Are there other types of materials used?

A. I only know nylon.

Q. Is there particular types of nylon that are more commonly used or that you're aware of?

A. Not that I recall.

Q. During your time at Northeastern University, did you teach classes related to paper machine clothing?

A. I already answered that. No.

Q. No?

A. I already answered. No.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Thank you.

From 1994 to 2010, did you teach classes with respect to or related to paper machine clothing?

A. No. Excuse me. Yes. There was a course -- we had a program called a master of science in global textile marketing, and I taught a section in there of various industrial textile materials. And in that case -- in that course I talked about paper machine clothing.

Q. And what was the subject of the module that you taught?

A. What do you mean, "the module"?

Q. You said you taught a section in there.

A. Well, in an academic semester, there are 14 weeks, and there's 3 classes; so that's 42 classes. I don't remember how many classes.

Q. So you taught the entire course?

A. I taught the entire course.

Q. Okay. I misunderstood. I thought potentially you were just coming in for a particular section of the course.

A. No, I taught the entire course. I was the professor of record.

Q. And what was the focus of -- strike.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

that.

So the focus of the course was on global textile marketing?

A. Yes. No, not the course; the degree.

Q. The course you taught was on various industrial textile materials?

A. That was part of it. That was part of it.

Q. Okay. So what else was in that course?

A. Apparel materials, a whole range of textile products from technical fabrics, which these would be, paper machine clothing, to fabrics which are apparel fabrics, which are not usually technical fabrics, and the yarns that are made for them, the yarns that are used in them.

Q. So the course was not focused on technical fabrics; it was more broad?

A. It included technical fabrics.

Q. What types of students took this course?

A. These were students from around the world. It was a program that was taught at three universities. It was taught four months at Philadelphia University, and it was taught in Israel at the Shenkar College of -- I think at the

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

time it was called the Shenkar College of Textiles in Israel, and it finished up at Reutlingen Fachshule -- and I can't spell this, Fachshule Reutlingen, which is basically a textile university in Reutlingen in Germany.

And I taught the module on fabrics -- I mean textiles, because, remember, it was called global textile marketing. So there were a lot of other things associated with that other than just the technical areas.

Q. And so this was a year-long program?

A. It was a year-long program.

Q. And were the students scientists technically oriented or more business oriented?

A. I don't recall. They were both, but I don't recall what the proportion was.

Q. Would you consider that class to be an engineering-type class?

A. I would consider my course to be an engineering-type course, yes.

Q. Was it directed, though, at a more general audience than engineering students?

A. When you say "general audience," what do you mean?

Q. Nonengineering students and business

majors, marketing majors.

A. There were marketing majors in there, yes, but there were also engineering students, students with degrees in textile engineering, undergraduates -- students with undergraduate degrees in textile engineering and textile technology.

Q. Did you into the details of textile technology in the course of this class?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I don't recall exactly the curriculum. This was a long time ago.

Q. From 2004 to 2003, you were a visiting scholar at Harvard University?

A. I was, on a sabbatical.

Q. And it said there that you studied national and international trends in patent applications involving textile structures?

A. That's correct.

Q. Can you describe that work?

A. Yes.

Q. Please do.

A. I was looking at -- around that time the U.S. textile industry that was around prior to that time was based mostly in the United States

for the U.S. consumer. And I started to see that more and more was being done overseas in places like China in industry.

And I wanted to see if the patents that were issued were issued in those countries -- or, excuse me, the inventors were from those countries or the inventors were from U.S. countries that then transferred their work to overseas.

Q. Was the focus of that work paper machine clothing?

A. It included paper machine clothing. It included any -- any patents on textiles I picked up through searches, yes. So it did include that.

Q. That wasn't necessarily the focus; it was all textiles?

A. It was all textiles.

Q. From 2009 to 2012 you worked as a part-time consultant at MAG Industrial Automation Systems; correct?

A. Yes, MAG.

Q. And what generally was your work activities in that role?

A. I was working on fiber-reinforced composites and the equipment to make fiber-reinforced composites.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Did that have anything to do with paper machine clothing?
A. No.
Q. Turning back to the forming fabrics that are used in the manufacturing process, are there versions of those fabrics that include seams?
A. Not that I saw at the time that I was working on them, no.
Q. Have you seen any since the time you've been working on them?
A. Have I seen since I've been working on them?
Q. On forming fabrics.
A. No.
Q. At the time you were working on press felts, did those fabrics include seams?
A. No.
Q. Have you seen seams on press felt since then?
A. No. In person. I've seen pictures of it but not in person.
Q. And I think you stated earlier, just to confirm, that you did not do any work on dryer fabrics?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

A. I did not do any work on dryer fabrics.
Q. Have you seen pictures of dryer fabrics with seams?
A. Dryer fabrics with seams? No.
Q. Have you seen pictures of forming fabrics with seams?
A. Not that I recall.
Q. Have you seen pictures of press felt fabrics with seams?
A. Yes.
Q. Can you explain your understanding as to how the seams are formed in press felt fabrics?
A. It depends on the press felt fabric.
Q. What do you mean?
A. Well, it was -- if it's a woven fabric, there are loops in there, and then in the loops there is something called a pintle that connects the loops. So it's woven as an endless fabric, and then it's folded over and a pintle goes through. That's P-I-N-T-L-E.
Q. So sticking with woven press felt fabrics, do you understand the process of how the fabric may be modified in order to create the seams?
A. Only from what I've seen in the

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

patents.

Q. And what do you understand from what you've seen in the patents?

A. I understand that one of the ways is to remove what's called the cross-directional yarns, the yarns that go -- I'm going to use the term a lot -- east to west that go across the machine. They're removed, and then the fabric is folded over and the pintle is -- goes through the loops in the passageway and makes the fabric continuous.

Q. And the loops are made by what would be called machine-direction yarns?

A. The loops are made by machine-direction yarns, yes.

Pretty soon I'm going to need a nature break. I usually have to take one about every hourly. I'm elderly.

Q. Why don't we take a break now, then.

(Recess taken from 9:49 to 10:01.)

Q. Before our break we were talking about woven press felt fabrics. Do you remember that?

A. I do remember.

Q. And we were talking about forming the seam loops in the woven press felt fabrics; correct?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Correct.
Q. And I think maybe there was a little bit of confusion, but when you -- is my understanding correct that you take a flat woven fabric and fold it and then remove CD-direction yarns in order to form seam loops?
A. Yes.
Q. Are there other ways to form seam loops in woven fabrics?
A. Yes.
Q. How are those?
A. Oh, seam loops?
Q. Yes.
A. Oh, no. Ways to form seams but not seam loops.
Q. Okay. I'm just talking about seam loops at this point.
A. Seam loops would be that.
Q. And then I believe you stated that the fabric is then folded and the seam loops -- a pintle is passed through the passageway created by the seam loops?
A. The interdigitated seam loops. You -- sorry to do this, but you do this (indicating) and you pass it through. They have to be

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

interdigitated. You can't pass it through one loop on one side and one loop on the other side. They have to be interdigitated so that they connect.

Q. Right. So you take that woven fabric with the seam loops on two ends --

A. Yes.

Q. -- you fold it on, and you interdigitate the seam loops?

A. Correct.

Q. And you pass a pintle through the passageway formed by the seam loops?

A. The way I understand it, yes.

Q. Your understanding is based on materials you've read and pictures you've seen?

A. Yes.

Q. The seam loops don't form a complete circle, do they? An individual seam loop is not a complete circle?

A. An individual seam loop is not a complete circle, that's correct.

Q. Is the passageway through the interdigitated seam loops a complete circle?

A. It doesn't have to be, no.

Q. In what way could it be not a complete

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

circle?

A. Could you ask that question again?

Q. I asked if the passageway through the interdigitated seam loops was a complete circle, and you said it doesn't have to be.

A. That's correct.

Q. If I'm understanding, in what circumstance would it not be a complete circle?

A. It would be dependent on the weave pattern of the fabric.

Q. How would the weave pattern of the fabric implicate the shape of the passageway through the seam loops?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. The crimp could affect that, the yarn crimp.

Q. What do you mean by "yarn crimp"?

A. So yarns go -- a woven fabric, yarns go -- this would be a plain weave, like that (indicating). It could be -- if you have a twill weave, it could be a little different than that.

Q. How would that affect the shape of the seam loops, the passageway through the interdigitated seam loops?

A. All the loops? Each loop it could be

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different depending on if the fabric was lined up properly.

Q. I'm not talking about the individual loops, I'm talking about the passageway through the interdigitated loops.

A. The whole group of interdigitated -- it could vary.

Q. Does the size of the seam loops that are formed in the fabric impact the size of the pintle that can be passed through?

A. Could you ask that question again?

Q. How does the size of the seam loops formed in the fabric impact the size of the pintle chosen?

A. The pintle has to be able to go through the smallest seam loop. There might be some that are larger than others. It has to go at the very least through the small seam loop.

Q. If it was larger than the smallest seam loop, it presumably wouldn't be able to pass through the fabric?

A. No, there would be mechanical interaction there. Couldn't do it.

Q. Mechanical interference?

A. Mechanical interference, yes. Not

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

interaction; interference.

Q. Could you turn to the patent, which is Exhibit 1001?

A. Yes.

Q. If you look at Column 9 starting at -- there's a paragraph that starts at line 34. Do you see that?

A. Let me look at that. 34, yes.

Q. It starts off the diameter of a circle in the case of Figure 4?

A. Yes. It refers to Figure 4. Yes.

Q. The second sentence -- or the third sentence of that paragraph says, A clothing having such seam loops thus fulfills the feature in which the diameter LD of the seam loops 41, 42, and the diameter MDYD of the associated MD threads --

A. Yes.

Q. -- 10 has a ratio of LD/MDYD between 2.5 and 4 and in particular 2.7 and 3. --

A. I don't see -- oh, it's the last sentence in that paragraph?

Q. Yes, in particular between 2.7 to 3.6.

A. That's what it says, yes.

Q. You understand that LD means loop diameter?

A. I do.
Q. And MDYD means machine-direction yarn diameter?
A. That's the way it's described in the patent, yes.
Q. We talked earlier that for the pintle to pass through the interdigitated seam loops the pintle must be smaller than the smallest seam loop in the fabric; correct?
A. Correct.
Q. And when we say smaller than the pintle, that means -- excuse me, when we say the pintle must be smaller than the smallest seam loop, is it fair to say that that is saying the pintle diameter must be smaller than the smallest loop diameter of the interdigitated seam loops?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. It won't go through something that is smaller, right, for that particular loop.
Q. Correct. And if it can't get through that particular loop, then it can't get through the entire fabric?
A. I would agree with that, yes.
I'd like to say that if it's a continuous pintle, not a pintle such as like in

Penven where it's tapered, you might be able to do it and then force the loop to be larger.

Q. Understood. Understood. So we'll deal with Penven later, obviously.

A. I'm sure you will. I'm sure you will.

Q. Without mechanically enlarging the smallest loop, the pintle must have a diameter less than the loop diameter of the smallest loop?

A. I would agree with that.

Q. And there's this ratio described here in this portion of the patent in Column 9, the LD/MDYD ratio. Do you see that?

A. Yes.

Q. It says that has to be between 2.5 and 4?

A. I see that.

Q. In particular between 2.7 and 3.6?

A. I see that.

Q. You would agree, then, that there could be seam loops that have an LD ratio -- LD/MDYD ratio greater than 3.6?

A. It would depend on what the LD and the -- LD is and the MD, yes.

Q. You would agree that the disclosure here says that LD/MDYD ratios could exceed 3.6 and

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

could go as high as at least 4?

A. Could you repeat that question?

Q. Sure. You see here on Column 9 that it describes LD/MDYD ratios between 2.5 and 4 and in particular between 2.7 and 3.6; correct?

A. Yes.

Q. So the patent discloses that the LD/MDYD ratio can in some circumstances be at least as high as 4, depending upon the parameters of the LD and the MDYD?

A. That's what the patent says, yes.

Q. How would the fabric's performance be affected in a fabric that has an LD -- strike that.

This LD/MDYD ratio depends upon the loop diameter; correct?

A. Yes, that's the numerator.

Q. There are multiple loops in a fabric, typically; correct?

A. Correct.

Q. So which loop diameter do we use for calculating this ratio?

A. Which particular loop diameter?

Q. Yes.

A. I can't answer that.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. But, as we've discussed earlier, the smallest loop diameter in the fabric would have to be large enough to accommodate the pintle being inserted into the seam?

A. What kind of pintle?

Q. A continuous diameter pintle.

A. Yes.

Q. How would the performance of the fabric be impacted if the LD/MDYD ratio is greater than 4?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. You have to define what you mean "performance."

Q. Well, any type of performance.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. That doesn't tell me anything, "any type of performance." Are you talking about the strength? Are you talking about the permeability? You're not telling me enough information to make that judgment.

Q. What is your understanding as to the importance of the LD/MDYD ratio on the performance of the fabric?

A. The whole point of this is to maintain the total fabric to have the same performance

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

characteristics, whatever those performance characteristics are, on the rest of the fabric, because if you don't you'll have a variation in permeability, which could cause something called marking. You could have a problem with seam strength.

You want to make it so that, to put it in simple words, you can't tell there's a seam in there.

Q. And if the LD/MDYD ratio is greater than 4, will you be able to tell that there's a seam in there?

A. It depends on the rest of the fabric. You can't -- you have to know the whole fabric construction to be able to do that, make that determination.

Q. If the LD/MDYD ratio is greater than 3.6, will you be able to tell that there's a seam in there?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. The same answer. You have to know the rest of the fabric to be able to make that determination.

Q. What other things would you need to know about the fabric?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. You have to know about fabric permeability, fabric strength, fabric compressibility.

Q. Again, if the smallest -- again, we'll go through the hypothetical here, but assuming there's a continuous diameter pintle; okay? And we've established that in that scenario the pintle needs to be of a size to fit through the smallest loop diameter of the interdigitated seam; correct?

A. The entire passageway?

Q. Yes.

A. Yes.

Q. If that is true, does the value of the LD/MDYD ratio impact the ability to pass the pintle through the interdigitated seam loops?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I need you to repeat the question.

Q. Sure. Again, you remember the setup in terms of continuous diameter pintle?

A. Yes.

Q. And that the pintle is sized such that it will fit through the smallest loop diameter of the interdigitated seam?

A. Yes. Seam loop?

Q. Seam loop, yes.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Okay.
Q. Well --
A. You have to be specific.
Q. The question was, And the pintle is sized such that it will fit through the smallest loop diameter, seam loop diameter, of the interdigitated seam.
A. Not necessarily. If it's not -- if it's not inter -- how to put it -- interdigitated enough, not necessarily. It can be interdigitated, and you could have a seam loop that's one seam loop -- you have to look at my finger -- and another seam loop that's maybe only like this (indicating). It would not go through.
Q. The hypothetical we're dealing with is it goes through, so you can pass the pintle through the series of interdigitated seam loops from one end to the other.
A. Yes.
Q. What impact in that case would an LD/MDYD ratio of greater than 3.6 have on the performance of the fabric?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. As I said earlier, you have to tell me what you mean by "performance."

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. Well, I think the way you said it earlier is would you be able to tell that there was a seam there in the fabric in that case?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. You would know there's a seam in there, but you don't know what the performance of it is, because, again, as I stated earlier, it's important that wherever the seam is that the properties of compressibility, permeability are the same; because if not, you'll get what's called marking, which is a permanent indentation on the resulting fabric.

Q. So sitting here today you cannot identify whether there's a performance difference if the LD/MDYD ratio is greater than 3.6 without more information?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I would need more information.

Q. And similarly, sitting here today, you would need more information to determine if an LD/MDYD ratio of greater than 4 impacted performance?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. As I stated earlier, it would depend on the rest of the construction of the fabric.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. So you would need more information about the rest of the construction of the fabric?
A. Yeah.
Q. Is that a yes?
A. Yes.
Q. Staying with that same hypothetical, that you have an interdigitated series of seam loops with a pintle size to pass through all of the seam loops.
A. The entire passageway?
Q. The entire passageway. Do you know if there would be any performance change if the LD/MDYD ratio was less than 2.5?
ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.
A. Could you repeat the question?
Q. Again, you're familiar with the hypothetical; correct?
A. Yes.
Q. Do you know if there would be any performance change if the LD/MDYD ratio was less than 2.5?
ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.
A. It would be the same answer I gave

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

before. You have to know the rest of the construction of the fabric.

Q. And, again, same hypothetical. Do you know if there would be any performance change if the LD/MDYD ratio was less than 2.5?

ATTORNEY KONSTANTAKOPOULOS: Same objection.

Q. Excuse me, 2.7.

A. It's the same answer I gave before. You have to know -- you have to know the construction of the rest of the fabric.

Q. Again, same hypothetical. Is there an improvement in performance if the LD/MDYD ratio is between 2.5 and 4?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I can't answer that.

Q. Why not?

A. Because, again, I have to know -- you keep saying "performance." I have to know what you're talking about.

Q. Any aspect of performance. You listed several aspects earlier.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Repeat the question again.

Q. Okay. Again, we're talking this

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

hypothetical fabric where the pintle is passing through all of this interdigitated seam loops. Is there an improvement in performance in the fabric if the LD/MDYD ratio is between 2.5 and 4?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I don't think I can answer that.

Q. Why not?

A. I need more information. I have to know, for instance, the loop density.

Q. Why do you need to know loop density?

A. Because that's part of the construction of the seam. It involves two things. It involves the LD/MDYD ratio and the seam density, loop seam density.

Q. For two fabrics that have the same seam loop density, will there be a difference in performance?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. When what happens?

Q. When the ratio -- the LD/MDYD ratio is inside of the range of 2.5 to 4 versus outside of the range of 2.5 to 4.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I can't answer that question.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. And why not?
A. Because I'd have to know more about the construction of the fabric, which includes the stitching, for instance.
Q. Again, I'm holding all other things constant except for the ratio.
ATTORNEY KONSTANTAKOPOULOS: Objection.
Q. Let's ask it again. Holding all other things constant between two fabrics --
A. Right. Two fabrics, two separate press fabrics?
Q. Fabrics, yes. One fabric -- and both fabrics have a pintle passing through --
A. A continuous pintle?
Q. A continuous pintle passing through the entire series of interdigitated seam loops. Okay?
A. Yes.
Q. One fabric has an LD/MDYD ratio outside of the range of 2.5 to 4, and one fabric has an LD/MDYD ratio inside of the range of 2.5 to 4.
Can you identify the performance improvement that would happen -- or the performance difference between those two fabrics?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. No.

Q. Why not?
A. Because I'd have to know what the measurements are. I can't do it just based on that.
Q. What measurements do you need?
A. The weave pattern.
Q. Again, I've held all those constant, Doctor. So the only difference between these two fabrics is the LD/MDYD ratio.
A. And the question is?
Q. Will there be a performance difference between those two fabrics?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. There could be. That's all I can say is there could be.
Q. You don't have enough information to know whether there would be?
A. Not as I sit here.
Q. But you would agree with me that the ability of the pintle to pass through the entire series of interdigitated seam loops does not depend on the LD/MDYD ratio?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. Can you repeat that again?
Q. You would agree that the ability of the

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

pintle to pass through an entire series of interdigitated seam loops on a press felt fabric does not depend on the LD/MDYD ratio?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It would depend on what the shape of the seam loop is.

Q. Okay. But the shape is not the ratio; correct?

A. Shape is not the ratio.

Q. So it doesn't depend on the ratio?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. You're saying that; I didn't say that.

Q. Well, do you agree that it does not depend on the ratio?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. As just the ratio?

Q. Yes.

A. And the question is?

Q. The ability of the pintle to pass through an entire series of interdigitated seam loops on a press felt fabric does not depend on the LD/MDYD ratio?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Of a single interdigitated loop or all the interdigitated loops?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. All of them.
A. I would agree, yes.
Q. We've been talking about -- I'm going to shift gears a little bit. We've been talking about these press felt fabrics; correct, Doctor?
A. Yes.
Q. Are you familiar with batt layers on press felt fabrics?
A. Yes.
Q. What are batt layers?
A. Batt layers are discrete individual fibers that are then what we call needle punched into the fabric so they're interlocked into the fabric, the base fabric.
Q. And can you give me a little bit more explanation of what you mean by needle punch?
A. Needle punch is a textile manufacturing process which takes a loose batt of individual fibers and then using barbed wire -- barbed needles goes transverse through in this particular case the base fabric and then interlocks them into the base fabric.
Q. Are there finishing processes typically applied to press felts after the batt has been applied?

A. The patent says yes, there's thermal processing.
Q. Are you familiar with the calendaring?
A. I'm familiar with calendaring.
Q. What is calendaring?
A. Calendaring is when you have two rollers that are in some cases heated, in most cases heated, and then they press the fabric. It's like ironing. It's like continuous ironing.
Q. Why do they perform calendaring on the press felt fabric?
A. I can't answer that.
Q. What impact does the calendaring have on the batt?
A. It would compress it.
Q. What impact does calendaring have on the base fabric?
A. It could compress it.
Q. What effect would calendaring have on the MD threads in the base fabric?
A. It could compress them.
Q. And it would compress them because it's applying a -- I'm trying to figure out the proper way to say this. It's applying a force normal to the surface -- or to the structure of the base

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

fabric?

A. Correct.

Q. And you said typically these calendaring processes are -- also involved heating?

A. Sometimes.

Q. Would you agree with me that applying the mechanical force along with the heating could deform the MD threads?

A. Yes.

Q. Do you have an understanding as to how that deformation may impact the performance of the MD threads?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I don't think I can answer that.

Q. Don't have enough information?

A. No.

Q. You'd agree that the deformation can change the cross-sectional shape of the MD threads?

A. Yes.

Q. Starting with the assumption that the MD thread is circular before calendaring --

A. Yes.

Q. -- there would be a diameter for that

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

circular MD thread?

A. If it's circular, there's a diameter.

Q. And you could envision drawing a line representing a diameter would be vertical and you'd have another line where the diameter would be horizontal, in the case of a circular MD thread, they would be the same?

A. Repeat the question, please.

Q. Yeah. I'm just trying to say if you start with a perfectly circular MD thread and we've envisioned that we have one sort of running vertically and we have one running horizontally.

A. Right.

Q. In the case of the perfectly circular MD thread, the two diameters would be equal.

A. Right.

Q. We discussed a minute doing that the calendaring process could lead to a deformation of the MD thread; correct?

A. I need you to describe deformation.

Q. Well, a change from something other than a perfect circle.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. That's not an explanation.

Q. What is an explanation?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Is it a permanent deformation or a temporary deformation?

Q. What is your understanding of the type of deformation that occurs to an MD thread after calendaring?

A. It depends on the property of the MD thread.

Q. Do you believe that there could be permanent deformation to an MD thread after a calendaring process?

A. Yes.

Q. So let's assume it's a permanent deformation.

A. Okay.

Q. And in our scenario, let's assume that the deformation is such that in the vertical direction the diameter is now less than the diameter of the perfect circle. Does that make sense?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It makes sense.

Q. What would the impact be on the horizontal diameter in that case?

A. There's something you have to know -- there's more that you have to know.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. What else do you have to know?
A. You have to know if you're changing the actual density of the material. If you're changing the density of the material, not necessarily.
Q. If you're changing the density of the material, the horizontal diameter would not necessarily change?
A. Not necessarily.
Q. If the density of the material stays constant, what will happen to the horizontal diameter?
A. It will have to get longer because of conservation of material.
Q. Have you ever looked at a press felt fabric after its calendared to determine the shape of the MD threads?
A. I've seen pictures of it, but I haven't seen any actual fabrics, no.
Q. In the pictures that you've seen, do you observe any permanent deformation?
A. Yes.
Q. So in that scenario where the density is not changing, the vertical diameter and the horizontal diameter are not independent from one

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

another, are they?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. They're not independent of -- they're not independent if the material density is constant. When I say "density," I mean the volumetric density.

Q. Understood. Thanks for that clarification, though.

A. Okay.

Q. I'm going to hand you the patent owner's response.

A. Okay. This doesn't have a Bates number on it or exhibition number.

Q. It does not. It's in the record because it was filed by Voith, but it's not an exhibit. It's a paper in the proceeding, not an exhibit in the proceeding.

A. Okay.

Q. But I'll represent to you, though, that it is an accurate copy of the paper filed by Voith in this proceeding.

A. I'll accept that.

Q. And I believe you stated at the beginning that you had reviewed this document?

A. Yes, I have.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. And if we turn to page 2, do you see there's a section about -- a little bit past the halfway point about background and technology background?

A. I see it.

Q. It starts off by talking about paper machine clothing, PMCs, and press felts in particular. Do you see that?

A. I do.

Q. And the last sentence at the bottom of the page says that PMCs must cope with repeating requirements: efficient water removal from the web, uniform surface contact to prevent marking, and structural consistency --

A. Yes.

Q. -- given that even slight permeability variations can produce visible effects in the finished product.

Do you see that?

A. I do.

Q. And what is the requirement for PMCs with respect to efficient water removal from the web?

A. Is that my sentence or the petitioner's sentence?

Q. If you turn to the next page, they cite to --

A. Is that something that I --

Q. 32 to 48 of your --

A. Declaration?

Q. Declaration. So there's 16 paragraphs.

A. All right. I'd like to look at my declaration.

Q. Certainly. I don't believe that they're citing -- quoting a specific sentence.

A. I would still like to see my declaration.

Q. Certainly. Take your time.

A. It's a long -- it's a lot of paragraphs, so what do you want me to answer?

Q. All right. Let's do it this way: Let's look at your declaration, page 14.

A. Yes.

Q. And there's -- looking at paragraph 32.

A. Okay.

Q. There's a sentence here in the middle of that paragraph that says, A primary function of press felt is to act as a reservoir to transport water expressed from the sheet at the press nip so the base fabric must provide void volume (empty

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

interior space) to accept and hold water until removed later (e.g., by vacuum suction), which can be provided by weave structure and/or by adding additional woven or nonwoven structures.

Do you see that?

A. Yes.

Q. You agree a primary function of the press felt is to transport water expressed from the sheet at the press nip?

A. No, it says to act as a reservoir to transport water.

Q. Okay. So you agree that it acts as a reservoir to transport water?

A. Yes.

Q. And where does it transport the water to?

A. To the vacuum.

Q. So it collects the water in the sense of being a reservoir, and then it transports it to a vacuum?

A. That's my understanding.

Q. And that's one of the primary functions of the press felt fabric?

A. Yes.

Q. Turning back to the patent owner

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

response on page 2, would you also -- would you agree that a uniform surface contact is necessary to prevent marking?

A. Repeat the question, please.

Q. Yeah. I'm looking at that last sentence again on the bottom of page 2. Would you agree that a uniform surface contact to prevent marking is a requirement of a PMC?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. That's one of the items. That's not the only item.

Q. Correct. The first item is efficient -- do you agree that efficient water removal from the web is a requirement for PMCs?

A. Yes.

Q. And you would agree that uniform surface contact to prevent marking is a requirement of PMC?

A. It's one of the requirements.

Q. And you would agree that another requirement of the PMC is structural consistency?

A. I would agree.

Q. What is structural consistency?

A. It means that if you look at, for instance, a press felt and you look at any section

of the press felt, it's going to be consistent. It doesn't look any different.

Q. Look any different how?

A. Well, you'd look at the weave pattern, you'd look at if there's any crushing, you'd look at if there's stitching there. There's a lot of -- there's many things. But it would have to be, again, as I stated earlier, you can't tell that there's a seam in there, that it's -- when you look at it, you take a picture of it, it's the same throughout the entire fabric.

Q. So you're saying when you look at it visually you cannot tell there's a seam there; correct?

A. What do you mean by "visually"?

Q. Well, you said when you look at it or take a picture.

A. No, I didn't say take a picture; I just said visually.

Q. Well, you actually did say take a picture, but that's okay.

A. Did I?

Q. Yes, you did.

A. I don't remember.

Q. I'm trying to understand when you

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

say -- you said when you look at it you can't tell the seam is there, and I was just trying to clarify when you say "look at it" you were talking about visually in that context.

A. Right. But I'd like to clarify that too. If the seam is a different color or something like that, you would notice a seam in there.

Q. Sure. Is there also the desire that from a performance perspective the belt near the seam functions as the belt remote from the seam?

A. Definitely.

Q. Looking back to our sentence here we were going through, it continues and says that given that even slight permeability variations can produce visible defects in the finished product.

Do you see that?

A. Where is that?

Q. It's at the top of page 3.

A. Yes, I agree with that.

Q. So that would be an example that even though permeability is not something you could identify through your visual acuities, that variation in performance could impact the finished product?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yes. But permeability is not measured visually. Permeability is usually -- there's an ASTM method to measure permeability of a fabric.

Q. Okay. So I guess what I was just trying to establish -- I think we're in agreement here -- you're saying generally you don't want to have any visual ability to see where the seam is, absent maybe a color change to identify where the seam is; but in addition you want the performance near the seam region to be consistent with the performance with the rest of the belt, including with respect to permeability?

A. I would agree to that.

Q. And then the next sentence -- I'm going to go back.

What does structural consistency mean in that sentence to you?

A. Well, structural consistency would be it's a woven fabric or even not a woven fabric that the density -- the yarn density is constant throughout the fabric, that it doesn't change in different positions.

Q. And then the next sentence on the top of page 3, first paragraph, says --

A. Yes.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. -- these trade-offs -- and I interpret that to be referring back to the previous sentence about the competing requirements.

A. Yeah.

Q. -- vary by the desired end product as well as the machines available for manufacture.

Do you see that?

A. Yes.

Q. So do you agree with me when it says "these trade-offs" it's referring to the competing requirements of PMCs?

A. Yes.

Q. And how does the desired end product impact the trade-offs that are made by the designer?

A. It's the other way around. Say that again.

Q. Well, this sentence says the trade-offs vary by the desired end product; correct?

A. Right.

Q. How does the end product impact trade-offs that are made?

A. The end product has to be consistent so there's no trade-offs.

Q. Well, it says there are trade-offs that

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

vary by the end product. I guess maybe as I interpret that what it's saying is if you're making toilet paper as the end product versus paper towels, you may make different trade-offs; is that fair?

A. That's fair.

Q. That's what I'm trying to understand. Assuming that type of scenario, making different products, different end products, how does that impact the trade-offs?

A. I see what you're saying. I don't know how it affects them, but they're different -- it's different. It's different.

Q. So the designer of the PMC takes into account that desired end product when making those trade-offs?

A. It's my understanding, yes.

Q. And the sentence continues to say, as well as the machines available for manufacture.

Do you see that?

A. Manufacture of -- let me just see something.

What I did not say in this declaration is we're talking about manufacturing of the PMC or manufacturing of the final product.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. Okay. Would the machines available for the manufacture of the final product impact the trade-offs that were made on the belt?

A. Not that I think -- not that I know of, no.

Q. Would the machines available for the manufacture of the press felt belt impact the trade-offs made?

A. Repeat that question.

Q. I'm trying to understand which machines available for manufacture impact the trade-offs. So I first asked you would the machines used by the customer making the paper product impact the trade-off.

A. Possibly.

Q. Would the machines available to the manufacture of the press felt belt impact the trade-offs?

A. Possibly.

Q. When you say "possibly," what do you mean?

A. I mean possibly. It could happen or it could not happen.

Q. Do you have any understanding -- do you have any idea as to any specific trade-offs that

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

occur based on machines available for manufacture?

A. I don't know all the machines for manufacture, so I can't make that determination.

And this was also a quote from not me. This was -- oh, yes, it was a quote from me.

Q. So --

A. Excuse me a second, though. It's a quote from me, but it relates to 49 to 46. So I'd like to look at my declaration and see what I said in 49-46, because that might have been taken from another reference. So I have to see my declaration.

Q. Okay.

A. You'll have to give me a few minutes.

(Pause.)

A. That's in my declaration, but my declaration has references in it like Straub, and it has declarations in it from Adanur, and it has declarations from Yook, and it has declarations from Rydin. So you can't -- that's just a compilation of all these other declarations so -- or all these other references.

So I don't know if I can answer that question.

It's getting to that time.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Take a break again? Yeah. It's been about an hour.

(Recess taken from 10:55 to 11:09.)

Q. Could you turn to your declaration, please.

A. Yes, sir.

Q. If you'd turn to page 36 for me.

A. Yes, sir.

Q. Page 36 there's a Figure 1 from Sudre?

A. Yes.

Q. And is that a woven fabric?

A. Yes.

Q. Flat woven fabric?

A. Yes.

Q. And Figure 2 at the top of page 37, is that fabric now has been folded so that the ends 12 and 13 are able to be joined at the bottom there?

A. Yes.

Q. And then in Figure 3 below that we see the seam loops 7 --

A. 17.

Q. Yeah, 17 and 18 --

A. Yes.

Q. -- have been joined and there's a

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

pintle 19?

A. I have to see the patent to see that's in fact -- can I have a copy of the patent, please?

Q. Yes, we can give you that, marked as 1004.

A. You asked me about 17 and what other number?

Q. The question I think was the loops 17 and 18 have been joined by pintle 19.

A. 17 is a loop, 18 is a loop, and Figure -- is that Figure 3? Figure 3. It just says a tunnel. I'm looking for number 19. Yes, pintle wire 19. Yes, sir.

Q. So the date on 1004, if we look at the front page under priority data, indicates 17 June 1988. Do you see that?

A. I do.

Q. And if you turn now to your paragraph 37.

A. Yes, sir.

Q. You say, Seamed fabrics have shown substantial increase in their usage since their introduce in the late 1980s.

Do you see that?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. What page is that on?
Q. Page 16, paragraph 37.
A. Oh, paragraph 37. And read me that again.
Q. The first sentence says, Seamed fabrics have shown a substantial increase in their usage since introduction in the late 1980s.
A. I see that.
Q. Do you agree with that?
A. Well, that's from Adanur. I agree. That's not -- that's what Adanur said.
Q. Okay. Do you have any reason to doubt that?
A. No.
Q. And then it continues, In North America, approximately 75 percent of all press fabrics are seamed (joined), and the proportion continues to grow as seamed technology has proven suitable for more applications. It cites to Adanur 108.
Do you see that?
A. I do.
Q. And you agree with that?
A. I have no reason not to agree with it.
Q. But you chose to put it into your

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

declaration?

A. So I agree with it. That's what "no reason" means.

Q. Okay. So seamed press felt fabrics were being used long before the '566 patent was filed; correct?

A. Yes.

Q. And just to be clear, if we look at Exhibit 1001, which is the '566 patent, you see that on the front page down there where it says on the left-hand side 30 paren and then it says foreign application priority data.

Do you see that?

A. Yes.

Q. March 15th, 2018?

A. Yes, sir.

Q. So manufacturers have been using seamed press felt fabrics for many years before the '566 patent was filed; correct?

A. What's your definition of many?

Q. Well, 75 percent of all press fabrics used?

A. That would be many, yes.

Q. And those manufacturers were able to successfully make products without the teaching of

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

the '566 patent; correct?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Where do you see that sentence? Does it say that?

Q. No. I'm just asking you the question.

A. And the question is?

Q. So seamed press felt fabrics were successfully used to make products without the teaching of the '566 patent?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I didn't say that in my declaration, so I don't know. I don't know what they've been doing in that period.

Q. You say in your declaration 75 percent of the press felt fabrics were seamed; correct?

A. Right.

Q. We've established that seamed fabrics were introduced in the 1980s; correct?

A. Correct.

Q. Are you saying that the 75 percent of the fabrics were unsuccessful in creating products?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I didn't say that. Just because

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

they're using them doesn't mean they were successful.

Q. You're saying they were using products and they were not successful --

A. I didn't say that either.

Q. So what is your opinion?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I can't give an opinion on that. I don't have enough information to give an opinion on that. People use things that aren't successful all the time.

Q. 75 percent of the market is unsuccessful all the time?

A. I can't answer that.

Q. Are you aware of any change in the success rate after the '566 patent?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I can't answer that.

Q. The question is a yes or no question. Are you aware of any change in the success rate after the '566 patent?

A. I'm not aware.

Q. Do you have any reason to believe the products made using press felt seam products were

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

unsuccessful prior to the '566 patent?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I have no reason to believe or not believe. I don't have the information.

Q. The fact that 75 percent of the market was using seamed press felt fabrics doesn't give you any indication?

A. Ford Pinto, they sold a lot of Ford Pintos. They were unsuccessful. That doesn't tell me anything.

Q. Let's turn to 1001, which is the '566 patent.

A. Yes.

Q. Did you turn to Column 10 --

A. Yes, sir.

Q. Actually at the bottom of Column 9.

A. Yes. American patents, not always in -- I've seen -- I've seen it in non-American patents, not at the end.

Q. Yes. But you're familiar with this orientation --

A. Yes.

Q. -- with respect to U.S. patents?

A. Yes.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. If we look at Claim 1, you'll see that at the top of page 10, starting at about line 9, it says -- well, I'll start at line 5. It says, A seam --

A. Where are you starting at? Line 5?

Q. Yeah.

A. Hold on. Let me get to that.

Q. Column 10, line 5.

A. On Column 9?

Q. Column 10.

A. Column 10. Okay. Go ahead.

Q. A seam interconnecting said ends to make the clothing endless, such seam being formed by interengaging said seam loops of said two end sides with an insertion of an insertion element.

Do you see that?

A. I do.

Q. Then it continues and says, said seam having a looped density between 64 percent and 90 percent.

Do you see that?

A. I do.

Q. What do you understand loop density to be?

A. I have to go back to the patent to see

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

what their definition is.

Q. Okay.

A. I recall it's on page...

And what was your question again?

Q. What do you understand loop density to mean?

A. Well, I'll read directly from the patent.

Q. Okay.

A. When determining -- this is starting on Column 6, line 12. When determining the seam loop density, firstly the number of seam loops per unit length is ascertained and the fabric having an MD thread density of 60 yarns per 100 millimeters, the seam area has twice the number, 128 yarns per 100 millimeters, as a result of the MD threads of the two ends interengaging.

If the number of threads is multiplied by the diameter, then the seam loop density statement in percent is obtained as a measure of the coverage of the seam area by the MD threads. If in the above example filaments having a loop diameter of .5 are used, then the result is a loop seem density of .64 -- 64 percent.

There's a division line there for that

equation. It should be a multiply line, because the units don't add up. You have meters squared -- millimeters squared on the denominator. The wording is correct. That equation is...

Q. I'm confused a little bit. Why do you think there's millimeters squared on the denominator?

A. Look at it. The first I thing I tell students is look at the dimensional analysis. That says it's 64 divided by 100 millimeters squared.

Q. Where do you see the millimeters squared?

A. Slash .5, that goes to the denominator so...

Q. Oh, I see.

A. It's worded right. It's just it should have put a multiplication sign in there. It's worded right.

Q. Yeah, it's worded right. I see what you're saying. I think they missed some parentheses.

A. Yeah.

Q. They could have done -- it's 128 times 5 on the top?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Right.
Q. So it's 64 millimeters --
A. Yes.
Q. -- that you get and then divided by 100 to get the percent.
A. Right. The first thing I tell students is before you even look at the number check the dimensional situation that you're getting the right dimensions -- type of dimension. And this will be millimeters squared.
But the wording is correct.
Q. Right, right. I agree with you. There's an error in the equation.
A. It's a typo.
Q. And just so the record's clear, I think you misspoke when you were reading the sentence and you said 60 yarns per 100 rather than 64 yarns per 100.
A. I misspoke. It should be 64 yarns per 100 millimeters.
Q. And with the correct dimensional analysis, the 64 percent is a dimensionalist number?
A. Yes.
Q. So looking at this formula, for

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

instance -- again, corrected as you've noted --

A. Yeah.

Q. -- if instead of millimeters there it were inches --

A. Yes.

Q. -- the loop density would still be 64 percent?

A. If it were inches on the top and the bottom, yes.

Q. It's still a dimensionalist number?

A. Still dimensionalist.

Q. If it were meters on top and bottom, it would be dimensionalist number?

A. Yes.

Q. So as long as the numbers on the top and bottom are the same, it's a dimensionalist number?

A. And cross each other out, yes.

Q. Back to Claim 1 at the top of page 10 or Column 10, excuse me, and page 10, it looks like you see that it says again a seam loop having a loop density between 64 percent and 90 percent; correct?

A. Yes.

Q. Will a press fabric with a seam loop

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

density of 64 percent perform the same as a press felt fabric having a loop density of 90 percent?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I'm pretty sure the patent says you have a difference in permeability.

Q. So you think there would be a different in permeability?

A. Yes.

Q. And why would there be a difference -- why would you expect there would be a difference in permeability?

A. I have to look at my declaration, because I discuss that.

Q. Okay.

A. Can you help me where it is in my patent -- I mean in my description? If not, I'm going to have to go through the whole thing. If you could do a word search to tell me where that is, and then I can find it.

Q. Well, I mean, I see, for instance, on page 20 of your declaration there's a seam permeability in the marking problem.

A. Yes.

Q. That's one location.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. But that is citing Yook. Yook is the one who said that; not me. I'm just quoting Yook.
Q. Okay. Look at paragraph maybe 76 is an area to consider.
A. Okay. Paragraph 76 or page 76?
Q. Paragraph 76.
A. Yes. But that's based on Yook, because that's where I got that from, because I had already established that earlier.
Q. This portion of your declaration actually is referring to the patent.
A. Okay. Let's look at that.
Q. It starts on page 30, paragraph 67.
A. On the patent?
Q. In your declaration, I'm sorry.
A. Okay. Start again. Where do you want me to look?
Q. We were looking at paragraph 76, and you indicated you thought that was based on Yook.
A. Right.
Q. And I'm just pointing out that paragraph 67 of your declaration starts a discussion of the '566 patent.
A. Yes, it does. So let me go to that.
(Pause.)

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. And what is your question?

Q. I think the question was I was following up on whether -- I think I believe I asked you whether press felt having a loop density of 64 percent would perform the same as a press felt fabric having a loop density of 90 percent, all other features being equal.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Well, if you read the context of 76, I'm talking about 64 and 90 percent. I'm talking about a high loop density and a low loop density, and that really refers back to Yook. So I'm just saying when I use Yook and then I use the patent, you would have reduced permeability.

Q. Okay. So are you saying reduced permeability in the entire range between 64 percent and 90 percent?

A. No, I'm saying -- once you get past 90 percent, you have reduced permeability. That's what I meant to say. That's the way I understand it.

If you look at the last two lines of that it says, As a result of a high loop density, it has a low permeability and as a result of the optimal LD/MDYD ratio can be closed easily.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. Right. But that whole sentence or that whole -- I guess it's the last sentence it says, A PMC -- about the fifth line from the bottom there: PMC designed with the combination of the specific LD/MDYD ratio and loop density ranges is highly advantageous because it will have a seam which - as a result of the high loop density - has a low permeability and nevertheless - as a result of the optimal LD/MDYD ratio - can be easily closed; correct?

A. Correct. So that's the trade-off.

Q. What's the trade-off?

A. The trade-off is you have a low -- if you have -- if you have a low permeability, you can close it easier.

Q. Okay. And you're viewing the 90 percent as being the range of the -- well, 90 percent loop density as being an area of low permeability?

A. Correct.

Q. And you're viewing loop density of 64 percent as not having low permeability?

A. I don't think I used the word "low." I was just talking about 90 percent. And specifically because it would be difficult for the

seam loops to interengage. It would be too tight.
Q. At 90; correct?
A. At 90.
Q. It would be easier at 64?
A. Yes.
Q. Would the permeability be different having loop density of 64 versus 90 percent?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. Based on my knowledge -- understanding, yes.
Q. What would be the impact of having a loop density less than 64 percent?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. It would be a very high permeability, and you'd have more water go through, and then you'd have marking.
Q. Would the performance of the fabric change if it were at a loop density of 60 percent versus 64 percent?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. I can't tell you exactly. But as you lower the loop density, permeability goes up. And if permeability goes up, you're going to have marking. Correspondingly, if you have too high permeability, you'll have -- I mean --

permeability affects marking. That's the bottom line. So this is here a percentage that is disclosed to have minimal amount of marking.

Q. Which one is disclosed to have a minimal amount of marking?

A. I can't tell you minimal. I can't tell you that.

Q. Well, do you think the entire range of 64 to 90 has a minimal amount of marking?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I don't know what experiments Voith did to make that decision.

Q. Do you know whether the press felt fabric with a loop density of 60 percent would have more marking than -- materially different marking than 64 percent?

A. I don't have a measurement of what marking is. It's a subjective decision. There's no specification like how many marks you have per unit length or things like that.

Q. So you can't quantify the amount of marking that might occur if a press felt fabric had a 60 percent loop density versus a 64 percent loop density?

A. I can't quantify it.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. And I think what you were saying earlier -- and correct me if I'm wrong -- was that --

A. By the way, it should say -- as I tell my students, in the second-to-last sentence in that thing, you don't say low, you say lower. You never -- it's like if I say to you 6 is a high number, as opposed to what?

Q. So you want to change your declaration there to say lower?

A. Yes. I'd like to say lower.

Q. Lower than what, then, since you just made that observation?

A. Let me read the sentence.

If you have a high loop density, you're going to have a lower permeability than if you have a low loop density, lower than 90 percent.

Q. All right. I think I understand that. Again, what I understand you to be testifying here is that there's a trade-off between loop density and permeability; correct?

A. Yes.

Q. And that as you increase loop density you decrease permeability?

A. I agree there.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. But increasing loop density makes the seaming process more difficult?
A. I agree there.
Q. So a lower loop density will increase permeability but make the seaming process easier?
A. Yes. I have to put on my professor's hat. Rarely in engineering is there a perfect solution; there's an optimal solution. This is looking for an optimal solution.
Q. So you're trying to optimize those two competing variables?
A. Yes. That's my professor's hat, engineering professor's hat.
Q. We talk about earlier that press felts often have a batt layer; correct?
A. Often, yes.
Q. Does the choice of loop density for press felt depend on the features of the batt?
A. That's what Rydin shows, yes. That's why they had to have a flap over there in Rydin.
Q. Can you elaborate what you mean?
A. Well, when you -- okay. So we have to look at how you make a press felt with a batt. You make the fabric first. Then you needle punch it. And then you have to -- if you're going to

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

make a seam, you have to remove some of the batt to put the pintle in.

When you remove some of the batt, even if you had an optimal loop density, you would still have a problem there because the loop -- the permeability is also affected by the batt properties.

So that's why Rydin comes along and adds a flap to cover that. Yook saw that also when he put in that intermediate later on top of where the pintle was.

Q. Okay. Would that problem caused by that process that you've just described cause the designer to change the loop density of the base fabric?

A. I can't make that judgment.

Q. Would a press fabric having a loop density of 60 percent be a functional fabric?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. What do you mean by "a functional fabric"?

Q. One that could be used to successfully produce an end product?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. What kind of end product?

Q. Well, what information would you need to know to determine whether a press fabric having a loop density of 60 percent would be a functional fabric?

A. You have to --

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. You have to know what the final paper product is that you're making. Some paper products, marking might not mean anything. If you're not worried about marking, you don't have to worry about that. There's many competing things going on here.

Q. So if the final product was more sensitive to marking issues, the designer would tend toward a higher loop density?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Repeat the question, please.

Q. Sure. If the final end product was sensitive to marking imperfections, would the designer tend toward a higher loop density for the base fabric?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I can't answer that question.

Q. Why not?

A. Because you also have -- in the subsequent drying process it could -- while the paper is still fairly wet, you could iron out that marking problem, which is like calendaring. You have to look at the whole papermaking process as a system.

Q. Okay. My understanding, then, is what you're telling me is you have to look at the whole papermaking process as a system, and you have competing variables that the designers will choose to achieve whatever goal they're hoping to achieve?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. As I indicated before, I've never worked for a PMC company. I mean, I have worked for a PMC company. I have never worked for a papermaking company. So I don't know how they go about choosing what kind of paper felt -- making paper felt they used -- papermaking machine clothing that they used. I worked for papermaking -- paper makers clothing company, but I have never worked for a papermaker.

Q. Okay. Who makes the decision as to loop density?

A. I can't answer that question who makes

the decision.

Q. You don't know?

A. I can't make -- yeah, I don't know.

Q. In any of the work that you've done, have you ever designed a product for commercial manufacture of a paper product?

A. Yes.

Q. In that work did you make a decision as to loop density?

A. No. This was done -- when I made that work, I had a project and we were up in Maine where they have a pilot paper machine. And the papermaker -- the press felt was an endless felt, not a seamed felt. So I could not make that then. This was done in the 1980s. I don't know what year it was.

But I have seen a paper machine. I've done experiments with a paper machine. But it was all done with fabric -- fabrics that were not seamed.

Q. And that was during your time in the 1980s?

A. In the 1980s.

(Pause.)

Q. This is the Lee patent we've discussed,

Exhibit 1005. This is one of the patents that you considered when you were creating your declaration?

A. Yes.

Q. And this gets a little confusing because if you look at pages beyond the first page you'll see that there's actually two page numbers on each page.

A. Yes. It took me a while to understand that.

Q. Yeah. Can we agree to use -- we'll use the bottom number.

A. That's fine for me, as long as we're consistent.

Q. Okay.

So let's turn to page 13.

A. Yes.

Q. And you see at the very first sentence at the top of the page it says, Preferably the yarns of the first array are single circular cross-sectional-shaped monofilaments having a diameter of about 0.3 millimeters to 0.6 millimeters and are preferably arranged to provide a yarn density of from 15 to 40 yarns per inch (5.9 to 15.7 yarns per centimeter).

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Do you see that?

A. I do.

Q. And you see that Lee describes those yarns as circular cross-sectional-shaped monofilaments?

A. I do.

Q. And what do you understand to mean a circular cross-sectional-shaped monofilament? What is a circular cross section?

A. It's round that has that diameter.

Q. So if we cut the yarn in half and looked at it from the end, it would look like a circle?

A. Yes.

Q. So the yarns that Lee are describing here, if we cut those in half, we would see --

A. When you say "cut in half," you mean transversely?

Q. Yes. Thank you.

If you cut the yarn transversely, you would see a circle with a diameter somewhere in the range of 0.3 millimeters to 0.6 millimeters?

A. According to Lee, yes.

Q. Well, why do you say "according to Lee"?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. It's from Lee.

Q. In general if I told you we're going to cut a monofilament yarn transversely and I told you the diameter was a 0.3 millimeter yarn, would you expect that the circular -- strike that.

If I told you that there was a 0.3 millimeter yarn that was cut transversely and you were looking at it at the cut end, would you expect that to appear to be a circle with a 0.3 millimeter diameter?

A. Yes, in the array.

Q. I'm just talking about a yarn.

A. Just yarns in general.

Q. Just yarns in general?

A. Not having to do with anything, monofilament yarn, .3 to .6 and you cut it in half.

Q. Cut it in half transversely?

A. Yes. Let's stipulate that it's always in half.

Q. All right. And, again, that same yarn, if we just looked at it -- if I stretched it out in front of you and we looked at it from the side, would it look -- what would the height be from top to bottom, if it was a 0.3 millimeter diameter?

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ATTORNEY KONSTANTAKOPOULOS: Objection.
A. .3.
Q. 0.3?
A. 0.3.
Q. That would be the height from the top surface of the yarn to the bottom surface of the yarn?
A. Yes.
Q. So the top edge to the bottom edge; correct?
A. Yeah, don't say surface; say edge.
Q. Yeah.
When you were attempting to determine that distance, you would measure perpendicular to the edges?
A. I would, yes.
Q. When you measure perpendicularly to the edges, that will give us -- that would give you the shortest distance between the opposing edges?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. I don't understand the question.
Q. So if -- as we just discussed, if we had just a yarn and were looking at it --
A. A monofilament yarn.
Q. A monofilament yarn, 0.3 millimeter

diameter, looking at it laterally, if we draw -- if we measured from the top edge perpendicularly to the bottom edge would be 0.3 millimeters?

A. If it went through the center of the -- if it went through the center, yes.

Q. Yes. Okay.

What if, through the center, instead of going perpendicular from the top edge to the bottom edge you drew -- you went 45 degree angle.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. That would be a cord. It would be shorter.

Q. It would be shorter or longer?

A. From --

Q. If I start at the top edge and I draw at a 45 degree angle --

A. From the top edge?

Q. -- to the bottom.

A. To the bottom?

Q. To the bottom edge.

A. It wouldn't go to the bottom edge.

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. At a 45 degree angle, it will eventually get to the bottom edge?

A. No, it wouldn't.

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. Why do you say it wouldn't get to the bottom edge?

A. Draw me a picture of what you're talking about.

Q. Sure.

A. I don't understand what you're talking about.

Q. Right. I'll make a picture here.

So I've drawn a top edge and a bottom edge. Do you see that?

A. Yes.

Q. I've indicated on the left side 0 -- top edge to bottom edge perpendicular 0.3 millimeters; correct?

A. Yes. Oh, I see what you're doing.

Q. Now I've drawn -- started at the top edge and, instead of going perpendicular to the top edge, I'm at a 45 degree angle to the bottom edge; correct?

A. So you're going on the surface of --

Q. No, in the middle, just like --

A. Oh, in the middle?

Q. Just like this dimension.

A. Yeah.

Q. I'm drawing -- instead of going perpendicular to the edges, I'm doing it at a 45 degree angle through the edges but still through the middle of the fiber. Is that clear?

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. Is that clear?

A. That's clear.

Q. Will the distance on the 45 degree line be greater, the same, or less than the 0.3 millimeters?

A. The way that picture shows me, it would be greater.

Q. And it will always be greater if the measurement that we're making is not perpendicular to the edges?

A. And it's going through the center of the material?

Q. Yes.

A. Yes.

Guess what time it is?

Q. Okay. We can take that break, and I think we've got lunch.

ATTORNEY KONSTANTAKOPOULOS: Lunch is here.

(Time noted: 11:53 a.m.)

A F T E R N O O N S E S S I O N

(Time noted: 12:27 p.m.)

D A V I D S. B R O O K S T E I N ,

resumed as a witness, having been previously sworn by the notary public, was examined and testified further as follows:

EXAMINATION CONTINUED BY

ATTORNEY KANE:

Q. So first thing I want to do is mark my wonderful artistry here.

A. As an exhibit.

Q. Yeah. Before we took our break, I had shown you a drawing of a fiber when we looked at both sort of measuring through the center on the perpendicular versus through the center on a degree angle. Do you recall that?

A. Yes.

Q. For the record here, just to make it complete, I'm going to mark that as Albany Exhibit 1051.

(Albany Exhibit 1051, drawing of a fiber, marked for identification.)

Q. Before we took our break, Doctor, we were looking at the Lee patent, which is 1005.

A. Right, which is not marked as -- oh,

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

yes, it is. Sorry.

Q. I think we were on page 13.

A. Correct.

Q. At the top there we were talking about the 0.3 millimeter to 0.6 millimeter monofilament yarns; correct?

A. Yes.

Q. Does Lee's range of 0.3 millimeter to 0.6 millimeter consistent with your understanding of the yarn diameters used in press felt fabrics?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I've never looked -- I've never measured the diameter of press felt. Usually what I've measured is the denier, which is the linear density, the grams per 9,000 meters. You can convert that to that, but I usually refer to -- when I used to work in that area I would say I want a 300 denier yarn, I want a 200 denier yarn. We usually don't talk about it this way.

Q. In your experience you did not talk about it in this way in terms of diameters in millimeters or inches?

A. No. I talked about it in terms of linear density.

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Q. Do you have any reason to believe that 0.3 to 0.6 is not a typical yarn size used in press felt fabrics?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I have no reason to believe it is or it isn't. Like I said, unless I converted it to denier, I can't really make that judgment.

Q. I'm going to hand you what's been marked as Albany 1016.

Is this one of the patents that you reviewed for your declaration?

A. Not in any extensive way. Not in an extensive way, no.

Q. It is on your appendix; correct?

A. It is on my appendix but not, as I said, in an extensive manner.

Q. You just see at the front page here in the abstract the first sentence says, a press felt formed of two stacked layers of a woven single later base fabric, and it continues on.

Do you see that?

A. Yes.

Q. And if we then turn, if you would, Column 6.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Column 6?
Q. Yes.
A. Hold on. 6. Give me a second here to get to that. Yes, sir.
Q. You see if you start at line 8 or so --
A. Yes.
Q. -- it says, In one embodiment for a single layer woven fabric for use as a base fabric in a full-width flat woven or multiaxial press felt, the fabric construction exhibits low to zero interference patterns by virtue of the following features.
A. I see that.
Q. And then if we look down at line 23, which is element F, you see there it says the MD monofilaments are 0.4 millimeters in diameter?
A. Yes, sir.
Q. So would that be an example of a single layer woven fabric with a 0.4 millimeter diameter?
A. That's what's disclosed, yes.
Q. And that's consistent with the 0.3 to 0.6 millimeter range disclosed in Lee?
A. It is.
ATTORNEY KONSTANTAKOPOULOS: Objection.
Q. I hand you another one. This is Albany

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1024.

Is this another reference that you reviewed as part of your work in the case in this matter?

A. The same answer I did for Xu. Barely.

Q. And, again, this is U.S. patent 4,251,588, and the abstract describes it as to papermaking belts of hollow monofilaments of polyester, polyamide, or polycarbonamide?

A. Where are you reading from?

Q. From the abstract on the front page.

A. Polycarbon -- I have never heard of polycarbonamide. Polyester and polyamide I've heard of. I have never heard of the third one.

Q. Okay. But that's what it says?

A. Yes, that's what it says.

Q. And the polyester and the polyamide you're familiar with, would those fall in the category of the nylons that you were talking about earlier?

A. Polyamide does, not polyester.

Q. Let's turn to Column 1, line 32.

A. Yes.

Q. And this is in a section called summary of the invention. It says specifically the

instant invention provides in a woven heat set papermaking belt of machine and transverse-direction thermoplastic filaments, the improvement wherein the filaments in at least one of the machine and transverse directions are hollow monofilaments of polyester, polyamide, or polycarbonamide having a diameter of about 6 to 32 mils (0.15 - 0.81 millimeters).

Do you see that?

A. Yes, I do.

Q. So that's describing the use of -- that's describing -- strike that. Start over.

That's describing papermaking machine belts using fibers having a diameter of 0.15 to 0.81 millimeters; correct?

A. Hollow monofilaments, yes.

Q. And does that overlap the range of Lee of 0.3 to 0.6 millimeters?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Not the 0.15, no.

Q. Well, the range of 0.15 to 0.81 overlaps the range of 0.3 to 0.6.

A. Oh, I see what you're saying. Yes, sir. Yes.

Q. It overlaps?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. It overlaps.
Q. Okay. Thank you.
So given Exhibits 1024 and 1016, do you have any reason to believe that the 0.3 millimeter to 0.6 millimeter range given in Lee is not a typical range for use in papermaking belts?
ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.
A. I have no reason to believe they're not used for arrays which are not woven.
Q. Okay. But just generally you agree that the disclosure of Lee and these other references is that monofilaments having a diameter from about 0.3 millimeters to about 0.6 millimeter are used in at least some press fabric belts?
A. That are woven, yes.
Q. Okay.
A. Excuse me, that are not woven -- they're arrays. They are not woven. I misspoke. They're arrays. They're not woven.
Q. Well, Xu was woven; right?
A. Xu is woven.
Q. And it's .4 millimeters; right?
A. Yes.
Q. .4 millimeters is between .3 and .6

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

millimeters; right?
A. In a woven structure, yes.
Q. Yes.
A. Yes.
Q. So there's an example of a .4 millimeter woven structure?
A. Yes, of a woven structure.
Q. Okay. So are you still saying that you do not have any reason to believe that a 0.3 to 0.6 millimeter can be used in a woven structure?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. If that's what I said, I misspoke. What I meant is in a nonwoven structure. These are for woven structures. You're comparing apples to oranges here.
Q. Okay. But you agree with me 0.4 millimeters can be used in a woven structure?
A. Yes, yes.
Q. And 0.4 millimeters is between 0.3 and 0.6?
A. Yes.
Q. And Albany 1024 described woven structures between 0.15 and 0.81 millimeters; correct?
A. Correct.

Q. And that range is applicable to a woven structure?
A. Correct.
Q. So at least the range in Lee is encompassed within the ranges disclosed in 1024 and 1016?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. Correct.
Q. I'm handing you Exhibit 2009. Have you seen this exhibit before?
A. Yes.
Q. Did you create this exhibit?
A. No.
Q. How did you come to see the exhibit?
A. It was given to the experts -- the petitioner's expert at his deposition, which I attended. I didn't see the red part; I saw the other parts.
Q. And then after that deposition did counsel provide you a copy of this?
A. Yes. They gave a copy there.
Q. Okay. Do you recognize the images on page 1 of the exhibit?
A. Yes, except -- yes, I do recognize the pictures, yes.

Q. And what do you recognize these pictures to be?
A. One picture is a picture in the cross-machine direction, and the other is in the machine direction.
Q. And these come from Adanur Figure 3.15?
A. They come from what is called Figure 3.15, yes.
Q. Right. And down at the bottom below that it says Adanur Figure 3.15. Do you see that?
A. Yes.
Q. So do you have any reason to believe it's not from the Adanur reference?
A. No, except for the red.
Q. Except for the red. Understood.
Have you ever seen in your work images like this of press felt belts?
A. No.
Q. In your work did you ever work with digital microscopy?
A. Yes.
Q. What was your involvement with digital microscopy?
A. Taking pictures of cross sections of fabrics and things like that, that I took of

fabrics, not of pictures.

Q. Understood. I'm trying to understand -- how about did you ever work with scanning electron microscopes?

A. Yes.

Q. And you took images using scanning electron microscopes?

A. In that particular case I sat next to the guy, the technician, that ran the scanning electron microscope.

Q. Okay. But you saw the images created?

A. Yes.

Q. Looking at these images, do you have any understanding as to how they were created?

A. They were taken from the Adanur paper.

Q. Okay. But how did Adanur create the images? Were they scanning electron microscope? digital microscopy?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I can't tell. He doesn't say how they were taken. I can't tell.

Q. Did it look similar to the scanning electron microscope images you have seen in the past?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I can't answer that question.

Q. Well, I think you can. Again, it's a yes or no. Does it look like what you've seen or not?

A. I haven't taken pictures of press felts.

Q. What have you taken pictures of?

A. I have an IPR that -- and I can't tell you too much about it -- that involves sneakers and fabrics. I have taken SEMs of cross sections of sneaker fabrics.

Q. I see. You didn't take any -- in your time in industry or in teaching, you were not making images of paper machine clothing?

A. No, not of paper machine clothing.

Q. For the images that you have made with digital microscopy or SEM, do these appear to be consistent with those?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. You have to define consistent.

Q. Well, do you look at it and say this was not made with an SEM?

A. It depends on the power of the digital microscope. They're very powerful today. I can't

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

tell. It could have been with a digital microscope. It could have been done with an SEM. They have these microscopes called confocal microscopes, which has a whole -- we have those at Temple, and I have taken pictures with those.

Q. Is it your understanding this was made, though, with some sort of a digital imaging system like a digital microscope or an SEM?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It was taken from one of the two, but I can't tell which one.

Q. Then if we look at the second page of the exhibit, what do you see there?

A. I see some very blurry pictures.

Q. Okay. What do you understand it to be?

A. I understand it to be, if I recall -- I don't remember exactly during the deposition, so -- I don't like to say I'm assuming. They're pictures of a cross section. I'll just leave it at that.

Q. I'm just looking for it in -- I believe they're in your declaration. They're not in the declaration.

So you did not create this image, though, on page 22

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. I did not create that image.
Q. Do you know what the magnification of the image on page 2 is?
A. No.
Q. Do you know who prepared the image on page 2?
A. Someone from the counsel's office.
Q. And you didn't discuss this in your declaration; correct?
A. No.
Q. Is there any reason why you didn't discuss this in your declaration?
ATTORNEY KONSTANTAKOPOULOS: I just want to caution the witness do not get into privileged conversation with counsel.
A. I'm not going to answer that question.
Q. Did you rely on this image in any way in forming your opinions in this matter?
A. No.
(Pause.)
A. Can I backtrack? I don't recall. I'd like to look at my declaration. I don't recall whether they're in there or not.
Q. We've checked. They're not. They're not in your declaration.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Okay.
Q. I'll represent that to you.
A. If you say so, I'll agree.
Q. Let's turn to -- back to the Lee reference.
A. Okay. I've got Lee here. Yes, sir.
Q. So let's turn to Figure 16, page 67. And this describes a press fabric structure; correct?
A. It does.
Q. And you see there's an element 300?
A. I do.
Q. And that's referred to as a tube element?
A. I'd have to look and see what it says in the patent.
Q. If we look at -- let me help you with that, if I can. Go to page 31.
A. I also see it on page 34. It says a continuous tube.
Q. Correct, yeah. 31 it says, As shown in Figure 16, continuous tube 300.
A. It says it, yes.
Q. I think it says it in many places.
A. Same thing.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Figure 300 is referred to as continuous tube; correct?
A. Correct.
ATTORNEY KONSTANTAKOPOULOS: Objection. Element 300.
ATTORNEY KANE: Yes, my question was wrong.
Q. The continuous tube is element 300; correct?
A. Is that a question? Yes, yes.
Q. All right. And then there's a second fabric structure inserted into the continuous tube; correct?
A. Yeah, that's the invention, yes.
Q. And that's element 200?
A. And that's the invention.
Q. And the MD direction is indicated by the arrow above the structure that points from left to right; correct?
A. Correct.
Q. And the CD direction, then, would run into the page perpendicular to the MD direction?
A. Correct.
Q. And the tube 300 has seam loops which are identified as 340A and B?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Correct.
Q. And the seam loops are formed on the MD yarns?
A. Formed from the MD yarns, correct.
Q. And the second fabric structure 200 also includes yarns which are identified here as 210; correct?
A. Yes.
Q. So what is your understanding of the continuous tube -- the structure of Lee's continuous tube 300?
A. That it is a tube that's going to be eventually a multiaxial, spiral-wound paper machine clothing.
Q. And the base fabric is composed of yarn arrays; correct?
A. Arrays, yes.
Q. And an array is a nonwoven fabric in this context?
A. There's a definition of one array on I think it's page 19 of the... Maybe it's not 19. I have to find that. You have to give me a few minutes to find it.
Q. I think maybe it starts at the third line down on the top of page 19 -- page 20, excuse

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

me.

A. Page 20. Third line? Page 20?

Q. Right. The bottom number, page 20.

A. Oh, bottom number, right, right, right.

Q. At the far right it says, The term "array" --

A. Right, I see it.

Q. -- refers to a --

A. I'll read the sentence. The term "array" refers to a generally planar group of mutually parallel yarns which are not interwoven or interconnected with one another by interlacing.

Q. So the question I had asked is an array as defined there is not -- is a nonwoven fabric; correct?

A. It's a fabric that has not been woven.

Q. Can the continuous tube in Lee's disclosure be a woven fabric?

A. They show -- Lee shows a woven fabric at the end, continuous tube, Figure 24.

Q. So in Figure 24 the continuous tube is a woven fabric?

A. That's what it looks like to me, yes.

Q. Then there's an insert put into that woven fabric?

A. Yes, sir.
Q. And if we turn to page 29 of Lee.
A. Page 29. Yes, sir.
Q. You can see there it says -- about halfway down the page in the very middle there's a sentence that starts, as shown in the construction presented in Figure 9...
A. Yes.
Q. Do you see that?
A. Yeah.
Q. Let me read the whole sentence. As shown in the construction presented in Figure 9 in a particularly preferred arrangement of the second array 215 for use with the preferred arrangement of the first array 115 the yarn density is 24 yarns per inch (9.45 yarns per centimeter).
Do you see that?
A. Yes, I do.
Q. And then he continues, Alternatively, the yarns of the second array may be provided at -- may be provided at a density equal to but not less than the yarn density of the first array. Let me start over again.
Alternatively the yarns 210 of the second array 215 may be provided at a density

equal to but not less than the yarn density of the first array 115, i.e., 15 to 40 yarns per inch (5.9 to 15.7 partners per centimeter).

Do you see that?

A. I do.

Q. So that sentence is indicating that the yarn density of the first array can be less than 24 yarns per inch?

A. Of the first array?

Q. Yeah.

A. They give a range of 21 to 30 yarns per inch.

Q. Not in the sentence I read. It said, Alternatively the yarns 210 of the second array may be provided in density equal to but not less than the yarn density of the first array 115, i.e., 15 to 40 yarns per inch.

Do you see that?

A. I see that.

Q. You understand the 15 to 40 yarns per inch to refer to the first array 115?

A. First array is 21 to 30. Wait a second, yarn density of the second array. I don't see the part of the first array here in this paragraph.

I don't see where there's a description of the first array in this, unless I'm missing something.

Q. If we look at the sentence you were just looking at it says, The yarn density of the second array --

A. Wait. Hold on. Yarn density of the -- okay. Yeah.

Q. -- 215 will be preferably higher than the array of the first -- higher than in the first array 115 --

A. I see that.

Q. -- and will be preferably in the range of 21 to 30 yarns per inch.

A. So that's the yarn density of the second array.

Q. Correct. We agree that that's the yarn density of the second array?

A. That's what it says.

Q. That's the preferred range of the yarn density of the second array?

A. Yeah.

Q. If we look at the sentence I was looking at earlier it says, The yarn -- I'm going to start in the middle of the sentence: the yarn

density of the first array, i.e., 15 to 40 yarns per inch.

A. Yes.

Q. So now do you understand that it's disclosing that the yarn density of the first array is 15 to 40 yarns per inch?

A. I do.

Q. And you understand the yarn density of the first array is the yarn density of the first fabric structure and is referring to the MD yarns in the continuous tube 300?

A. Of the array of the yarns, yes.

Q. And you also, then, agree that the yarn density of the MD yarns in the continuous tube 300 can be less than 24 yarns per inch?

A. They can be less than 24 yarns per inch, yes.

Q. And again looking at the sentence that starts off "alternatively," you see it says, Yarns 210 of the second array 215 may be provided at a density equal to but not less than the yarn density of the first array 115, i.e., 15 to 40 yarns per inch.

A. I see that.

Q. So that means that the second array

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

cannot be less than -- excuse me. The yarn density of the second array cannot be less than the yarn density of the first array?

A. You say can.

Q. Cannot.

A. Cannot.

Q. Right. So the yarn density of the second array cannot be less than the yarn density of the first array?

A. I have to read this. Repeat the question, please.

Q. The yarn density of the second array --

A. Can I write on this so it helps me?

Q. Sure.

A. Go ahead.

Q. The yarn density of the second array --

A. You're reading that from where?

Q. The "alternatively" language again. I'm not reading it.

A. Alternatively, the yarns 210 of the second array.

Q. Yeah. Why don't you work through that sentence yourself.

(Pause.)

A. Okay. And the question is?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. That question says the yarn density of the second array cannot -- can be equal to but not less than the yarn density of the first array.

A. That's what that sentence says, yes.

Q. Okay. You'd agree, then, that sentence says that the yarn density of the first and the second fabric structures can be the same?

A. They can be the same, yes.

Q. And you'd agree that 24 yarns per inch falls within the range of 15 to 40 yarns per inch?

A. 24 falls between the range of 15 to 40, yes.

Q. And 24 yarns per inch is a value that is then possible for the yarn density for Lee's first fabric?

A. His first nonwoven fabric, yes.

Q. Let's look at paragraph 209.

A. Of?

Q. Your declaration.

A. Yes.

(Pause.)

Q. Actually, let's go back to Lee. I'm sorry to shift gears on you there.

If you go to page 29 of Lee. That's where we are.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yes.

Q. If we continue the next sentence it says, Also, as shown, the size or diameter of the yarns 210 in the second array 215 is smaller than the yarns 110 in the first array 115.

A. I see that.

Q. And then it continues, Monofilaments having a circular cross-sectional shape and diameter of about 0.4 millimeters are presently preferred for this purpose when used in combination with larger yarns 110 in the first fabric structure 100.

Do you see that?

A. I see that, but it doesn't say what -- I'm trying to see where it says what purpose this is about. It says "this purpose." Which purpose are they talking about?

Q. Can you determine what the purpose is they're referring to there?

A. I'm not going to speculate. I want to see what the definition is. When they say "this purpose," they have to say what purpose this is about.

Q. You don't -- okay. For whatever purpose it might be, this sentence is describing

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

that the circular cross shape in diameter of about 0.4 millimeters are presently preferred in the second array when used in combination with larger yarns 110 in the first fabric structure 100.

A. Yes. But it has the word "purpose" in there. You have to tell me what the purpose is, or Lee has to tell us what the purpose he's talking about. Is he talking about strength? Is he talking about moisture? permeability? What is he talking about?

Q. Well, whatever he's talking about, he's saying -- isn't it true that he's saying that 0.4 millimeters can be used in combination with larger yarns in the first fabric structure?

A. You're not reading the whole sentence. You're taking out the word "this purpose."

Q. I understand.

A. So when you sake the word out "this purpose," I don't see what the purpose he's talking about.

Q. How would the purpose change whether or not you could use a larger yarn in the first array?

A. Because in the first array you have to have -- that's the one that's bearing the strength

of the -- bearing the strength of the belt, and the strength is proportional to the diameter squared. Every textile engineer would know that.

So you can't be throwing things like that around unless you describe what this purpose is. If the purpose is strength, you can't do that. Be you if you don't say what the purpose is, what's the whole point of that sentence? There is no point to that sentence. The sentence doesn't mean anything.

Q. It doesn't mean that you can use a larger fiber in the first array than the 0.4 millimeters?

A. Not unless you tell me what the purpose is, not unless Lee tells me what the purpose is.

Q. Let's assume the purpose is strength.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I'm not going to assume --

Q. Then does it tell you you can use a larger fiber in the first array?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I'm not going to -- I'm not going to opine on that.

Q. I'm not asking you -- it seems to me -- I'm not trying to be difficult but --

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. It might be permeability.
Q. And, again, I don't care what the purpose is.
A. I do.
Q. Why? If I say to you you can use a larger fiber in structure A versus structure B, why do you need to know the purpose?
A. Then why did he put the word "the purpose" in there?
Q. I don't know. I didn't write it.
A. I know. And I didn't write it either. But I can read it, and I see it has the word "this purpose." So unless you tell me what the purpose is, it doesn't mean anything.
Q. So if Lee is telling you you can use a larger fiber in structure A for this purpose than in structure B, you don't know whether you can use a larger fiber in structure A?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. Unless I know what the purpose is. You're asking me, and I'm answering you. Unless I know what the purpose is, I can't answer that question.
Q. Okay. If I tell you you can use a larger fiber in structure A -- well, let me think

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

about that.

A. Okay.

Q. Let's again turn to page 13.

A. Of?

Q. Of Lee, please. Again go back to that first sentence: Preferably the yarns of the first array are single circular cross-section-shaped monofilaments having a diameter of 0.36 millimeters to 0.6 millimeters and are preferably arranged to a yarn density of 15 to 40 yarns per inch.

Do you see that?

A. Yes.

Q. And if we look at the top of page 12 -- or bottom of page 12, I'm sorry.

A. Yep.

Q. He says there: Preferably the polymers comprising the yarns of the first and the second arrays are polyamides; correct?

A. Correct.

Q. More preferably, the yarns of the first array are comprised of a polyamide 6 (PA-6) while the yarns of the second array are comprised of polyamide 6-10 (PA-6/10).

Do you see that?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yes.

Q. And then it continues on the top of page 13 where it describes preferably the yarns are -- of the first array are circular cross-sectional-shaped monofilaments having a diameter of about 0.3 to about 0.6 millimeters and are preferably arranged to provide a yarn density of from 15 to 40 yarns per inch.

Do you see that?

A. I do. But they're different -- they're different materials.

Q. What are different materials?

A. It says, if we go back to page 12, the yarns of the first array are comprised of polyamide 6 while the yarns of the second array are comprised of polyamide 6/10. That's different materials.

Q. Well, actually what it says is the first sentence. It says, Polymers comprising the yarns of the first and the second arrays are polyamides.

A. That is a general term.

Q. Correct. It says more preferably.

A. Right.

Q. It doesn't mean it's required; right?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

It just means it's preferred. More preferably doesn't mean it's required that the first array be PA 6; right?

A. It does to me.

Q. So you believe that that sentence limits the material used in the first array to polyamide 6?

A. It does to me.

Q. The first sentence says, The polymers comprising the yarns of the first and second arrays are polyamides?

A. That's a general term.

Q. Right. It is a general term. It includes lots of polyamides --

A. Right. The second one distinguishes it. It begins to break down.

Q. -- as a preferred embodiment. You understand the concept of a preferred embodiment?

A. Yeah.

Q. That doesn't mean that's the only way to practice the invention; correct?

A. Like I said earlier, I'm not an attorney. I don't know if that's what that means or not.

Q. Let's look at, for example, page 20.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

A. Okay.

Q. You can see at the first full paragraph it says -- it's talking about the yarns 210 of the second array 215. Do you see? And it says -- let me just read the whole sentence. The yarns 210 of the second array 215 used in the yarn assembly 200 are preferably also monofilaments but could be cabled or other multicomponent yarns.

Do you see that?

A. That's correct.

Q. Even though it says preferably, it didn't limit it to monofilaments, did it?

A. Not in this sentence, no.

Q. Or combinations of monofilaments cabled and/or multifilament yarns.

A. Yes.

Q. And are preferably comprised of a polyamide polymer; right? For this present application, yarns comprised of polyamide 6/10 (PA 6/10 or nylon 6/10) are presently preferred due to their dimensional stability when exposed to varying moisture levels, although other types of polyamide yarns may prove suitable.

Do you see that?

A. I do.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. If we go back, then, and look at -- and this is talking about the yarns in the second array; correct?

A. In the what?

Q. Second array?

A. Second array?

Q. Yeah, if we look at the first sentence, second array, top of the sentence.

A. Yeah.

Q. Go back and look at page 12 at the bottom there.

A. Yep.

Q. We're looking at preferably --

A. Wait. Yes.

Q. The polymers comprising the yarns of the first array are comprised of a polyamide 6 (PA-6) while the yarns of the second array are comprised of polyamide 6-10 (PA-6/10).

Do you see that?

A. Yes.

Q. So given that disclosure on page 29 where it said other polyamides may be suitable, do you now agree that this does not limit the yarns in the second array to polyamide 6/10?

ATTORNEY KONSTANTAKOPOULOS: Objection.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. As I sit here, I can't answer that question.

Q. Okay. But you will agree, if you go to the top of page 13, that the first array is described as having monofilaments having a diameter of 0.3 to 0.66 millimeters?

A. Yes.

Q. And a range to provide a yarn density of from 15 to 40 yarns per inch?

A. That's what it says.

Q. And then the next paragraph talks about the --

A. You didn't read the next sentence of that.

Q. Okay. More preferably the diameter of the yarns in the first array is about 0.5; correct?

A. That's what that sentence says.

Q. Does that mean you can't use anything other than 0.5?

A. No, you could use anything within that range.

Q. Okay. Even though it says preferably?

A. Preferably, yes.

Q. The next sentence, next paragraph,

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

starts off: the yarns of the generally planar yarn assembly. Do you see that?

A. I do.

Q. And you understand the planar assembly to be the insert?

A. It's described that way, yes, the nonwoven.

Q. And it's sometimes referred to as the second array? The yarns in the general planar assembly are referred to as the second array?

A. Generally planar assembly is always used for the second array.

Q. When it says the yarns of the generally planar assembly are single circular cross-shaped monofilaments having a diameter range from about 0.3 millimeters to 0.6 millimeters and a preferably arranged to provide a yarn density from 15 to 40 yarns per inch.

Do you see that?

A. Yep.

Q. So it's the same ranges for both the first array and the second array?

A. That's what that sentence says.

Q. And 0.4 millimeters is a possible value for the yarn diameter of the yarns used in the

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

first array?

A. Repeat that, please.

Q. 0.4 millimeters is a possible value for yarn diameters of first array?

A. It's within the range of .3 to .6 millimeters, yes.

Q. So it's possible?

A. It's possible.

Q. So a yarn with a diameter of 0.4 millimeters is possible for use in Lee's first fabric structure?

A. Is there a question there or --

Q. I'm asking, yes. Do you agree with that?

A. Ask me that as a question.

Q. Do you agree a yarn with a diameter of 0.4 millimeters is possible for use in Lee's first fabric structure?

A. Yes.

Q. And do you agree that a yarn with a diameter of 0.4 millimeters is possible for use in Lee's second fabric structure?

A. Yes.

Q. And you would agree a yarn with a diameter of 0.3 millimeters is possible for use in

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Lee's second fabric structure?

A. It's right at the lower limit, yes.

Q. Then if we turn to -- well, it's been an hour. Do you want to take a break?

A. Yeah. Biological break wouldn't hurt.

(Recess taken from 1:28 to 1:42.)

Q. So before the break we had been discussing the yarn density values for the fabrics disclosed in Lee and the yarn diameter values for the fabrics disclosed in Lee. Do you remember that?

A. I do.

Q. And you also said that Lee includes embodiments that are woven fabrics as well as nonwoven fabrics; correct?

A. I don't think I said that, but you can ask me that.

Q. Okay. Does Lee include embodiments that are both woven and nonwoven?

A. Yes.

Q. Let's look at paragraph 209 of your declaration.

A. Okay. Go ahead.

Q. And I guess if you look at that paragraph it says, Because of these differences,

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

the same yarn diameter or linear density would not perform the same function --

A. Where are you reading? Okay. That's 209. Yes.

Q. Paragraph 209 -- would not perform the same function or even be physically suitable across the two structures.

Do you see that?

A. I do.

Q. What did you mean when you said that?

A. Okay. Remember, I'm a textile engineer. When you have an array and it's nonwoven, okay, an array that's nonwoven -- let's say you have an array and you have some yarns going this way (indicating) and some yarns going that way (indicating), and you know the strength of this yarn (indicating). Okay. Then the strength of all four yarns is four times the strength of this yarn (indicating). Okay?

But when you weave it, okay, when you weave something, because you have elements of that yarn now not -- they're off axis, these -- in this case I'll use three yarns -- yeah, three yarns. No, I'll use four yarns.

If you have the strength of this yarn,

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

not in -- just the strength of this yarn and the strength of this yarn and the strength of this yarn and the strength of this yarn (indicating), the strength of that fabric of the four yarns is going to be less than the strength when it's that way (indicating).

So you can't -- it's mixing apples and oranges when you do that. You can't do that. You can do it, but they're not going to be the same thing. You're talking about two different textile-engineered structures here.

Q. You're saying that the yarn diameter of 0.3 millimeters to 0.6 millimeters was not physically suitable for a woven fabric?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I didn't say it wasn't suitable. I said it would act differently for a woven fabric than for a nonwoven fabric. That's all I'm saying.

Q. Actually it says -- in paragraph 209 it says, or even be physically suitable.

A. That's basically what I mean. When I say suitable, what I mean is that it's different. That's what I guess I should have said, that it's different.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. You're not saying you couldn't use a yarn of 0.3 to 0.6 in a woven fabric?

A. Oh, no, you could use it, but you wouldn't get the same properties you would if it was planar assemblies. Planar assemblies are nonwoven. They're not interlaced. That's what I'm meaning there. Maybe I didn't word it the way --

Q. Okay.

A. But do you understand what I'm saying now?

Q. I understand what you're saying now, yes.

Would you also say, though -- the same -- let's read it again. Because of these differences -- and when you say "differences" there, I think you're talking about woven versus nonwoven?

A. Correct.

Q. -- the same yarn diameter or linear density values would not perform the same function.

A. Right.

Q. Explain that to me.

A. The function would be the strength,

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

because you're talking about in the machine direction strength plays an important role -- plays the role in seam strength. In the cross direction it has no effect on the seam strength. And the invention here is to have a tube and something inserted in it in the cross-machine direction.

So if you start screwing -- excuse me. If you start fooling around with the way you're making that MD structure, you're changing things. So even if you had the same dimensions, it would change things.

Q. Okay. It would change it qualitatively.

A. No, quantitatively.

Q. Well, all right. Do the machine-direction yarns in a woven fabric perform the same function as the machine-direction yarns in a nonwoven fabric --

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

Q. -- in connection with the seams?

A. What -- are you talk -- no. Because the seam ultimately derives its strength from the part that's not the seam. The seam isn't by

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

itself; the seam is connected to the yarns that are in the tube. So if the yarns in the tube are now weaker, then that means the seam has to be weaker.

Q. Okay. Let me come at it this way: In the nonwoven fabric, where does the strength of the seam come from?

A. In a nonwoven fabric?

Q. Yes.

A. In which direction?

Q. The machine direction. Well, I'm asking.

A. Okay. In a nonwoven fabric in the machine direction, it comes from the addition of all the strengths of the individual yarns. Okay? But once it's woven, it's lower than that.

Q. Okay. But where does the strength come from in the woven fabric?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It still comes from the yarn, but there's going to be a geometric restraint on how much strength can be realized.

Q. Okay. So is it true, then, that the strength in the machine direction comes from the machine direction yarns in both woven and nonwoven

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

fabrics?

A. Oh, it does come from it. Even though they're different, it does come from it.

Q. Wouldn't that be, then, the machine-direction yarns performing the same function in both fabrics?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. No, because I define function as the strength. That's the function you're talking about, strength. One of the things we're trying to do on all these paper machine clothings is to have sufficient seam strength. It was said in many places that they're trying to increase the seam strength.

Q. Okay. But I guess we're just -- I just want to make sure. How do you measure strength in the machine direction? What is the units that you would use typically?

A. There's a lot of ways you can do it. You can do it by -- there's ASTM standards on measuring strength for fabrics. I don't recall exactly which one it is, but it measures usually the strength per unit width.

Whereas normally in mechanics you measure the strength per unit cross-sectional

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

area, here you measure -- for fabric you measure the strength per unit width.

Q. And what kind of units would you use for strength per width?

A. It could be rams force [phonetic], it could be pounds, it could be anything that's a force; and then the width is the width of the fabric.

Q. So I'm just trying to understand. So are you saying that -- in just a hypothetical, we have a woven fabric where the strength is 50 pounds per linear foot.

A. Fine.

Q. If you took the same yarns diameter and made it into a nonwoven fabric, the strength in the machine direction might be a hundred pounds per linear foot?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It wouldn't be that high -- I don't think it would be doubled, but it would definitely be more. It would definitely be more.

Q. Okay.

A. By the way, it's also a function of what the weave pattern is. You know, talking about the weave pattern, we haven't even talked

about weave patterns yet.

Q. Okay. Again, I'm just trying to get back to this function thing. As we said, in both the woven and the nonwoven, the strength per unit of width is derived from the machine-direction threads -- machine-direction yarns?

A. Yes.

Q. And there could be a difference in the strength measured depending upon the weaving pattern?

A. Correct, everything from nonwoven up to, let's say, something that was maybe 10 by 1 twill or something where you had long floats. It becomes a function of what the weave pattern is. But the very fact that it's interlaced starts to decrease the strength. I mean, that's textile engineering 101.

Q. Okay. But you're not saying that you need a nonwoven fabric in order to have a suitable seam; correct?

A. It depends on what kind of loads are on the belt. What are the loads on the belt? I'm just telling you it's going to be less on a woven structure. I'm not going to give you discrete numbers. I'm just going to tell you it's less for

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

a woven than it is for a nonwoven.

Q. Okay. But you agree with me, though, that woven fabrics could be designed to have a suitable seam strength to function as a press felt?

A. Well, they are used as a press felt. Yes, they are. I'm only comparing nonwoven against woven.

Q. Right. I guess I was confused when you say not the same function.

A. And I'm describing what I meant by function, function being strength.

Q. But we just described that both woven and nonwoven get their strength from the MD yarns.

A. Partially. Partially.

Q. Okay. All right. Let's look at your sentence says. It says, The same yarn diameter or same linear density would not perform the same function.

A. Right. And I'm telling you what the function is.

Q. Are you saying that the same yarn diameter in a nonwoven fabric will have greater strength than that yarn diameter in a woven fabric?

A. I'm telling you the fabric will, yes. The fabric will -- in a nonwoven fabric will have a greater strength than the woven fabric.

Q. Okay. So since -- you're defining the function as the ultimate strength of the fabric?

A. In this particular case, yes. The function might be permeability, but we're not talking about that here. We're talking about strength.

Q. Okay. So unless it's the same strength, it's not the same function, as you're using it here?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Correct.

Q. So then help me. You say or even be physically suitable.

A. Well, that -- that goes to once you know you have a lower strength it might not be suitable because you don't know what the strength requirement is in the machine -- in the paper machine.

Q. Okay.

A. In a paper machine the dryer felts are under very high loading, tensile loading, and compressive loading, transverse compressive

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

loading.

Q. All right. So it's not physically suitable in the sense that it might fail under the loads exerted in the machine?

A. All of these patents all talk always about how long a felt will last, because it costs a lot of money to change a felt. You're always trying to increase the time.

Q. You lost me there. I was...

A. Okay. Press felts, like any other mechanical device, don't last for an infinite amount of time. Okay?

Q. Okay.

A. So if you're operating at a higher load than not as high a load, intuitively it's going to fail earlier than it might fail if it was at a lower load. That's all I'm saying. That's all I'm saying.

Q. And I guess the reciprocal would be if you had a -- well, I don't know if it's -- I'll ask you this: Is it true, then, that if you had a nonwoven structure with a particular yarn with a particular diameter and a woven structure with a particular yarn and a particular diameter, the same load --

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Same tensile load?
Q. -- tensile load that the woven fabric would be more likely to fail sooner?
A. Yes, which might be all right, but it will fail sooner.
Q. Okay.
A. Lee talks about this, by the way, in his patent.
Q. So you're not saying -- again, just -- I want to -- I'm just trying to make sure we're clear here.
A. Yeah.
Q. Let's look at page 43 of Lee.
A. Okay.
Q. Actually, let's start on page 37. I'm sorry, I hate to do that to you.
In the middle there it talks about referring to Figures 22 to 25 of press felt assembly, the press felt according to the invention as shown.
Do you see that?
A. I do.
Q. And then about five lines below that it says, The illustrated embodiment is a woven fabric with a plain weave.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yes.

Q. And it says, The MD yarns 852 form loops 856/858 at the fold regions --

A. Right.

Q. -- to define a uniform channel 860, extending the CD width of the press felt fabric 850.

Do you see that?

A. I do.

Q. Then he continues on and he says, The base fabric 830 can be of a known prior art as shown in Figures 1 to 6, namely endless woven fabric, a modified endless woven fabric, a flat woven fabric, two layers of nonwoven yarn arrays such as discussed above, a multiaxial structure formed from nonwoven or nonwoven fabric strips. See Figures 1 and 2; right?

A. Right.

Q. Lee is teaching here that this particular embodiment is a plain weave but that the designer could choose any of these other configurations, depending on the application?

A. Depending on the application, correct.

Q. And then on page 43 --

A. Yes.

Q. -- at the second paragraph it says, As previously mentioned, a polymer from which the component yarns 852/854 of the base fabric 830 -- so this is still talking about that plain woven fabric?

A. In the machine direction?

Q. Yes -- is preferably -- of the invention is made preferably of a polyamide, in particular polyamide 6, but other polyamides and copolymers thereof may prove suitable.

Do you see that?

A. I do.

Q. And you recall that we saw earlier the discussion of polyamides being used in the invention of Lee?

A. I do.

Q. And he says here "as previously mentioned." Do you understand he is referring back to that discussion?

A. I do.

Q. So your opinion here is not that a polyamide fiber as described in Lee of .3 to .6 millimeters could not be used in a plain woven fabric --

A. I never said that. I just said it

would be not as strong.

Q. It would be not as strong as --

A. An array that's not woven. That's all I'm saying.

Q. Okay.

We talked about the woven, nonwoven, and the polyamide diameters, and the linear density. Is it the same analysis that you could use the same fiber diameters, you could use the same linear density, but it just won't be as strong?

A. Well --

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It depends on what the volumetric density is of the material.

Q. I'm saying would the same --

A. Strength is a function of the linear density and the volumetric density and the strength of the material -- and the inherent strength of the material.

Q. What's the volumetric density?

A. Gram -- well, mass per unit volume.

Q. Okay. How is the mass per unit volume different in a woven versus a nonwoven fabric?

A. Oh, of the fiber? It would be the

same. If a woven fabric is made from polymer A and a nonwoven fabric is made from polymer A also and they're both the same linear density, the woven fabric is going to be weaker than the nonwoven fabric. That's all I'm saying.

Q. Okay. You're not saying it's going to be unsuitable for the purpose of a press felt fabric?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I'm saying that it won't last as long because it's not as strong.

Q. Okay. Let's look at -- let's go back to Figure 16, I guess, in Lee just for ease.

A. Sure.

Q. Actually, let's -- let me change my mind here. Let's look at 16.

A. Let me get to it.

Q. Actually I changed my mind again. Sorry. It's getting to be late. Let's look at Figure 24.

A. 24. Okay. That's the woven. Yes.

Q. Right, the woven version.

A. The woven with the insert. It's not just the woven, because that's the invention here.

Q. Understand. And we're going to talk

about that.

So we see here in Figure 24 -- and this is -- Figure 24 is very similar to Figure 16; it's just a woven fabric in 24 versus the nonwoven in Figure 16?

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. Both have inserts?

A. Let me look at 16. Yes, they both have inserts.

Q. And you can see here that they've got these dashed lines 900?

A. Yes.

Q. And what are those?

A. Those are stitching to prevent -- okay. So when you have a woven fabric and you take out those cross-machine yarns, if you don't have stitching, a lot of cross-machine yarns will come out. So you have to stop it at someplace.

So what they do is they stitch in the cross-machine direction to lock in the yarns -- the cross-machine yarns that are woven in. Without that stitching, there would be no integrity to this.

Q. Okay. We're going to do both now. Let's flip back to 16 just for comparison.

purposes. You see there they have 360A and 360B? What are those?

A. That's stitching also.

Q. Okay. And why do they have stitching there?

A. I don't know why they have them there. Oh, I do know why they have them there. They're there to hold the interfabric 200 in place so it doesn't slip out.

Q. Okay.

A. So it's a totally different reason.

Q. Well, in 24 would the stitching also hold the interstructure?

A. It would do two things: It would both hold the structure and prevent the cross-machine yarns from pulling out.

Q. And if we look at -- again we'll start with Figure 24. Is it true that the insert structure does not completely run from the edge of the loop on the left side to the edge of the loop on the right side?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Explain what you mean by "the edge of the loop."

Q. Well, for example, do you see 858 on

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

the left?
A. Yes.
Q. And 856 on the right?
A. Yes.
Q. Okay. And there's some distance between those locations and the edge of the insert; correct?
A. Correct.
Q. So that insert does not extend all the way to the edge of the tube fabric?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. That's true.
Q. And again just doubling back, look at Figure 16.
A. Yes.
Q. Similarly, the insert 200 does not extend all the way to the ends of the loops identified as 340A on the right and 340B on the left?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. That is correct.
Q. So if I -- back to Figure 24. I keep flipping back and forth here.
A. I should just take these two pages out.
Q. Back to Figure 24.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Hold on. Hold on. 24.
Okay. I've got it. Yes.
Q. You see there's a location identified as 852?
A. 850 --
Q. In the middle toward the top.
A. Yes.
Q. If we took a cross-sectional cut there, if we cut the fabric in half and we looked --
A. Wait. Cut it in half lengthwise or widthwise?
Q. Widthwise.
A. Okay. So you're cutting it like this (indicating).
Q. Right.
So that would be parallel to the CD direction, or in the CD direction?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. The cut would be parallel to the CD direction, correct.
Q. What would we see if we look, then, at that cross section where the cut was made?
A. You would see the cross yarns going across, and you'd see the machine-direction yarns as the cross section.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Okay.

And is it true that you would see machine-direction yarns and cross-direction yarns for the continuous tube on the top of that cross section and the bottom of the cross section?

A. You're cutting it without the insert put in.

Q. No, the insert's there.

A. So you would see the yarns and you would see the inserts, but there you would only see, depending on where you cut it, the cross yarns in the insert. If you cut it -- if you look in one of these pictures, the insert, the yarns in the insert there are not right up against each other; there is space between them. So if you cut it between the spaces, you wouldn't see them.

Q. Okay. But you would see -- we talked about, remember, the continuous tube 300 earlier?

A. Yeah.

Q. You would see yarns from the continuous tube at the top of the cross section, then you would see some structure from the insert, and then you would see more yarns from the continuous tube below the insert; correct?

A. Correct.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. If we went back to Figure 16.
A. Okay. Go ahead.
Q. Again, if we did that CD direction cut, say, at 130, somewhere in that region of the fabric --
A. Which fabric? The tube fabric or the insert?
Q. The assembly.
A. What assembly?
Q. The tube fabric and the insert.
A. Oh, the whole assembly?
Q. Yes.
A. The whole 300?
Q. Yes.
A. Okay.
Q. Again you would see the base fabric, continuous tube yarns at the top, you would see the insert in the middle --
A. You would see circles on the top, and on the next side in the middle you would see lines.
Q. And then below the lines?
A. Below that would be circles again.
Q. Right.
A. Circles, lines, circles.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Okay. So you would see circles, lines, circles?

A. Right.

Q. Okay. Okay.

Similar to what you'd see if you cut Figure 24?

A. You would see -- it depends on where you cut Figure 24. If you cut it between cross yarns, you wouldn't see those yarns. If you cut it -- like look at -- look at number -- they don't have them labeled there. You can't do that.

Just if -- you would agree that there's spaces between the cross yarns; they're not right up against each other.

Q. Correct.

A. If you cut it between those cross yarns, you wouldn't see them.

Q. Right. You would just see the circles?

A. You would see the circles.

Q. Which is what you described for Figure 16 because it's a nonwoven array?

A. Right.

Q. So then if we -- now let's say we took -- instead of taking that CD direction cut in the middle of the fabric here --

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Which fabric?
Q. Figure 24.
A. Yep.
Q. We're talking about the entire assembly.
A. Yeah.
Q. We did a CD direction cut at, say, the location approximating where 832 is pointing to the seams?
A. 832 is pointing to the seams...
Q. Do you see that on the far right side?
A. Oh, yes, yes.
Q. So you're cutting to the right of the end of the insert. Does that make sense?
A. Right, you're cutting in the loop area.
Q. Right. So what would the cross direction look like there?
A. You'd see the yarn started the loop, and that would be a circle. And then, depending on where you cut it, you might see stitching, you might see yarns from the insert --
Q. Well, I'm going to go -- my hypothetical is you're beyond the edge of the insert.
A. You're beyond the edge of the insert.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

You would just see the yarns that are going in the machine direction.

Q. So you would just see circles above and circles below?

A. Yeah.

Q. That would be different than in the middle where you would see circles above, circles below, and the insert?

A. If the middle -- oh, yes, yes, yes. Yes, for this one, yes.

Q. Similar to our friend Figure 16, same thing, if we made just a cut to the right of the insert, so maybe roughly again where that Figure 330A is in the loops, what would the cross section look like?

A. Again, it depends on where you're focusing it. Are you focusing it at where the cut is or is it using a confocal microscope where you can see a big depth of field?

Q. Not the big depth of field, just at the cut.

A. You would see where the cut is.

Q. And what would you see there?

A. Circles.

Q. Just the machine-direction yarns?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

A. Yes.

Q. And that's different than if you cut in the middle where you're going to see the machine-direction yarns and the insert and then the machine-direction yarns?

A. Well, it depends on where you cut it, because if you look earlier on, there are pictures of I think it's 7 -- Figure 10A. If you cut it -- if you look at 10A and you see those yarns that are going across, if you cut it where the little dots are, you wouldn't see anything.

Or if you look at Figure 10D, if you cut it between those circles, you wouldn't see anything. You would see fiber scrim, but you wouldn't see any yarns.

Q. Okay. In any event, if you cut in the middle of the fabric, the cross section is different than if you're cutting through the seam loops of the fabric?

A. You have to tell me where in the middle of the fabric. You can't just say in the fabric; it has to be where in the fabric. Is it between yarns or not?

Q. What if it's between yarns? Between -- between which yarns? Between the CD yarns?

A. Ask the question again, please.
Q. If you cut it in the seam --
A. First stop. Which figure are we talking about?
Q. Let's go back to 16 -- or 24.
A. Okay. Hold on. Yes.
Q. One cut is in the seam roughly at location 832. Okay?
A. This is on Figure 16?
Q. Figure 24.
A. You said 16.
Q. Oh. Okay.
A. So say it again.
Q. If you cut at 832, which is a cut just in the seam loop area to the right of the insert.
A. Yes.
Q. Okay. Then you actively --
A. You don't mean right of the insert; on top of the insert. 852 is on top of the insert.
Q. 832.
A. 832. Oh, 832. I'm sorry, I thought you said 852. All right. Say it again.
Q. The first cross section we're going to look at is a cut through the seam loops at approximately 832.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Where on 832?
Q. Cross direction --
A. No, but if you have a loop, are cutting it there (indicating)? Are you cutting it here (indicating)? Where are you cutting it?
Q. You're cutting it through --
A. Both.
Q. -- two strands of the yarn.
A. All right.
Q. Okay?
A. Yep.
Q. Versus cutting it at, say, roughly 852 --
A. Right.
Q. -- where you've got the tube structure plus the insert.
A. Right.
Q. And my question is those two cross sections are going to look different.
A. Right. Because the cross section in the middle there also includes the insert, and the picture at the seam there is no insert.
Q. And similarly 16, I think the answer is the same, but I just want to make sure.
A. Go ahead. Ask me the question again.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. Again if we make the cut at approximately 340A to the right of the insert but through both -- two times through the seam loop versus in the middle of the fabric with the insert and the tube at approximately the 130 location, the two cross sections will be different?

A. They will be different.

Q. Okay. New topic.

A. If we're going to go to 10 -- I just need three minutes.

(Recess taken from 2:22 to 2:25.)

Q. I'm going to hand you Penven, which has been marked as 1006.

A. Yes, sir.

Q. This is one of the references you reviewed?

A. Yes.

Q. And Penven relates to seam press felts?

A. Yes.

Q. And Penven's seam is formed by aligned loops, seam loops?

A. Aligned seam loops.

Q. Interdigitated seam loops?

A. Interdigitated seam loops.

Q. What do you understand Penven to be

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

describing?

A. Penven is describing his invention of a way to speed up the pintle insertion process by putting tapered pintles from both ends of the on-machine seam fabric with two workers.

Remember, these fabrics are relatively wide, and they lock in place because they have a taper. That's his invention.

Q. Okay. That's one embodiment, putting the two portions of the pintle in separately; correct?

A. Yes.

Q. There's a separate embodiment where they put it in using something called a swedge?

A. Can you tell me where it says that?

Q. Sure.

A. You're talking about swedge or swadge?

Q. Swedge is the term he uses. For instance, it's shown in Figure 3, element 40.

A. 3? Okay.

Q. If you look at Column 3 starting at line 34?

A. 3, 34.

Q. Column 3, line 34.

A. He's still talking about the pintle.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

elements 31/32. He's only talking about a different way to put them in.

Q. Correct.

A. At the end of the day it's 31/32.

Q. Right. So how do you understand -- well, and you said earlier that this use of two tapered portions to make the pintle made it easier to seam -- create the seam?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It makes it faster.

Q. And how does it make it faster?

A. Because you can do it from both ends. Normally you would just do it from one end. You can do it from two ends.

Q. Is it faster because you've also got a relatively narrow portion leading the way through the loops?

A. No. That has nothing -- it has nothing to do with that.

Q. We agreed the front end of this angled pintle is narrower than the full diameter of the pintle.

A. Yeah. He gives a taper -- a formula for taper depending on what the width is.

Q. If we look down at Column 3, starting

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

at line 56.

A. Column 3, line 56. Yes.

Q. You see here by providing pintle elements 31 and 32 with a taper which is longer than the width of the seam to be closed, a tight closure can be provided. In order to control twisting movement of the pintle unit in the seam, a tight fit between the pintle unit and the loops along the full length of the seams -- typo -- is desired.

Do you see that?

A. Well, there's a typo in there. It's not seams; it's seam. But go ahead.

Q. But you see that sentence?

A. Yeah.

Q. How do you understand that the tight fit between the seam and the pintle is achieved?

A. When it goes through the passageway through some -- not all the loops might be all the same. There might be variation in loops. It's secured by at least one of the loops.

Q. Do you have an understanding as to why it's described here in such a way that says the pintle elements 31 and 32 with a taper which is longer than the width of the seam to be closed,

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

means?

A. I understand what it says, but I don't know why it says it. I understand what it says.

Q. Okay. If we look in Column 4, you see at line 16 it says, The relatively thin insertion ends 31 -- I'm not sure what that is -- is it -- it's supposed to be 31A and 32A allow for the elements 31 and 32 to be oriented so as to be easily inserted simultaneously from opposite ends of the felt, if desired; correct?

A. I've already said that's what it says.

Q. Right.

Then it says, The taper of the elements further provides a wedging action when the elements 31 and 32 are pulled in opposite directions as indicated by the arrows 41 and 42.

Do you see that?

A. I do.

Q. And if we look at Figure 1 of the patent. I think there's another typo in here. You can see --

A. Hold on. I don't see. Okay. Go ahead.

Q. You see Figure 1?

A. Yes, sir.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. And you can see here you've got a tapered pintle section at the bottom 32 in the seam?

A. 32. Yes.

Q. And you've got a tapered pintle section 31 on top of 32?

A. Yes.

Q. And you can see that they're both longer than the width of the fabric?

A. I can.

Q. And then you can see that there's arrows 41 and 43 --

A. Yes.

Q. -- adjacent to these thin portions at each end of the pintle?

A. I see.

Q. And do you understand the idea is that you then pull those portions of the pintle and create this wedging action between the two pintles?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Yes, I see that.

Q. So the -- and what do you understand when it says "wedging action" in the patent?

A. That they are -- each side is up

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

against each other, and they're wedged together.
Q. Are they wedged against the seam loops?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. No. They're wedged in the passageway.
Q. Well, you see they're pulling the pintles in opposite directions; correct?
A. Correct.
Q. And by pulling the pintles in opposite directions, they're increasing the effective diameter of the pintle; correct?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. The effective diameter?
Q. Yeah.
A. No, because effective diameter is when it's a full circle. They're not full circle -- I think there's a cross section of what one looks like.
Yeah, if you look at Figure 4, they're not full circles; they're two pieces that go through. Or Figure 2, not full circles.
Q. Right. They're not full circles.
A. They're tapered.
Q. Correct. If you look at Figure 1 -- right? -- and you would agree, for instance, 31 has a larger cross-sectional area on the left side

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

than it does on the right side?
A. Cross-sectional area?
Q. Yeah.
A. That's what the drawing shows.
Q. And the flip side, pintle portion 32, has the opposite. It has a larger cross section on the left side than it does on the right side?
A. I agree.
Q. So if you pull the two in opposite directions, you are bringing the larger cross-sectional areas closer together; correct?
A. You better explain that a little more.
Q. Well, you have these two pintles sitting on top of each other as shown here in Figure 1. Again let's look at the left side. You've got 32B with the cross-sectional area on the bottom, and you've got above that some portion of 31A; right?
A. Yep.
Q. Which is smaller than 32B?
A. When you say "smaller," what do you mean?
Q. Smaller cross section.
A. Smaller cross-sectional area?
Q. Yes.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yes.
Q. If you pull 31A further to the left and 32B further to the right, isn't the diameter in the middle -- in the seam going to increase?
A. You're not pulling 32B. You're not pulling it at 32B.
Q. Right. You're pulling it at 31. But 32B is going to move to the right as you pull at 31; correct?
A. Say that again.
Q. Arrow 33 indicates you're going to pull 31 --
A. Yes.
Q. -- to the left.
A. Agreed.
Q. And that means 31B on the right side is going to move to the left?
A. I agree with that.
Q. Similarly, arrow 41 shows that you're pulling 32A to the right?
A. I agree with that.
Q. And 32B is going to move to the right as well?
A. I agree.
Q. As we pull these two in opposite

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directions, the smaller cross-section pieces are now further outside of the seam, and the larger cross-section pieces are now inside the seam.

A. You don't know if the taper goes beyond the end of that seam. You don't know if -- if you look at 32A, you don't know the taper is done right at the edge there, if it ended there and just stays the same cross-sectional area. You don't know that.

Q. If we look at the Column 3 it says, A pintle unit having a taper of about -- it's at the bottom starting at line --

A. Hold on.

Q. -- 66?

A. 56, yeah.

Q. 66.

A. Yeah, 66. Okay.

Q. A pintle unit have a taper area about 0.75 mil per inch is effective for felts up to 300 inch in width.

Do you see that?

A. Yeah.

Q. Does it say anything about stopping the taper at any point on the pintle?

A. Well, let's multiply 300 by .075 and

see what it comes out to be.

Q. What would that tell us?

A. You have a taper of .075 mils per inch, and if it's 3 inches wide then -- I'm not sure. I'm not sure. I'm not sure.

What's your question again?

Q. Why do you think they're pulling those pintles in opposite directions?

A. You can put two parts of a pintle in at a time to make a composite pintle.

Q. Why are they pulling them once they're all the way in?

A. I don't know if the patent tells you why.

Q. Could it be to create this wedging action?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. At the end of the day you want it to be wedged, yes.

Q. Okay. And again if we go back to Column 4 at the middle starting at line 25.

A. Okay.

Q. During insertion of the pintle elements 31 and 32 into the passageway 20, flat faces 37

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

and 38, Figure 2, are preferably oriented toward each other so that as the elements 31 and 32 are pulled through the passageway, arrow 20, and then arrows 40 and 42 of Figure 1 -- I think it's a typo and it's supposed to be 41 and 43 on the figure, another typo -- the desired wedging action across the width of the seam is provided.

A. Okay.

Q. So is the pulling of the pintles in opposite directions for purposes of creating the desired wedging action?

A. I think you're wording it a way that I wouldn't word it. I think pulling of the pintles in opposite directions, they end up wedged together. That's not quite the way you said.

Q. Well, what do you mean, "they end up wedged"?

A. They end up that they make a tight -- the overall cross section -- there's no space between the two elements. They're flush with each other.

Q. The two pintle elements?

A. Yeah. They're flush with each other in the cross section.

Q. Right.

A. That's all you really know is that they're flush with each other.
Q. What is the wedging action?
A. When you think about a door wedge, you put a door wedge in a door, and that fits up tight against the door to keep it from moving.
Q. Right.
A. That's what's going on here, same kind of thing going on. At least that's the way I see it.
Q. Well, would a one-piece pintle have a wedging action?
A. Not necessarily.
Q. Why not?
A. Because what if the one-piece pintle was larger than the loop?
Q. Larger than a loop or smaller than a loop?
A. If it was larger -- if it was larger than a loop, it would wedge itself between the loop and the pintle. I mean the loop -- yeah, the loop and the pintle.
Q. How would you get it into the loop if it was --
A. I don't think you could. You're giving

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

me a hypothetical that no one would do.

Q. The pintle is creating a wedging action?

A. Yeah, it's creating wedging action with two elements. He's not creating wedging action with a single element. You're comparing two different things here.

Q. How do you create a wedging action with two elements?

A. You pull them from both sides until they lock in together.

Q. What do you mean by "locked in together"?

A. They don't move anymore.

Q. Why don't they move anymore?

A. Because they're pressed up against each other.

Q. You're saying they're not pressed up against each other -- go ahead?

A. No. The surfaces are pressed up against each other.

Q. What's pressing on them?

A. The loop.

Q. So they're wedged inside the loop?

A. In a loop, yeah. In a loop.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Right.
A. They're wedged in the whole passageway. It's the whole passageway here. It's not just one loop; it's the whole passageway that's doing the job. One loop is not doing anything. You have to have all the loops work together.
Q. Okay. So are all --
A. Which is the passageway.
Q. All the loops, then, pushing against the two pintle elements?
A. Not necessarily, because loops could be -- whenever you weave something, there's always some variation in there. They could be varied. Enough of them are.
Q. Okay. There you go. So enough of them are pressed up against the two pintle elements to wedge the two pintle elements together?
A. I would think so, yes.
Q. And that prevents the pintle, then, from --
A. Twisting.
Q. -- twisting inside of the loop?
A. That's what I mean.
Q. Let's look at paragraph 268 of your declaration.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

A. Okay. 268. Okay.
Q. Why don't you read that to yourself.
A. Okay.
Q. Okay. So you're saying -- what are you trying to convey through this paragraph?
A. You have to go to Figure 2. You have to go to Figure 2. 37 is the pintle, and the red is the part of the loop. There's a space between there.
Q. Okay.
A. But it's for a single loop.
Q. Okay. Let's look at paragraph 268. It says, Specifically Penven discloses, quote, that the pintle unit 30 is of a diameter which is less than the diameter of the seam passageway 20. Do you see that?
A. Yes.
Q. And then you Column 3, line 42 to 43; right?
A. Right.
Q. Let's look at Column 3, and we'll start at line 41. The orientation of the pintle elements which joined by the swedge is such that the pintle unit 30 is of a diameter which is less than the seam passageway 20.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Do you see that?

A. Yes, it's less than the seam passageway 20.

Q. When it's joined to the swedge. You didn't include the "when it's joined to the swedge" in paragraph 268.

A. No, I didn't.

Q. Why not?

A. I don't recall.

Q. You're not saying that -- well, you understand that the swedge is just used to insert the pintle?

A. It's a tool.

Q. To insert; right?

A. Right.

Q. And then if we look -- and the purpose of the swedge is to make the pintle easy to pull through the seam passageway 20; right?

A. Right. It's a tool.

Q. But that's not the end of the operation?

A. Not at all. It says in paragraph -- line 4 -- Column 4 starting on line 40 it says, As an aid in insertion of the pintle, elements 31 and 122, a wire lead is preferably attached to the

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

swedge at 31B and 32A.

And then moving along: Typically after insertion and tightening of pintle elements, the pintle elements are severed at each edge 17 and 19. The severed edges of the pintle are then trimmed and fixed as by gluing, tying off the insertion or heat to seal the seam.

So swedge is a tool. It's not part of the pintle.

Q. Right. Swedge is a tool to aid in the insertion?

A. Right.

Q. As you just read in Column 4, it says after insertion then there's a tightening of the pintle elements.

A. After insertion...yes.

Q. What's the tightening of the pintle elements?

A. They're forced together so they don't slide by each other.

Q. And that's that wedging action?

A. Yes.

Q. Then after the wedging has been achieved and they don't move relative to the loops anymore, then further steps are taking place?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. They're cut off, yes.

ATTORNEY KONSTANTAKOPOULOS: Not stretching the time, I'm sorry, we've been going for --

ATTORNEY KANE: Sure. Why don't we take a break.

(Recess taken from 2:51 to 3:01.)

Q. If we stay on Penven, at the bottom of Column 3 here it says for a typical seam in a papermaker's fabric having an internal void diameter of about 50 mils, a pintle unit having a taper of 0.075 mil per inch is effective for felts up to about 300 inches in width.

Do you see that?

A. I do.

Q. What do you understand it to be saying where it says, for a typical seam having an internal void of about 50 mils?

A. It's the void -- the void in length across the whole width of the passageway.

Q. What does it mean to have a void across the whole length of the passageway?

A. You're measuring void -- the picture shows the void there across the whole passageway, across all the loops.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. And is Penven saying that that void is about 50 mils?
A. Typically.
Q. And when you say 50 mils, what kind of shape does that suggest?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. When it says diameter, to me it means circular.
Q. Let's look at paragraph 277.
A. 277.
Q. Of your declaration.
A. I'm going to wrong way.
Yes, sir.
Q. Why don't you read that to yourself.
(Pause.)
A. I have.
Q. You've done it?
A. Yeah.
Q. Do you understand that one of the arguments in the petition is that a person of skill in the art would be motivated to design a seam loop approximately a 50 mil void -- of approximately 50 mils -- let me strike that.
Do you understand that one of the petitioner's motivation for relying on Penven was

based on Penven's disclosure of a typical seam in a papermaker's fabric having an internal void of about 50 mils?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Do I understand that's the petition?

Q. Yes.

A. I haven't seen the petition.

Q. Well, you saw it when you were preparing the declaration?

A. Yeah, but I don't remember it.

Q. Do you agree --

A. If you're reading from the petition, please let me have it.

Q. I'm not reading from the petition.

You say here: The motivation to choose a 50 mil overall composite pintle design as a target does not come from pintle.

Do you see that?

A. Right.

Q. You agree, though, that Penven describes a typical seam in a papermaker's fabric having internal void diameter of about 50 mils; right?

A. It says a void diameter of 50 mils, yes.

Q. Wouldn't a person of ordinary skill be motivated, then, to make a typical seam in a papermaker's fabric of about 50 mils?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Only if he went back and looked at what '566 said to get to the LD/MD ratio.

Q. Penven tells me 50 mils, doesn't it?

A. Typically.

Q. Right.

A. Yeah.

Q. So why wouldn't a person of ordinary skill pick the typical size?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Because -- can I see the patent where it describes what -- there's a description here in the patent of what -- here. This is on Column 2, line 46 of the patent. To determine the diameter of a seam loop, the largest circle which can be inserted completely into the seam loop is ascertained. The diameter of the circle is then used as the diameter of the seam loop.

So this says the diameter of the circle is the diameter of the seam loop. It doesn't say -- it doesn't say anything about void diameter. It says the diameter of the circle is

then viewed as the diameter of the seam loop.

If that were the case, it would say the pintle has -- use the same words as in the patent.

Q. What is the relationship between the internal void diameter of about 50 mils in Penven and the diameter of a seam loop in '566?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Will you ask that question again, please?

Q. What is the relationship between the internal diameter of about 50 mils in Penven and the diameter of a seam loop in '566?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. The void diameter? Did you say void diameter or not?

Q. I did.

A. Well, you can have a void diameter, as that picture shows, that's larger than 50 mils, that's larger than -- if you go to the figure that's in my petition, you can see where those red lines are, and that horizontal diameter there is larger than the vertical diameter.

Q. But the figure that you're -- let's look at the figure that you're talking about.

A. Yeah. It's in my petition.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Page 126.
A. Right.
Q. The figure there includes the pintle; right?
A. It does include the pintle, yes, 37 -- 28.
Q. 37 and 38?
A. Right, right.
Q. Because it's a two-piece pintle?
A. Right.
Q. And we discussed earlier, that two-piece pintle has been wedged against the seam loops; correct?
A. Against the tops of the seam loops, not necessarily the actual end of the seam loops. You can see that in the picture there. That's where the hash lines are.
Q. Right. Seam loops are not -- I think we talked about this earlier. Seam loops are not perfect circles; correct?
A. There's no such thing as a perfect circle. It's a circle or it's not.
Q. The seam loops are more almost -- I would say almost a teardrop shape?
ATTORNEY KONSTANTAKOPOULOS: Objection.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. They can be. It depends on how many cross yarns you take out.

Q. Do you think that this figure is drawn to scale?

A. Oh, the figure in the patent?

Q. Yeah.

A. Oh, it's a well-known -- even I know as not a lawyer that drawings are not drawn to scale. They don't have to be drawn to scale. I guess that's what I should say.

Q. Right. So there's no indication that Penven Figure 2 is drawn to scale?

A. To scale, but that doesn't mean the shape. There's two different things here. Scale would be where you measure -- let's say you measure something this way and you measure it this way and then say it's that. But a drawing tells you a lot. It doesn't have to be to scale; it can have different dimensions.

So, yes, the drawing's correct, but it's not -- it doesn't have to be to scale.

Q. So you're saying this drawing is correct?

A. Yes.

Q. Okay. So let's look at the CD yarn to

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

the left of the loop. Do you see that?
A. Yeah. That would be the 20?
Q. No, it's to the left of 20.
A. The CD yarn -- oh, right, right, right. It's the one that's not mark --
Q. It's not marked.
A. It's the one that's not marked. Yeah.
Q. And above and below that we're showing machine-direction yarns?
A. Yes.
Q. Okay. How come the machine-direction yarns are just little lines and the CD direction lines show a full cross section?
A. I don't know why he did it that way.
Q. Because it's not to scale right?
A. Yeah, it's not to scale. But it shows machine-direction yarns and the cross-direction yarns.
Q. Would the machine-direction yarns be flat at the top and the bottom around that CD yarn?
A. They could be.
Q. Do you think they are?
A. I think it depends on how many cross-direction yarns you took out.

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Q. This is a cross-direction yarn. It shows it on every cross-direction yarn that there's a flat portion, a perfectly flat portion of a skinny line below and a perfectly flat portion of a skinny line above.

A. Right.

Q. Have you ever seen a fabric that looked like that?

A. Have I seen a fabric like that?

Q. Yeah.

A. No.

Q. So do you really think that is trying to attempt to communicate accurate configuration and scale?

A. It's not to scale. It could be to what it is. Just because I haven't seen it doesn't mean it doesn't exist.

Q. You're assuming that it's accurate?

A. I'm assuming that the shapes are accurate, yes.

Q. So you're assuming that they're flat?

A. I'm assuming that they're flat.

Q. And you're assuming -- even though it shows no substance to the machine-direction yarns?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. What's your definition of substance?
Q. Well, something other than a line.
A. You could have a yarn that's as thin as that line. You could.
Q. Do you think a yarn is that thin?
A. I haven't thought about it.
Q. So getting back to my question, what's the relationship between a seam loop in '566 and the internal void in Penven?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. Internal void is the distance between -- roughly the distance between the crossover points. And the seam loop is the -- would be -- depending on where it's taken, it could be like the teardrop shape we talked about or it could be a half circle, a semicircle. It can be the whole range of that depending on how many cross yarns you took out to make the seam.
Q. Your understanding, then, is that because of that the largest circular pintle that could be inserted is smaller than the internal void?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. It could be, yes. Yeah, it could be.
Q. It doesn't refer, though, to an

internal void; right? We talked about that. It talks about an internal void diameter.

A. It talks about internal void diameter, right.

Q. Right, which you said suggests circular?

A. When? Tell me where I said that.

Q. Five minutes ago when I asked you about what 50 mils meant in terms of an internal void diameter and you said since it includes the word "diameter" it means circular.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Then I misspoke.

Q. So you think now that an internal void diameter is not circular?

A. It doesn't have to be. And it's for the whole passageway. It's the whole passageway. It's not just one loop.

Q. I understand. Okay. But doesn't -- what is the importance of the internal void diameter in the passageway?

A. It's where the pintle goes through.

Q. And what does that tell you about the size of the pintle?

ATTORNEY KONSTANTAKOPOULOS: Objection.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. It tells you -- it could be -- it could be a range of diameters.
Q. Could it be more than 50 mils?
A. It could be.
Q. If the internal void diameter of --
A. It could be, or it could be less.
Q. Let me ask my question.
If you have an internal void diameter of 50 mils, you could put a pintle in through there of 60 mils?
A. You could.
Q. How would you do that?
A. Force it through.
Q. So you'd have to stretch the seam loops?
A. Not stretch, but you'd have to open them up more. Instead of being a teardrop, they would be more oval in the direction horizontal -- in the vertical direction.
Q. And you'd have to do that on both sides of the seam loop?
A. Both sides?
Q. You've got two loops. In the simplest case you've got two loops, and you've got one loop with --

A. I don't know. I'd have to think about that. I don't think I can answer that as I sit here.

Q. So what do you understand, though, then the internal void diameter of what 50 mils to mean in Penven?

A. Not a whole lot.

Q. So you don't know what it means?

A. It's an example, that's all. It's an example. And it says typical. It doesn't mean it is. It just says it's typical. It's a number -- you can pick that number out of the air.

Q. Typical suggests that it's commonly used.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. What does the claim say? I don't think the claim gives any dimension.

Q. I don't believe that it does, but that's not the question. I'm asking you what you understand Penven to be saying a typical seam in a papermaker's fabric having an internal diameter of about 50 mils means.

A. He's just giving an example. But he never claims anything there. What he's claiming -- the invention there is this two-part

pintle. That's all this is about.

Q. Okay. And -- but that's not my question. My question is what does it mean to say the internal void that's a diameter of about 50 mils.

A. It means -- if you look at Figure 2, it means the horizontal distance between the two red lines is -- could be 50 mils.

Q. But the distance vertically would be less than 50 mils?

A. Could be.

Q. Could it be the same?

A. Could be.

Q. So do you think Penven's teaching of a typical seam of about 50 mils of an internal void with a diameter of about 50 mils would be of interest to a designer of a press felt fabric?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It would only be of interest of a designer of a pintle. That's all this is about, pintles. It's not giving directions to how to make a press felt.

Q. Well, but it is saying that a typical press felt fabric -- typical seam in a papermaker's fabric has an internal diameter of

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

about 50 mils.

A. It says the diameter is .96 millimeters. There's a big difference there. You can have all kinds of diameters. So how can you say it's typical when in another place you're saying it's .96 millimeters?

Q. Well, Penven says it. I didn't say it.

A. That's what I'm saying. You say typical. Okay. You say typical; he says typical. But then we've got another art where it says it's .96. That's basically double what the 50 is.

Q. Well, so is the internal void diameter of a seam loop of variable that the designer adjusts as necessary for the project?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I don't know what the designer uses for a project.

Q. You what?

A. I can't tell you what the designer is thinking when he or she does the project.

Q. You're saying, though, that apparently Penven thinks some fabrics are around 50 mils and Adanur thinks some fabrics are around .96 millimeters; correct?

ATTORNEY KONSTANTAKOPOULOS: Objection.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yes.
Q. Apparently at least in those two examples the designers made different choices; right?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. They made two different choices, yes.
Q. So are you -- again, is this, then, a variable that designers can make depending upon all of the considerations before them?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. You can't use the word "typical" when you're using another art in the same petition that's .96.
Q. Okay. I'm just asking a different question, though. I'm asking you are you saying, then, that in your view --
A. In my view.
Q. -- the internal void diameter of a papermaker's fabric seam is a variable for the designer to choose depending upon the application.
A. Can you ask me that again?
Q. In your view the internal void diameter of a papermaker's fabric seam is a variable for the designer to choose depending upon the application?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. When you say "application," what do you mean, "application"?

Q. The type of product that's going to be manufactured on the specific type of machine that the end-use customer is going to use.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I don't know if I can answer that question.

Q. Why not?

A. Because I don't know if I can answer. I don't know why I can't answer. If I knew why I couldn't answer it, I would answer it.

Q. Well, so you're saying -- we've identified there's variability, according to you?

A. There is variability. There's no question there's variability. We see that between that dimension that Adanur gives and the dimension that the typical Penven gives. And Penven is really -- his primary concern, his only concern, is making a two-piece pintle. That's all. He wants to show you it's two pieces. And it is 50. It doesn't have to be 50, but if it is 50, you would taper it a particular way. That's all it's about.

Q. But it could be 50?

A. It could be 50.
Q. In fact, he says it's typically 50. But it could be 50?
A. Could be 50.
Q. And it could be a different value?
A. Yeah.
Q. And who makes that decision?
A. The designer of the press felt, yes.
Q. Okay. So that's my question. So this is a variable that the designer of the press felt determines?
A. Yes.
Q. Let's turn to your declaration, paragraph 313.
A. Yes.
Q. Actually we'll start on the paragraph -- the page before, paragraph 311.
A. 311, yes.
Q. And this is describing Dr. Pastore's figure as shown on page 148 of your declaration?
A. Figure 3, yes.
Q. So you understand that this is a photograph coming from Rydin; correct?
A. Well, what's on that figure there, the red, is not from Rydin; it's what Pastore put in.

Q. Correct. The figure is -- or the picture is from Rydin, but then there's some annotations and some lines that have been added.
A. Correct.
Q. Okay. And you understand at least in your version of this figure here there are there are green lines through the MD yarns. Do you see that?
A. Yes.
Q. And there's some arrows up to the upper right hand that say MD threads; correct?
A. Yes.
Q. Then there's this red circle that's labeled seam loop. Do you see that?
A. Yes.
Q. What do you understand that red circle to be?
A. A seam loop.
Q. Well, was that in the picture?
A. The picture? Yeah, before the red was in there, yeah, it was there.
Q. But what is the red, though?
A. The red is the -- goes by the definition of what a diameter of seam loop, the largest circle which could be inserted completely

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

into the seam loop. The diameter of the circle is then viewed as the diameter of the seam loop.

Q. And to our previous discussion, we can see is -- the seam loop here is not a complete circle; right?

A. No seam loops are a complete circle. They can't be.

Q. Right. Okay. This one is not either; right?

A. Right.

Q. And the red circle that Dr. Pastore added appears to touch the seam loop thread on the upper right portion of the circle. Do you agree?

A. The upper part. I don't know if it's the left of the circle or right of the circle.

Q. And you would agree that it touches at the bottom right of the circle as well?

A. Touches, yes, touches.

Q. And you would agree that kind of at the 3 o'clock position on the circle it is not touching the thread, is it?

A. 3 o'clock position?

Q. Yes.

A. It's not touching which thread?

Q. The machine direction thread, the seam

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

loop thread.

A. No, it looks to me like it's touching it.

Q. You don't see a gap in there?

A. I can't, no.

Q. I can see a gap.

A. Okay. Good.

Q. You can agree with me even the seam loop portion close -- on the right side of the red circle is not a perfect circle?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. There's no such thing as a perfect circle. It's a circle or it's not a circle.

Q. Okay. You agree, then, that the seam loop -- the seam loop -- even -- the seam loop on the right half is not a semicircle?

A. We talked about that earlier. It's a teardrop.

Q. I'm just talking about the right half now.

A. The right half?

Q. It's not a semicircle.

A. It's not? It looks to me like it is.

Q. You think that's a perfect semicircle?

A. There's no such thing as a perfect

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. That's why I'm asking you.
A. Okay. Yes, I think it's a semicircle. Yes.
Q. You think it's a perfect semicircle?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. You have to define what you mean by "perfect."
Q. If you measured every -- well --
A. I did. I did measure every diameter of it.
Q. I'm not talking about the diameter; I'm talking about is this red circle touching -- which is a perfect circle. I'm assuming that was inserted by the machine.
A. Right.
Q. So that's a perfect circle. We can agree on that?
ATTORNEY KONSTANTAKOPOULOS: Objection.
Q. Is that a yes?
A. Yes.
Q. And you think that that red circle and that machine direction loop are touching each other at all points on the right side?
A. Yes.
Q. You can't see the gap?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. No.
Q. If you look at the next page, you have another figure, kind of a blowup.
A. Yeah.
Q. So now let's look again, and I'm going to ask again. You see you've got a 1 and a 2 on the right?
A. Yes.
Q. And you see between those two lines -- you can see the machine-direction thread; correct?
A. Yes.
Q. And you can see the red circle?
A. Yes.
Q. Do you see any distance between the red circle and the machine-direction line there?
A. I see a slight gap between lines 1 -- between yellow line 1 and yellow diameter 2.
Q. So there is a gap there?
A. Infinitesimal.
Q. But there is a gap?
A. Infinitesimal.
Q. So you would agree with me it's not a perfect semicircle?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. I would say because of the gap it's not

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

a perfect semicircle.

Q. And that makes sense because even as defined in the '566 it's saying it's the largest circle that can fit inside.

A. Right.

Q. Which implies to me that it's not a perfect circle, so it may be touching on various locations but not on all locations?

A. Well, if you -- I assume you're talking the gap on the right.

Q. I am.

A. If you know that a circle is 360 degrees, to me that looks like it's maybe 20 degrees that it's not touching.

Q. Okay. But it's not touching.

A. So it's almost -- it's almost there. So if you want to keep using the words "perfect circle," I'm going to keep using, well, except for 20 degrees it's a circle.

Q. Okay.

A. Okay?

Q. We can agree on that.

What does point 1 that you've labeled 2 refer to?

A. Point 12.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Yeah.

A. It's where I extend -- okay. The three yellow lines, they're all the same length. I drew those. Okay?

Q. Okay.

A. They all meet in the center. That's the center of the circle.

Q. Okay.

A. And then I drew those lines out, and then I compared them to the green lines to see if in fact the green lines lined up with the yellow lines, because if they didn't, they're measuring a cord; they're not actually measuring the diameter.

And a lot of those green lines are cords; they're not diameters, which would be longer than a diameter.

Q. There's a green line on the bottom left. Do you see that?

A. Yep.

Q. Why didn't you do a yellow line there?

A. Because it didn't touch. At that point it didn't touch the circle.

Q. Okay. So --

A. And even where that gap is, those lines did touch the circle.

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Q. Well, I may disagree with you on that, on 1 and 3 -- on 1 and 2.
A. You can disagree all you want, but that's what happened.
Q. You think that they're touching; you don't see the gap?
A. No.
Q. Where is the gap?
A. There's a gap between line 1 and 2 but not at 1 and not at 2.
Q. All right. So what is the relationship -- so you drew these yellow lines through the diameter of the artificial circle; correct?
A. Right.
Q. If I just gave you a fiber and asked you to measure the width or the diameter of that fiber, would you be drawing any artificial lines?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. Physically gave me a fiber?
Q. Yeah.
A. There's an ASTM method on how to measure that.
Q. Okay.
A. He's doing all this from pictures, not

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

from actual materials.

Q. Okay. Let's look at the bottom left-hand side.

A. Yes.

Q. That's a machine-direction fiber; correct?

A. Yes.

Q. Did you check to see whether or not that machine -- that green line is perpendicular to the upper edge and the lower edge of that fiber?

A. No, because it's not touching. I can't do that. I can't do that. But I can measure the line.

Q. What do you mean, you can't do it?

A. I did it only in places where the red touched the machine-direction yarn and then wanted to see if it was lined up along the diameter lines that were extended to see if they were not adjacent to it.

In other words, take -- see the top line, green? If I extended that line green, which he's saying is the diameter, and I extended that, that wouldn't go through the diameter of the circle; that would go somewhere to the left of the

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06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

green line there.

So he's measuring a cord there; he's not measuring a diameter.

Q. Well, again, I want to talk about the bottom left green line. Is that a cord?

A. Is that a cord? I don't know. I don't know.

Q. Why do you not know?

A. Because I can only measure a cord in conjunction with the circle.

Q. Okay. Why do you care about the circle?

A. Because that informs me of if the other lines he drew are actual diameters or larger than diameters.

Q. What other lines?

A. 1, 2, and 3.

Q. What about the other green lines, do you have any opinion as to whether the other green lines are accurate or not?

A. I don't know -- I don't think I measured the other lines. I don't recall measuring the other lines.

Q. Okay. Because if we look at, again, back on page 148, Dr. Pastore starts -- at the top

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

has one far left. Do you see that? On the top of machine-direction thread.

A. Yeah.

Q. Do you think that's a cord?

A. Wait, the far left?

Q. Yes.

ATTORNEY KONSTANTAKOPOULOS: Page 148.

ATTORNEY KANE: Page 148.

A. 148? Oh, I'm sorry. Ask me the question again.

Q. I want to look at the machine-direction thread, far left. Is that a cord?

A. I don't know.

Q. There's another one where the first MD thread arrow is pointing. Is that a cord?

A. I don't know.

Q. There's another one, second one, with MD thread. Is that a cord?

A. I don't know if it's a cord or a diameter.

Q. On the bottom portion of the thread we have again the far left, is that a cord?

A. I need the circle to be able to inform me on how to get the length of the green line -- excuse me, not the length of the green lines but

the orientation of the green lines. I have no basis for getting the green -- orientation of the green lines in the rest of this loop.

Q. Isn't the orientation of the green line just from the top edge to the bottom edge in a perpendicular fashion to the edges?

A. On the circle?

Q. On anyplace.

A. Ask me that again, please.

Q. If I want to measure the diameter of a thread --

A. Yeah.

Q. -- isn't the way to determine that is to start and draw a line from the top edge to the bottom edge perpendicular to the two edges?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Perpendicular to the two edges?

Q. Yes.

A. If you were going to use a picture, yes. By the way, which you didn't ask me, I wouldn't use a picture for this. You do things with actual fabrics. Doing something with pictures is somewhere between useless and really useless.

Q. The green line that's on the far left

on page 148, then, you didn't attempt to determine whether or not that was a diameter?

A. What was a diameter?

Q. The green line on the far left of 148, page 148.

A. No, I used the word some of the green lines confirm. I didn't say all; I said some.

Q. Why would the method be different on the circle versus off the circle?

A. Because in a circle you measure the -- again, I put the yellow lines in there which are true diameters. Okay. I see where they're touching the circle, and then I see -- and then I extend the yellow lines and I see that there's angles.

Like, for instance, if you look at the top, you can see that it's roughly 15-20 degrees. So that's longer than what a diameter would be.

Q. So let's look at that top one, because you brought it up. Do you see the machine-direction thread there?

A. Yeah.

Q. It comes up the right side, is touching the red circle; correct?

A. Yes.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. And then it appears to continue in a kind of tangential horizontal fashion off the top of the circle?

A. There's no such thing as a tangential. It's either tangential or not.

Q. Well, approximately tangential.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. There's no such thing as approximately tangential.

Q. Okay. Does it follow the arc of the circle?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. It touches the arc of the circle.

Q. Right. And then it continues -- it's above the arc of the circle?

A. What do you mean, "above the arc of the circle"?

Q. If you look at the red circle --

A. Yeah.

Q. Let's look at where the blue line that you've drawn there; right?

A. Yeah.

Q. Again, do you see the gap between the blue line you've drawn and the bottom of that machine direction thread?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. The blue lines were not meant to be dimensions.

Q. I'm not asking you. I'm asking if you can see a gap there.

A. Do I see a gap? I see a gap in the blue line, but that doesn't mean anything.

Q. The point I'm making is the thread is not -- we've already agreed is not a perfect circle.

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. Correct?

A. I know I'm repeating myself. There's no such thing as a perfect circle.

Q. Okay.

A. What I'm saying is --

Q. The red you would agree is a perfect circle?

A. The red is a perfect circle, yes.

Q. Okay. And the thread is not the same as the red perfect circle?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. In a small area it's not.

Q. Well, the whole left side is not touching.

A. No, but we're not measuring those

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

lines; we're only measuring the lines that are tangential to the circle or required to be tangential to the circle. Not tangential; perpendicular to the circumference of the circle.

Q. And why does it need to be perpendicular to the circle at locations 3?

A. Because that would tell you what the real diameter is.

Q. Even though just to the left of that line the thread is not touching the circle?

A. To the left of line 3?

Q. Yes.

A. It is touching the circle. It is touching the circle.

Q. Look at the far left edge of that picture. You see the thread?

A. This is the thread?

Q. Yeah. If you look at the far upper left of that circle, of the picture.

A. Up here (indicating)?

Q. To the left, all the way to the left.

A. Here (indicating)?

Q. Yeah. Is that thread touching the circle?

A. No.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. That's my point. So --
A. That was measured in pixels, as I recall.
Q. Right. Okay. But the point being you're saying that -- are you taking into account that it's not touching the circle on the far left edge?
A. It's definitely not touching the circle on the far left edge.
Q. Okay. Does that impact your analysis?
A. No.
Q. Okay. Why not?
A. Because I see ones that I can measure are not perpendicular to the surface of the circle.
Q. Okay. Let's look at 1. Is 1 perpendicular to the surface of the circle?
A. It's off by a little bit. You can't really tell, but it's off by a little bit.
Q. So you think that one is correct?
A. It could be correct, whereas 2 and 3 are definitely not correct.
Q. In your analysis 2 and 3 are not correct?
A. For sure.

Q. And the gaps and the differences between the red circle and the thread do not change your analysis?

A. No, because I'm not measuring those green lines at the gaps; I'm only measuring those green lines where it touches.

Q. Okay. What if we unwound the thread from that and made it straight.

A. Yeah.

Q. How would you determine what the diameter of that thread was?

A. I'd measure it based on ASTM methods.

Q. What about based on if you only had a picture?

A. I would never do it based on a picture. The first thing I used to tell my textile engineers is don't take measurements off pictures that you didn't take because you don't know what the magnification is. That's a bad engineering habit to get into.

Q. Okay. So you wouldn't do it, but --

A. But he did.

Q. -- if I made you do it, how would you do it?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. You couldn't make me do it because I wouldn't do it. It's like if you said cross the street when there's a lot of traffic and I want to make you do that, I'd say I'm not going to do that.

Q. Okay. So you can't -- you would -- you're telling me -- your testimony is -- let's look at Figure 148 again, page 148, on the left side.

A. Yeah.

Q. Let's look at the far left green location where Dr. Pastore made a measurement; right?

A. Uh-huh.

Q. You're saying you are unable to estimate the diameter of the thread at that location?

A. I'm telling you that I would not want to do that. That's not a proper way to do it.

Q. Okay. But --

A. That's what he did, and that's not a proper way to do it. That's all I'm saying. He did it in an improper way.

Q. So how would you do it based on a picture?

A. I wouldn't do it on a picture. I would never do it on a picture. I never have. I've done a lot of work in my day with pictures. I told you earlier this morning: When I use a picture, one, it's a picture that I took. He didn't take this picture. And two, I'm looking at macroscopic details, like the shape of something like a shoe, a tent, or something like that.

Q. A shoe or --

A. A tent.

Q. So is it your -- looking back to your yellow lines again --

A. My yellow lines? Oh, yes.

Q. And let's look at 3, for instance. So are you saying, then, that under your theory if we measured the yellow line --

A. Length of the yellow line?

Q. -- length of the yellow line from the bottom of the thread to the top of the thread, it would be less than Dr. Pastore's green line from the top of the -- bottom of the thread to the top of the thread?

A. I don't follow you at all.

Q. Well, you're saying that -- again we're focusing on number 3; right?

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Yeah.
Q. You see you've got a yellow line that extends from the top of the circle --
A. Right.
Q. -- to the top of the thread?
A. Right.
Q. Right? You're saying that's the diameter?
A. No. Oh, no, I never say that. I never say that. I say that line is a diameter. I don't say it is the diameter.
Q. What do you think the diameter of the thread is in that region? Is it the yellow line?
A. No, the yellow line goes -- the yellow line goes past. It's there just for orientation purposes; it's not there for measurement purposes.
Q. If I measured the yellow line from the top of the thread to the bottom of the thread, are you saying that is the appropriate diameter of the thread there?
A. No, I'm not. I'm just saying those are there for -- to show orientation. That's the only purpose of those yellow lines, to show orientation, not to show lengths.
Q. Okay. So what is the relationship

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06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

again, let's -- if we measured the yellow line, talking about figure -- your number 3 at the top of this figure. If I measured the length of the yellow line from the bottom of the thread to the top of the thread, how would that compare to Dr. Pastore's green line, which starts at essentially the same location at the bottom of the thread to the top of the thread that he's drawn?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. I'm telling you those lines were not put there for measurement; they were put there to show orientation.

Q. Why is orientation important?

A. Because if a line like those green lines are not oriented exactly -- earlier I said tangential. I meant perpendicular. If they were not perpendicular to the surface of the circle, then they're not -- they're showing a cord; they're not showing the true diameter.

Q. So then they would be longer than the true diameter?

A. They could be.

Q. So is the yellow line the true diameter?

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I have no idea because --

Q. Why did you use that as the orientation point if you didn't know if that is the right orientation?

A. No, no, no. I'll tell you where it is the same. It's the same along the red -- the circle. Those lengths are all the same lengths from one end of the red line to the other end of the red line. That's how I know that center where they cross is in fact the center of the circle.

Q. Okay. But, again, why are you extending those into the threads beyond the circle?

A. So the viewer can see that they're not -- that they're cords and not diameters.

Q. What are cords?

A. The green line.

Q. So if it's a cord, it must be longer?

A. Yes.

Q. Longer than the diameter?

A. Right. It would say you have a longer diameter.

Q. So if I measured along this yellow line, then, from the bottom of that thread to the

top of that thread, it should be shorter than from the bottom of the green to the top of the green on the thread, because the green you just said is the cord.

A. Right. And your question is?

Q. So the green must be longer than the yellow; correct?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. If the picture makes sense, yes.

Q. So you're saying that Dr. Pastore should have oriented his green line from along the same angle that your yellow line is angled in Figure 3 -- or in terms of point 3?

A. Can you ask that again, please?

Q. You're saying that the proper orientation for Dr. Pastore would have been from the bottom of the thread along the yellow line to the top of the thread?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Yes.

Q. And that would be the diameter?

A. That would be the diameter.

Q. And that would necessarily be shorter than the green pipeline that he drew?

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. Which you've identified as a cord?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. It should be. Geometrically it should be, yes.
Q. Did you measure it?
A. I didn't measure anything like this because I don't believe in using these pictures for measurements.
Q. Okay. So you didn't measure, so you don't know --
A. I did not measure.
Q. You don't know the distances?
A. No. He said they were 534 pixels, and I said he overestimates the thread diameter. That's what I said at the bottom of page 49. I would never go that route that he's done. And that goes for all his pictures that uses measurements like that. You should have the fabric. He even said in one case -- I think it was Adanur -- that he would have preferred to have the fabric.
Q. Just to be clear, you only did this analysis for these three green lines?
A. Yes, to show the method was wrong.
Q. And you couldn't apply that analysis

if we go back to Figure 148, to the green lines on the far left?

A. No, no.

Q. So you don't know whether those green lines are fair representations of the diameter or not?

A. I had enough to show that his method doesn't work.

Q. Well --

A. It makes no sense.

Q. You took ten measurements; right?

A. I think it was ten, yeah.

Q. And we've already talked about number 1 --

A. Right.

Q. -- which you said is very close if not indistinguishable from your proposed line.

A. Okay.

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. So you've only got really two data points that you're disagreeing with Dr. Pastore on?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. At that point, yes. But there should be no disagreement.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Okay. But you don't have any opinion -- so one of the data points you agree he did it correctly?

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. Number 1; correct? The orientation of his green line which you've labeled number 1 is correct?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I didn't say that. I said it looks -- again, I'm going by the looks. Obviously it's easier for lines 2 and 3 to go by looks. But look at what my petition says. Dr. Pastore's measured MD diameter value of 50 could tell us likely overestimates the true thread diameter, which in turn means that the computed LD/MD ratio is correspondingly underestimated.

That's all I'm saying. I'm criticizing his method.

Q. I understand.

A. And if you criticize his method -- you know something, it's an expression we use in engineering. It's called garbage in, garbage out. You give me garbage in; you're going to get garbage out.

Q. How much of an error is number 12

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A. I didn't calculate that.
Q. Can you even attempt to?
A. No.
Q. How do you see an error?
A. Because I don't go by -- I don't estimate pictures; I estimate -- I don't estimate dimensions from pictures, dimensions of pictures.
Q. What you said is a POSITA would observe three of the green lines that Dr. Pastore drew are not in line with the diameter lines I extended through Dr. Pastore's inscribed circle; right?
A. Right.
Q. Number 1, show me where that one is not aligned.
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. It's a visual thing. I don't see it as a line.
Q. Well, interesting --
A. Even if it were only two, that's enough. That's enough. You don't make measurements on pictures that you didn't take and you don't know what any of the conditions were for taking the picture. You should get the actual sample. I tell that to students all the time.
Q. Okay. So, interestingly, for 2 and 3

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

you extended the yellow lines; right?

A. Yes.

Q. And you can see the difference between the yellow line and the green line; right?

A. Yes.

Q. There's no extension on number 1, is there?

A. No.

Q. It's because it's a line, isn't it?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. No, I don't remember why I did it that way.

Q. Well, can you point me to any alignment?

A. I can't point you to alignment because I'm not going to do it on a picture.

Q. Then why did you offer an opinion that three lines are not aligned?

A. Let's say it's only two aligned.

Q. Are you changing your testimony to two are not aligned?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I don't want to change my testimony.

Q. Okay.

A. I'm going to need a break in a couple

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

minutes.

Q. Kind of the reciprocal. The reciprocal of the question I asked you earlier, to go back to number 3, I think we said earlier that if Dr. Pastore had drawn his line to -- his green line to align with your yellow line it would have been a more accurate representation of the diameter of the thread.

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Keyword is to say more accurate, but you didn't say accurate. Whenever he takes a picture and then makes measurements from it, it's the wrong way to do it.

Q. Okay. I understand.

A. This is going beyond that. This is going beyond that. So more accurate -- either it's accurate or it's not accurate. Again, like circle, it's either a circle or it's not a circle. Accurate, it's either accurate or it's not accurate.

I say what he does when he takes pictures and then makes measurements, they're inaccurate. It's not the proper way to do it.

Q. Really?

A. Yeah.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Have you ever heard -- is there a measurement error when you take measurements?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. When you do measurements based on standards, that's taken into account.

Q. Right. You take measurement errors, and there can be variations. Two people can measure the same --

A. There's no question.

Q. -- and they can get different answers; correct?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. There's no question to that. But somewhere earlier I remember him saying where he said he was just making measurements based on something he did at NASA. And NASA has standards on everything. Dr. Pastore has been known to make measurements on things and observations that are not based on any scientific principles.

And you saw what the judge said in the other case when he called his work junk science.

Q. I also notice you were disqualified in that case as well for your opinions.

A. I was disqualified because I was rebutting what he said. You did not read the

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

whole -- you did not read the whole thing and understand it.

Q. Can you answer my question?

A. Yes.

Q. Your statement is that it would be more -- it would have been more accurate, because there's no absolute accuracy -- I hope we can agree on that --

A. I definitely agree on that.

Q. -- that if he had followed his green line along your yellow line; correct?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. The hypothesis is you're saying more accurate. Something is either accuracy or not, or, or, or there's a printed -- not a printed standard. There's an accepted standard which allows for a certain standard deviation.

Because, you're right, a lot of physical measurements, they're not always the same. But in every test I've ever done on textiles it will say standard deviation. If it's 5 percent -- I'm making that up -- then it's okay to report it. If it's greater than 5 percent, then it's not okay to report it.

Q. I understand but -- so, again, we can

all agree that there's no absolute accuracy; right?

ATTORNEY KONSTANTAKOPOULOS: Objection.

Q. You and I can pull out tape measures and measure this table ten times, and we could get different numbers; correct?

A. But if we did it according to a standard, we could then take a standard deviation and see if it's within the accepted standard.

Q. And that would not tell us what the exact number was; it would tell it's somewhere in that standard deviation or some relation to the standard deviation?

A. That's precisely why in engineering any time you see a dimension -- any time you look at a drawing you will say something is X plus or minus Y, and that plus or minus Y is according to a standard.

Q. Simple question, I think, hopefully: So according to your view, if Dr. Pastore had done -- had aligned on item -- at location number 3, here his green line with your yellow line, that green line would then be shorter than the green line that he drew?

ATTORNEY KONSTANTAKOPOULOS: Objection.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

A. Can you repeat the question?
Q. If Dr. Pastore --
A. Let me get the drawing.
Q. Number 3, yeah.
A. What page was that?
Q. Page 149.
A. Go ahead.
Q. So under your analysis if Dr. Pastore had drawn his green line on the same orientation as your yellow line --
A. You're talking on page 149?
Q. Yes, location 3 -- he would have -- his green line would have been shorter than the green line he actually drew?
A. That's correct.
Q. So if I measured both of these yellow lines -- if I measured your yellow line and his green line, his green line is going to be longer than your yellow line from the top edge to the bottom edge of the fiber?
A. When you say measure, how would you measure it?
Q. However I measure it.
A. No, no, because we don't measure things based on figures. Anything you tell me doesn't

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

mean a whole lot.

Q. So you're saying you really don't know -- basically --

A. I'm telling you a fact of geometry. That's what I'm telling you, a fact of geometry. That's all I'm telling you is a fact of geometry.

Q. What if there was a scale on this picture, could you draw lines and measure things?

A. Not necessarily. I would have to know what the scale -- if the picture was distorted. You can distort a picture -- you know, you can take a picture and distort it this way, distort it this way, or distort it aerially (indicating).

Q. Let's assume there's no distortion and it's to scale.

A. Yeah.

Q. Have you ever seen a figure like that?

A. I've seen figures like that, but I don't base any engineering analysis on it.

Q. So you would never use a measurement off a scaled drawing?

A. Drawing or picture?

Q. Picture.

A. I don't recall ever doing that unless I took the picture.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. Okay.

A. I took the picture. Then I knew what all of the -- I knew that the lens distance was proper, I knew everything was proper, I knew that the camera -- let's say you're trying to take a picture of something flat here, that the camera wasn't tilted.

Q. So --

A. Wait. Before you ask a question, I know you can't take a break during a question. I've got to take a break.

Q. Okay.

(Recess taken from 4:05 to 4:12.)

Q. Just to kind of finish this up, then, briefly, Doctor. If you look at Exhibit 2009, which is the Adanur photos.

A. Do I have that?

Q. Yes. It should be over there. There it is.

A. This one here. Yeah.

Q. I think when we talked earlier you said this was either a digital microscopy or SEM images?

A. Yes.

Q. You see down at least on the bottom

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

photo there is a scale?

A. Yes.

Q. So is it your testimony that you would not rely on measurements taken on a photo like this with a scale?

A. I wouldn't rely on it unless I took it. I don't know if when he took it -- when I say "he," this case would be Adanur. When Adanur took it, if the angle was tilted a bit -- I mean the camera was tilted a bit. I have no way of knowing how he took this picture.

Q. Have you had grad students in your lab?

A. Yes.

Q. What if one of your grad students had taken a photo with an SEM, would you rely on that?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. A graduate student took a picture of -- I'd have to know more about the qualifications of the graduate students. I've had graduate students who have taken pictures and I said, No, no, you're not qualified to take this picture.

Q. Okay. Assuming one that was -- have you ever had one that took a picture that you thought was qualified and you relied upon?

ATTORNEY KONSTANTAKOPOULOS: Objection.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

A. Relied upon for what?
Q. For accuracy.
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. What kind of accuracy?
Q. Well, to take measurements off of.
A. No.
Q. You have never taken a measurement off an SEM or a digital microscopy image?
A. Measurements?
Q. Yeah.
A. Not that I recall.
Q. Either electronically or manually?
A. If I took them, I would, yes, because I know -- I would know how to do it right. Or I would say to the graduate student: Did you take them based on an ASTM method?
Q. And what if they did?
A. They did?
Q. Yeah.
A. Then they would show me the standard deviation, and if that met the requirements in the ASTM method, I would be okay with it.
Q. Is there an ASTM method -- well, on a scale bar such as what's shown here on Exhibit 2009, what would the standard deviation

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

information contain?

ATTORNEY KONSTANTAKOPOULOS: Objection, foundation.

A. Well, in this particular case when you look at that scale bar, notice that it's not -- it's not clear all the way, indicating to me this picture wasn't taken properly.

Q. I didn't ask you this earlier, but do you have a copy of Adanur's textbook?

A. Yes.

Q. Electronic or physical?

A. I have a PDF version of it.

Q. Okay. Did you look at this image in Adanur's textbook in the electronic version?

A. Yes.

Q. And how did you think it compared to this version?

A. First of all, I disagreed that it was the same figure. It could be two different fabrics, because he uses the word "fabrics."

Q. I'm talking about the quality of the images.

A. What do you mean by "quality"?

Q. Well, the quality of this exhibit versus what you saw in the electronic PDF.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

ATTORNEY KONSTANTAKOPOULOS: Objection.
A. I don't recall.
Q. Did you notice how the scale bar looked in the electronic version versus this figure?
A. That I did.
Q. And how did it look?
A. Same way.
Q. So you don't trust Adanur's figure either in the electronic version or in this version?
A. No.
Q. Have you ever published an image of an SEM or a digital microscopy in one of your papers?
A. Yes.
Q. Do you expect others to rely on that?
A. I did it to show the macroscopic features, not dimensions.
Q. So you didn't provide any scale information?
A. Not that I recall.
Q. And you wouldn't use in your own papers images to determine scale information?
A. I don't recall ever doing that.
Q. Well, would you do that?
A. No. Only macroscopic -- you know, like

the shape of something or something like that.
Q. But not scale?
A. No.
Q. Continuing on, so you are familiar with digital microscopy?
A. Yes.
Q. And you've used and analyzed digital microscopy images?
A. If it was done with a confocal microscope, yes.
Q. Okay. And have you ever -- have you ever measured the scale of a feature on a digital microscopy image that you took?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. I usually have a separate scale bar, a physical scale bar, up against it and look at it that way.
Q. Then how would you use that image to measure features?
A. Quantitatively?
Q. Yeah.
A. I don't do it that way.
Q. Then why do you put the scale bar into the image?
A. Get an idea of what it is. I wouldn't

do it for a patent or for, let's say, a legal publication. But let's say I was trying to get an idea about how something was made. That's all.

Q. So you wouldn't trust the quantitative scale in a digital microscopy image used according to some ASTM standard?

A. It would depend on what I would use it for. Certainly not for a patent case.

Q. Why not?

A. Because you've got to get it exactly right.

Q. And you don't think a digital microscopy image --

A. I think there's a chance that it could be wrong. I don't like to do anything where -- I've been an engineer for almost 60 years now. I'm very careful about what I do.

Q. You just wouldn't rely on a digital microscopy image in a patent case?

A. No.

Q. Are you aware of anyone ever using a digital microscopy image to determine scale?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I'm not aware or not unaware. I don't remember.

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

Q. It's not something that you do?
A. It's not something that I do. That's for sure. I like to have the physical thing.
Q. Do you know if there are software packages for use with digital microscopes that can take measurement -- will generate measurements based on the images?
A. I've heard of them. I've never used them.
Q. So you've never used them yourself?
A. No.
Q. Do you have any idea of the accuracy of those images?
A. No.
Q. Any idea of the accuracy of the software?
A. No.
Q. Do you understand how the software determines quantitative scale measurements?
A. No.
Q. And you said earlier you're familiar with scanning electron microscopy as well?
A. I'll do you a favor. Just say SEM.
Q. All right. You're familiar with SEM?
A. Yes.

www.DigitalEvidenceGroup.com Digital Evidence Group 202-232-0646

Q. Have you ever used SEM images in order to obtain quantitative scale information?
A. Not that I recall.
Q. Would you ever use SEM images to obtain quantitative scale information?
A. I think I already said no.
Q. Do you have an understanding that there may be software packages that will generate scale information based on SEM images?
A. Yes.
Q. Have you ever used that software?
A. No.
Q. Do you have any understanding of how that software works?
A. No.
Q. In what connection are you aware that that sort of software has been used with SEM images?
ATTORNEY KONSTANTAKOPOULOS: Objection.
A. I don't know.
Q. So you're generally aware of it, but you don't know of any particular applications?
A. I've heard of them, but I don't use them.
Q. Right. Are you aware of anybody else

using it?

A. I'm not aware or not not aware. I don't know. I've never had to do it.

Q. Okay. I just was inquiring as to whether, say, in some other industry you knew that it was being used, for instance.

A. Might be, but...

Q. You don't know. Okay.

One thing I wanted to follow up on from this morning, we were talking -- we talked about several of the variables associated with press felt fabrics today; correct?

A. Yes.

Q. Such as the weaving pattern or the nonwoven fabric or the thread density, thread diameter, seam loop density, many -- many different parameters; correct?

A. Yes.

Q. And we also talked about the fact that different end-use products have different requirements, potentially?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. Well, of course.

Q. And so, for instance, I think earlier this morning we mentioned -- you mentioned that

there may be a product that's not as concerned -- an end-use product that is not as concerned with some amount of marking on the material?

A. It might be, yes.

Q. And other products might be very sensitive to marking on the material?

A. Yes.

Q. The end-use customer will define the parameters for the end product; correct?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I keep coming back to ASTM. ASTM is -- people use ASTM methods and also other standard methods, ANC methods, ISO methods, to know if something that they, let's say, ordered as a subcontractor to buy, did it meet requirements for tolerances, things like that.

Q. I understand for tolerances, but I'm talking about things like cosmetic issues, for instance, marking. Some -- for some applications some marks might -- extraneous marks might not be concerning but other end use manufacturers might be very concerned.

A. My example might be if you were making fine writing paper, you would want that fine writing paper to be as smooth as possible. If

you're making paper for a corrugated box, you probably don't care, probably don't care.

Q. Within limits?

A. Yeah.

Q. Right. And that's -- right.

And so given -- that's a great example. Given those different requirements, the press felt fabrics, as part of the overall manufacturing system, have to be designed and implemented; correct?

A. According to the customer requirements, yes.

Q. Right.

A. Being the papermaker.

Q. Yes. The papermaker, yes, requirements.

But the party actually designing the belt, the press fabric belt -- press fabric belt -- I'm sorry, it's the end of the day.

A. Just say felt.

Q. The party designing the press fabric belt is the belt manufacturer, not the paper manufacturer?

A. No, but there's different press -- different paper machines that make different paper

products that use different belts depending on what the end use was.

Q. Right.

A. There's not a universal belt.

Q. I understand. I guess the point I'm trying to get at is Georgia-Pacific or Pitney-Bowes might be an end-use paper manufacturer; right?

A. Not Pitney-Bowes, but, yes, Georgia-Pacific.

Q. So Georgia-Pacific. We'll use them.

They don't design the press fabric belt?

A. No.

Q. They give parameters to a supplier to design a press fabric belt?

A. No.

Q. What do they give?

A. They give the papermaker -- they're the papermaker.

Q. Right.

A. Yes. They say, I'm making fine paper.

Q. Right.

A. What belt do you have for making fine paper.

Q. If a manufacturer of belts provides the belt to Georgia-Pacific and it doesn't meet their specifications and so some design changes need to be made, who makes the design changes?

ATTORNEY KONSTANTAKOPOULOS: Objection.

A. I don't know. I don't know how that works in industry.

Q. Do you think Georgia-Pacific would tell a Voith how to change the density?

A. No. They would just say, The belt you sent us isn't making the product that we want.

Q. Right. And then the belt manufacturer would try to adjust the belt in order to make the product that the end user wants?

A. I used to see that happen at Albany International all the time.

Q. Right. So a paper manufacturer like a Georgia-Pacific would come back to Albany and say, Your belt isn't working for us, here's the problems, and adjust it?

A. Not just working. It's not giving us what we want.

Q. Right.

A. It's not giving us what we want.

Q. That's a better way of saying it. It's

06/17/2026 Albany International Corp. vs Voith Patent GmbH David S. Brookstein

not giving us what we want, make the adjustments. But Albany International doesn't dictate what the adjustments are?

A. No, because they're not paper machine clothing manufacturers, correct.

Q. So a paper machine clothing manufacturer like an Albany or a Voith makes those adjustments?

A. Should. They better or else they won't have a customer anymore.

ATTORNEY KANE: All right. No further questions at this time.

ATTORNEY KONSTANTAKOPOULOS: We have no questions. We will reserve reading and signing. Thank you.

(Time noted: 4:29 p.m. ET)

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That DAVID S. BROOKSTEIN, the witness whose deposition is hereinbefore set forth, was duly sworn by me and that such deposition is a true record of the testimony given by the witness.

I further certify that I am not related to any of the parties to this action by blood or marriage and that I am in no way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 19th day of June 2026.

Laurie Collins

LAURIE A. COLLINS, RPR

Case: Albany International Corp. vs Voith Patent GmbH
Witness Name: David S. Brookstein
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From _____ to _____

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From _____ to _____

Page _____ Line _____ Reason _____

From _____ to _____

Page _____ Line _____ Reason _____

From _____ to _____

Page _____ Line _____ Reason _____

From _____ to _____

_____

DAVID S. BROOKSTEIN

0

0 104:13

0.075 189:12

0.15 111:8, 14,20,21 113:23

0.3 99:22 100:22 101:4,6,9, 25 102:3, 4,25 103:3 104:14 105:9 107:5,8 108:2 109:21 111:18,22 112:4,14 113:9,19 135:6 139:6 140:16 141:25 144:13 145:2

0.36 134:8

0.4 109:16, 19 113:16, 19 130:9 131:2,12 132:12 140:24 141:3,9, 17,21

0.5 139:16, 20

0.6 99:22 100:22 107:5,9 108:2 109:22 111:18,22 112:5,14 113:10,20 134:9 135:6 140:16 144:13 145:2

0.66 139:6

0.75 180:19

0.81 111:8, 15,21 113:23

075 180:25 181:3

1

1 75:9 82:1 86:19 110:22 114:23 150:12 155:12,17 175:19,24 177:23 178:15 182:4 211:6,16, 17 212:23, 25 214:2, 9,10 216:17 223:16 232:14 233:5,6,25 234:13 235:6

10 42:18 81:15 82:2,8,10, 11 86:19, 20 150:12 171:9

100 83:14, 16 84:10 85:4,17, 18,20 130:12 131:4

1001 5:24 6:2 42:3 78:9 81:12

1004 8:23 76:6,15

1005 99:1 106:24

1006 171:13

101 150:17

1016 108:10 112:3 114:6

1024 110:1 112:3 113:22 114:5

1051 106:20,21

108 77:20

10:01 37:19

10:55 75:3

10A 168:8,9

10D 168:12

11,261,566 6:3

110 130:5, 11 131:4

115 124:15 125:2,16, 21 126:11 127:22 130:5

1150 4:11

11:09 75:3

11:53 105:25

12 75:17 83:11 134:14,15 135:13 138:10

122 187:25

126 194:1

128 83:15 84:24

12:27 106:2

13 20:2 75:17 99:16 107:2 134:3 135:3 139:4

130 164:4 171:5

14 30:16 65:17

148 206:20 216:25 217:7,8,9 219:1,4,5 225:8 232:1

149 240:6, 11

15 99:24 125:2,17, 20 127:1, 6,22 129:10,11 134:10 135:8 139:9 140:18

15-20 219:17

15.7 99:25 125:3

15th 78:15

16 65:6 77:2 120:7,22 158:13,16 159:3,5,8, 25 161:14 164:1 165:21 167:11 169:5,9,11 170:23 175:5

17 75:22,23 76:7,9,11, 16 188:4

172 6:15

18 75:23 76:10,11

19 76:1,10, 13,14 122:21,25 188:5

19034 4:12

1980 16:1 24:19,22 25:9 27:21,24

1980s 76:24 77:7 79:18 98:15,22, 23

1984 24:20, 21

1988 76:17

1994 16:2 18:12,21 24:22 25:9 27:22,25 30:2

1:28 142:6

1:42 142:6

2

2 8:2 10:22 23:10 64:1 67:1,6 75:15 118:25 119:3,6 155:17 177:20 182:1 186:6,7 192:16 195:12 202:6 211:6,17 212:23 214:2,9,10 216:17 223:21,23 233:11 234:25

2.5 42:19 44:14 45:4 51:13,22 52:5,14 53:4,22,23 54:19,20

2.7 42:19, 22 44:17 45:5 52:8

20 87:22 122:25 123:2,3 181:25 182:3 186:15,25 187:3,18 196:2,3 212:13,19

200 107:19 121:15 122:5 137:6 160:8 161:16

2001 5:25

2003 33:13

2004 33:13

2009 34:17 114:9 242:15 244:25

2010 18:12, 22,24 30:2

2011 5:25 6:12 8:2

2012 18:23 34:17

2018 78:15

2026 6:19 9:7

209 129:17 142:21 143:4,5

144:20

21 125:11, 22 126:14

210 122:7 124:24 125:14 127:20 128:20 130:4 137:3,5

215 124:14, 25 126:9 127:20 130:4 137:4,6

22 154:18

23 109:14

24 123:20, 21 124:15 125:8 127:15,16 129:9,11, 13 158:20, 21 159:2, 3,4 160:12,18 161:22,25 162:1 165:6,8 166:2 169:5,10

25 154:18 181:22

268 185:24 186:1,12 187:6

277 190:9, 10

28 194:6

29 124:2,3 129:24 136:25 138:21

2:22 171:11

2:25 171:11

2:51 189:7

3

3 23:10 30:16 42:19 69:19 70:24 75:20 76:12 101:16 102:2 112:25 141:5 156:22 172:19,20, 21,23,24 173:25 174:2 180:10 181:4 186:18,21 189:9 206:21 208:20,22 214:2 216:17 222:6,11 223:21,23 226:14,25 228:2 230:13 233:11 234:25 236:4 239:22 240:4,12

3.15 115:6, 8,10

3.6 42:22 44:17,21, 25 45:5 47:18 49:21 50:15

30 6:19 78:11 88:13 125:11,22 126:14 186:14,24

300 107:19 120:11,22 121:1,5,8, 24 122:11 127:11,14 163:18 164:13 180:19,25 189:13

30th 9:7

31 120:18, 21 174:4, 24 175:6, 8,15 176:6 177:24 179:7,9,12 181:25 182:2 187:24

31/32 173:1, 4

311 206:17, 18

313 206:14

31A 175:7 178:18 179:2

31B 179:16 188:1

32 65:4,19 110:22 111:7 174:4,24 175:8,15 176:2,4,6 178:5 181:25 182:2

32A 175:7 179:20 180:6 188:1

32B 178:16, 20 179:3, 5,6,8,22

33 179:11

330A 167:14

34 42:6,8 120:19 172:22,23, 24

340A 121:25 161:18 171:2

340B 161:18

36 75:7,9

360 212:12

360A 160:1

360B 160:1

37 75:15 76:20 77:2,3 154:15 181:25 186:7 194:5,7

38 182:1 194:7

3:01 189:7

4

4 8:4,21 42:10,11, 19 44:15 45:1,4,9 46:10 47:11 50:21 52:14 53:4,22,23 54:19,20 112:23,25 113:5 175:4 177:18 181:22 187:23 188:13

4,251,588 110:7

40 99:24 125:2,17, 20 127:1, 6,22 129:10,11 134:10 135:8 139:9 140:18 172:19 182:4 187:23

41 42:15 175:16 176:12 179:19 182:5 186:22

42 30:16 42:15 175:16 182:4 186:18

43 154:13 155:24 176:12 182:5 186:18

45 10:22 103:9,16, 23 104:19 105:2,8

46 74:8 192:17

48 65:4

49 74:8 231:15

49-46 74:10

4:05 242:13

4:12 242:13

4:29 256:16

5

5 82:3,5,8 83:23 84:14,25 238:22,23

5.9 99:25 125:3

50 4:16 149:11 189:11,18 190:2,4, 22,23 191:3,16, 22,24 192:3,7 193:5,11, 18 199:9 200:3,9 201:5,22 202:4,8, 10,15,16 203:1,11, 22 205:21, 22,25 206:1,2,3, 4 233:13

534 231:13

56 174:1,2 180:15

566 8:8 78:5,9,18 79:1,9 80:16,22 81:1,12 88:23 192:6 193:6,12 198:8 212:3

6

6 83:11 93:7 101:16 108:25 109:1,3 111:7 112:25 134:22 135:15 136:3,7 138:16

141:5
155:12
156:9,22

6-10 134:24
138:18

6/10 135:16
137:19,20
138:24

60 83:14
85:17
91:18
92:14,23
95:18 96:3
200:10
248:16

64 82:19
83:24
84:10
85:2,17,
19,22
86:6,22
87:1 89:5,
10,16
90:21
91:4,7,12,
19 92:9,
16,23

66 180:14,
16,17

67 88:13,22
120:7

7

7 75:21
168:8

75 77:16
78:21
79:14,20
80:12 81:6

76 88:3,5,
6,18 89:9

8

8 109:5

830 155:11
156:3

832 166:8,
10 169:8,
14,20,21,
25 170:1

84 24:23

850 155:7
162:5

852 155:2
162:4
169:19,22
170:13

852/854
156:3

856 161:3

856/858
155:3

858 160:25

860 155:5

9

9 42:5
44:11 45:3
81:17
82:2,9
124:7,12

9,000 107:16

9.45 124:16

90 82:19
86:22 87:2
89:6,10,
17,18
90:16,17,
24 91:2,3,
7 92:9
93:17

900 159:11

96 203:2,6,
11,23
204:13

9:49 37:19

A

a.m. 105:25

ability
48:14
55:20,25
56:19 70:7

absent 70:8

absolute
238:7
239:1

absorb 28:13
29:10

abstract
108:19
110:7,11

academic
30:15

accept 63:22
66:1

accepted
238:16
239:9

accommodate
46:3

account
72:15
223:5
237:5

accuracy
238:7,14
239:1
244:2,4
249:12,15

accurate
5:12 63:20
197:13,18,
20 216:20
236:7,10,
11,16,17,
19,20
238:6,14

achieve
97:11,12

achieved
174:17
188:24

act 65:23

66:10
144:17

action
175:14
176:19,24
181:16
182:6,11
183:3,12
184:3,4,5,8 188:21

actively
169:17

activities
16:24
34:22

acts 66:12

actual 18:16
62:3,19
194:15
215:1
216:14
218:22
234:23

acuities
69:23

Adanur 74:18
77:10,11,20 115:6,10,13
116:15,16
203:23
205:17
231:20
242:16
243:8

Adanur's
245:9,14
246:8

add 84:2

added 207:3
208:12

adding 66:3

addition
70:9
147:14

additional
66:4

address 4:8,11

adds 95:9

adjacent
176:14
215:20

adjunct 18:2

adjust
255:13,20

adjustments
256:1,3,8

adjusts
203:14

advantageous
90:6

aerially
241:13

affect
40:15,22

affected
45:13 95:6

affects
72:12 92:1

agree 43:23
44:9,19,24
55:19,25
56:13 57:2
59:7,18
66:7,12
67:2,7,13,16,20,22
69:20
70:13 71:9
77:9,10,23,24 78:2
85:12
93:25 94:3
99:11
112:11
113:16
120:3
126:17
127:13
129:5,9
138:23
139:3
141:13,16,20,24
151:2
165:12
177:24
178:8
179:18,21,24 191:11,20 208:13,16,19
209:8,14
210:17
211:22
212:22
221:16
233:2
238:8,9
239:1

agreed
173:20
179:15
221:8

agreement
17:24 70:5

ahead 82:11
128:15
142:23
164:2
170:25
174:13
175:23
184:19
240:7

aid 187:24
188:10

air 201:12

albany 5:24
16:2,3,6,7,13,15
17:2,4,5,9,18,21,22
18:1 19:11
20:2
106:19,21
108:10
109:25
113:22

255:15,18
256:2,7

align 236:6

aligned
171:20,22
234:14
235:18,19,
21 239:21

alignment
235:14,15

alternatively
124:19,24
125:14
127:19
128:18,20

America
77:16

American
81:18

amount 6:22
92:3,5,9,
21 153:12
252:3

analogy
22:16

analysis
11:10 84:9
85:22
157:8
223:10,23
224:3
231:23,25
240:8
241:19

analyzed 6:8
247:7

ANC 252:13

and/or 66:3
137:15

angle 103:9,
16,23
104:19
105:3
106:16
230:12
243:9

angled
173:20
230:12

angles
219:15

annotations
207:3

answering
133:21

answers
237:10

anterior
20:20,21

anymore
184:14,15
188:25
256:10

anyplace
218:8

apologize
10:1

apparel
31:10,13

apparently
203:21
204:2

appears
208:12
220:1

appendix
8:14,17,
21,23 10:7
108:15,16

apples
113:14
144:7

applicable
114:1

application
78:12
137:19
155:22,23
204:20,25
205:1,2

applications
33:18
77:19
250:22
252:19

applied
24:17
57:24,25

apply 231:25

applying
58:23,24
59:7

approximately
16:14
77:16
169:25
171:2,5
190:22,23
220:6,8

approximating
166:8

approximation
6:21

arc 220:10,
13,15,16

area 83:15,
21 88:4
90:18
107:18
149:1
166:15
169:15
177:25
178:2,16,
24 180:8,
18 221:22

areas 14:15
16:21
21:12 25:6
32:10
178:11

arguments
190:20

arranged
99:23
134:10

135:7
140:17

arrangement
124:13,14

array 99:20
101:11
122:18,20
123:6,10,
13 124:14,
15,20,22,
25 125:2,
7,9,14,16,
21,22,23,
24 126:2,
6,10,11,
16,18,21
127:1,6,9,
12,20,22,
25 128:2,
3,8,9,12,
16,21
129:2,3
130:4,5
131:3,23,
24 132:12,
20 134:7,
22,23
135:4,14,
15 136:2,6
137:4,6
138:3,5,6,
8,16,17,24
139:4,16
140:9,10,
12,22
141:1,4
143:12,13,
14 157:3
165:21

arrays
112:10,19,
20 122:16,
17 134:19
135:20
136:11
155:14

arrow 121:18
179:11,19
182:3
217:15

arrows
175:16
176:12
182:4
207:10

art 155:11
190:21
203:10
204:12

artificial
214:13,18

artistry
106:10

ascertained
83:13
192:20

aspect 52:21

aspects
21:8,9
52:22

assemblies
145:5

assembly
137:6
140:2,4,
10,11,14
154:19
164:8,9,11
166:5

asserted
7:8,21

associate
16:9,12,19

assume 5:2
61:12,15
132:16,18
212:9
241:14

assuming
48:5 72:8
118:18
197:18,19,
21,22,23
210:13
243:22

assumption
59:22

ASTM 70:3
148:20
214:22
224:12
244:16,22,
23 248:6
252:11,12

attached
8:18
187:25

attempt
197:13
219:1
234:2

attempting
102:13

attended
114:17

attorney
4:6,21
7:17 28:19
29:2 33:10
40:14
43:17
46:11,15
47:20
48:16
49:23
50:4,17,23
51:14,23
52:6,15,23
53:5,19,24
54:7,24
55:13,23
56:4,11,
15,23
59:14
60:23
61:20 63:2
67:9 79:2,
10,23
80:7,17
81:2 87:3
89:8 91:8,
13,20
92:10

95:19,24
96:6,16,22
97:13
102:1,20
103:10,22
104:1
105:5,23
106:8
107:11
108:4
109:24
111:19
112:7
113:11
114:7
116:19
117:1,20
118:9
119:13
121:4,6
132:17,21
133:19
136:23
138:25
144:15
146:20
147:19
148:7
149:18
152:13
157:13
158:9
159:6
160:22
161:11,20
162:18
173:9
176:21
177:3,11
181:17
189:2,5
190:6
191:4
192:4,13
193:7,13
194:25
197:25
198:10,23
199:12,25
201:15
202:18
203:15,25
204:5,10
205:6
209:11
210:5,18
211:24
214:19
217:7,8
218:16
220:7,12
221:10,21
224:25
228:9
229:1
230:8,19,
25 231:2
232:19,23
233:4,8
234:15
235:10,22
236:9
237:3,12
238:12
239:3,25
243:16,25
244:3
245:2
246:1
247:14
248:23
250:19
251:22
252:10
255:5
256:11,13

audience
32:22,23

Automation
34:18

aware 29:18
80:15,21,
23 248:21,
24 250:16,
21,25
251:2

axis 143:22

B

B-R-O-O-K-S-T-E-I-N 4:10

bachelor
12:24

back 9:13
10:5 20:14
27:9 35:4
66:25
69:13
70:15 71:2
82:25
86:19
89:12
120:4
129:22
134:5
135:13
138:1,10
150:3
156:19
158:12
159:25
161:13,22,
23,25
164:1
169:5
181:21
192:5
198:7
216:25
226:11
232:1
236:3
252:11
255:18

backed 13:17

background
64:3,4

backtrack
119:21

bad 224:19

bar 244:24
245:5
246:3
247:15,16,
23

barbed 57:19

Barely 110:5

base 57:14, 21,22 58:17,20, 25 65:25 95:14 96:21 108:21 109:8 122:15 155:11 156:3 164:16 241:19

based 33:25 39:14 55:3 74:1 88:7, 19 91:9 191:1 224:12,13, 15 225:24 237:4,15, 19 240:25 244:16 249:7 250:9

basically 32:4 144:22 203:11 241:3

basis 218:2

Bates 63:12

batt 57:7, 10,11,18, 24 58:14 94:15,18, 23 95:1,3, 6

bearing 131:25 132:1

beginning 63:24

begins 136:16

belt 23:7 69:10,11 70:11 73:3,7,17 111:2 132:1 150:22 253:18,19, 22 254:4, 13,16,24 255:2,10, 12,13,19

belts 110:8 111:14 112:6,15 115:17 254:1 255:1

big 167:19, 20 203:3

Biological 142:5

bit 38:3 57:4,15 64:2 84:5 223:18,19 243:9,10

blowup 211:3

blue 220:20,24 221:1,6

blurry 118:14

board's 9:3

bodies 18:6

bottom 15:18 64:10 67:6 75:17 81:17 86:9,12,16 90:3 92:1 99:12 101:25 102:6,9 103:3,9, 18,19,20, 21,24 104:3,10, 14,19 115:9 123:3,4 134:15 138:11 163:5 176:2 178:17 180:12 189:8 196:20 208:17 213:17 215:2 216:5 217:21 218:5,15 220:24 226:19,21 227:18 228:4,7 229:25 230:2,17 231:15 240:20 242:25

Bowes 254:7

box 253:1

break 37:16, 18,20 75:1 105:21 106:12,23 136:16 142:4,5,7 189:6 235:25 242:10,11

briefly 242:15

bringing 178:10

broad 16:20 19:24 31:17

Brookstein 4:10

brought 219:20

business 32:14,25
buy 252:15

C

cabled 137:8,14
calculate 234:1
calculating 45:22
calendared 62:16
calendaring 58:3,4,5,6,10,13,16,19 59:4,23 60:18 61:5,10 97:4
call 27:16 57:12
called 4:2 13:8,22 15:15 16:5 27:14,17 30:6 32:1,7 36:17 37:5,12 47:4 50:10 110:24 115:7 118:3 172:14 233:22 237:21
camera 242:5,6 243:10
cans 23:8
Carbide 14:21
carbon 14:19,20 15:12
care 133:2 216:11 253:2
careful 248:17
case 30:9 42:10 49:20 50:3 57:21 60:6,14 61:23 110:3 116:8 143:23 152:6 193:2 200:24 231:19 237:21,23 243:8 245:4 248:8,19
cases 58:7,8
category 110:19
caused 13:15 95:12
caution 7:18 119:14
CD 121:21 155:6 162:16,17,19 164:3 165:24 166:7 168:25 195:25 196:4,12,20
CD-DIRECTION 38:5
cellulosic 22:2
center 103:4,5,7 105:16 106:14,15 213:6,7 229:10,11
centimeter 99:25 124:16 125:3
centrifugal 22:18
chance 248:14
change 11:6 51:12,21 52:4 59:19 60:21 62:8 70:8,21 80:15,21 91:18 93:9 95:14 131:21 146:12,13 153:7 158:15 224:3 235:23 255:9
changed 158:18
changing 62:2,4,6,24 146:10 235:20
channel 155:5
characteristics 26:5,19 47:1,2
characterize 14:4
check 85:7 215:8
checked 119:24
China 34:3
choice 94:17
choices 204:3,6

choose 97:10
155:21
191:15
204:20,24

choosing
97:18

chose 77:25

chosen 41:14

circle
39:18,19,
21,23
40:1,4,8
42:9 60:22
61:18
100:13,21
101:9
166:19
177:15
192:18,20,
22,25
194:22
198:16
207:13,16,
25 208:1,
5,6,11,13,
15,17,20
209:10,13
210:12,13,
16,21
211:12,15
212:4,7,
12,18,19
213:7,22,
25 214:13
215:25
216:10,12
217:23
218:7
219:9,10,
13,24
220:3,11,
13,15,17,
18 221:9,
13,17,18,
20 222:2,
3,4,6,10,
13,14,19,
24 223:6,
8,15,17
224:2
227:3
228:18
229:8,11,
14 234:11
236:18

circles
164:19,23,
25 165:1,
2,18,19
167:3,4,7,
24 168:13
177:19,20,
21 194:20

circular
59:23
60:1,2,6,
10,14
99:20
100:4,8,9
101:5
130:8
131:1
134:7
135:4
140:14
190:8
198:20
199:6,11,
15

circumference
222:4

circumstance
40:8

circumstances
45:8

cite 65:1

cited 8:13

cites 77:19

citing 65:10
88:1

claim 82:1
86:19
201:16,17

claiming
201:25

claims
201:24

clarification
63:8

clarify 5:1,
2 69:3,5

class 32:17,
18 33:9

classes 18:5
29:21
30:3,16,17

clear 4:25
78:8 85:15
105:4,6,7
154:11
231:22
245:6

close 90:15
209:9
232:16

closed 89:25
90:10
174:5,25

closer
178:11

closure
174:6

clothes
22:17

clothing
16:22,25
17:8 18:10
21:10,18
29:22
30:4,10
31:12
34:10,11
35:2 42:13
64:7 82:13
97:20,21
117:15,16
122:14
256:5,6

clothings
148:11

collaborative

7:12,14

collects
66:18

College
31:25 32:1

color 69:6
70:8

Column 42:5
44:11 45:3
81:15,17
82:8,9,10,
11 83:11
86:20
108:25
109:1
110:22
172:21,24
173:25
174:2
175:4
180:10
181:22
186:18,21
187:23
188:13
189:9
192:16

combination
90:4
130:11
131:3,13

combinations
137:14

commercial
98:5

commonly
28:15,17,
18,25
29:18
201:13

communicate
197:13

communication
7:19

companies
19:10

company
16:7,14,15
97:15,16,
17,21

compare
228:5

compared
213:10
245:16

comparing
113:14
151:7
184:6

comparison
159:25

competing
71:3,10
94:11
96:11
97:10

compilation
74:21

complete
5:13
39:17,19,
21,23,25
40:4,8
106:19
208:4,6

completely
160:19
192:19
207:25

complex
20:24

component
156:3

composed
27:10
122:15

composite
181:10
191:16

composites
15:5
34:24,25

compress
58:15,18,
21,22

compressibilit
y 48:3 50:9

compressive
152:25

comprised
134:22,23
135:14,16
137:17,19
138:16,18

comprising
134:18
135:19
136:10
138:15

computed
233:15

concept
136:18

concern
205:19

concerned
15:11
252:1,2,22

conclusions
7:21 11:9

conditions
234:22

conduct
11:19 19:3

conductivity
14:19
15:12

configuration
13:23
197:13

configurations
155:22

confirm
35:24
219:7

confocal
118:3
167:18

247:9

confused
84:5 151:9

confusing
99:5

confusion
38:3

conjunction
216:10

connect 39:4

connected
147:1

connection
146:22
250:16

connects
36:17

conservation
62:14

considerations
204:9

considered
8:7,10 9:1
99:2

consistency
64:14
67:21,23
70:16,18

consistent
68:1 70:10
71:23
99:14
107:9
109:21
117:19,21

constant
54:6,9
55:7 62:11
63:5 70:20

construction
47:15
50:25 51:2
52:2,11
53:12 54:3
109:10
124:6,12

consultant
34:18

consumer
34:1

contact
64:13
67:2,7,17

content 23:9
24:4

context 69:4
89:9
122:19

continue
13:2 130:2
220:1

CONTINUED
106:7

continues
69:14
72:18
77:15,18
82:18
108:21
124:19
130:7
135:2
155:10
220:14

Continuing
247:4

continuous
22:7 37:10
43:25 46:6
48:6,19
54:14,15
58:9
120:20,22
121:1,8,12
122:10,11
123:17,20,
21 127:11,
14 163:4,
18,20,23
164:17

contract
16:16 19:9

control
174:6

conversation
119:15

convert
107:17

converted
108:7

convey 186:5

conveyer
23:7

cope 64:11

copolymers
156:10

copy 63:20
76:3
114:20,21
245:9

cord 103:11
213:13
216:2,5,6,
9 217:4,
12,15,18,
19,22
228:19
229:19
230:4
231:1

cords 213:15
229:16,17

Corporation
14:21

correct
4:23,24
6:20 8:8,
9,11,14,
15,24,25
12:17 17:5
18:3,4,8,
15 19:1,2
28:6 33:19
34:19
37:25
38:1,4
39:10,21

40:6 43:9, 10,20 45:5,16, 19,20 48:9 51:18 56:8 57:5 59:2 60:19 67:12 68:14 71:19 78:6,19 79:1,15, 18,19 84:4 85:11,21 86:23 90:10,11, 20 91:2 93:2,21 94:15 102:10 104:15,20 107:3,6 108:15 111:15 113:24,25 114:3,8 119:9 120:9,21 121:2,3,9, 13,19,20, 23 122:1, 4,7,16 123:15 126:17 134:19,20 135:23 136:21 137:10 138:3 139:17 142:15 145:19 150:11,20 152:14 155:23 161:7,8,21 162:20 163:24,25 165:15 172:11 173:3 175:10 177:6,7, 10,23 178:11 179:9 194:13,20 195:20,23 203:24 206:23 207:1,4,11 211:10 214:14 215:6 219:24 221:11 223:20,21, 22,24 230:7 233:5,7 237:11 238:11 239:6 240:15 251:12,17 252:9 253:10 256:5

corrected 86:1

correctly 233:3

correspondingly 91:24 233:16

corrugated 253:1

cosmetic 252:18

costs 153:6

cotton 14:1

counsel 7:13,22,23 10:13,15 114:20 119:15

counsel's 119:7

count 4:16

counting 22:5

countries 34:5,6,7

couple 235:25

courses 15:3 18:9

court 5:5

cover 95:9

coverage 83:21

create 36:23 114:12 116:16 118:24 119:1 173:8 176:19 181:15 184:8

created 38:21 116:11,14

creating 79:21 99:2 182:10 184:2,4,5

crimp 14:9 40:15,16, 17

criticize 233:20

criticizing 233:17

cross 86:18 100:9 115:24 117:11 118:19 131:1 146:3 162:22,23, 25 163:4,

5,11,21
165:8,13,16 166:16
167:14
168:17
169:23
170:2,18,20 171:6
177:16
178:6,23
182:19,24
195:2
196:13
198:18
225:2
229:11

cross- 115:3
135:4
178:10
196:24

cross-direction
163:3
196:17
197:1,2

cross-directional
37:5

cross-machine
146:6
159:16,17,20,21
160:15

cross-section
180:1,3

cross-section-shaped 134:7

cross-sectional
59:19
130:8
148:25
162:8
177:25
178:2,16,24 180:8

cross-sectional-shaped 99:21
100:4,8

cross-shaped
140:14

crossover
198:13

cruciate
20:20,21

crushing
68:5

curriculum
33:11

customer
73:13
205:5
252:8
253:11
256:10

cut 100:11,16,17,20
101:3,7,8,16,18
162:8,9,10,19,22
163:11,12,15 164:3
165:5,8,9,16,24
166:7,20
167:12,17,21,22
168:2,6,8,10,13,16
169:2,7,14,24
171:1
189:1

cutting
162:13
163:6
166:13,15
168:18
170:3,4,5,6,12

CV 19:17
20:5

cycle 22:18

D

dashed
159:11

data 11:20
12:3,10
76:16
78:12
232:20
233:2

date 76:15

dated 6:19

David 4:9

day 10:18,24 11:1
17:23
173:4
181:19
226:3
253:19

deal 18:10
44:3

dealing
49:15

dean 18:13,25

decision 9:4
92:12,18
97:23
98:1,8
206:7

declaration
6:13,23
7:3,10,24
8:14,24
9:14 10:6
11:2,5,10,13 20:8,10
21:25
65:5,6,8,12,17
72:23
74:9,12,16,17 75:4
78:1

79:11,14
87:13,22
88:10,15,
22 93:9
99:3
108:12
118:22,23
119:9,12,
22,25
129:19
142:22
185:25
190:11
191:9
206:13,20

declarations
74:18,19,
21

decrease
93:24
150:16

defects
69:16

Defense
20:24

define 46:12
117:21
148:8
155:5
210:6
252:8

defined
123:14
212:3

defining
152:4

definition
78:20 83:1
122:20
130:21
198:1
207:24

deform 59:9

deformable
18:6

deformation
59:12,18
60:18,20
61:1,2,4,
9,13,16
62:21

degree 12:23
31:4
103:9,16,
23 104:19
105:3,8
106:16

degrees
33:4,6
212:13,14,
19 219:17

denier
107:15,19
108:8

denominator
84:3,7,14

density
26:8,12,25
27:2,7,8,
12,19
53:10,11,
14,15,17
62:3,4,6,
10,23
63:4,5,6
70:20
82:19,23
83:5,12,
14,19,24
86:6,22
87:1,2
89:4,6,11,
23 90:5,7,
18,21
91:7,12,
18,22
92:14,23,
24 93:15,
17,20,23
94:1,4,17
95:4,14,18
96:3,15,20
97:24 98:9
99:24
107:16,25
124:15,21,
22,25
125:1,7,
15,16,23
126:5,7,
15,18,21
127:1,5,8,
9,14,21,22
128:2,3,7,
8,12,16
129:1,3,6,
14 134:10
135:7
139:8
140:17
142:8
143:1
145:21
151:18
157:8,10,
15,18,21
158:3
251:15,16
255:9

department
15:15

depend 44:22
50:24
55:22
56:3,5,10,
14,21
94:18
248:7

dependent
40:9

depending
41:1 45:9
150:9
155:22,23
163:11
166:19
173:24
198:14,17
204:8,20,
24 254:1

depends
36:13
45:15
47:13 61:6

117:24
150:21
157:14
165:7
167:16
168:6
195:1
196:24

deposed 4:13
11:18

deposited
23:18

deposition
10:4 11:16
114:16,19
118:17

depth
167:19,20

derived
150:5

derives
146:24

describe 7:2
13:9 21:23
22:10 23:4
33:20
60:20
132:5

describes
45:4 100:3
110:7
120:8
135:3
191:21
192:15

describing
100:15
111:11,12,
13 130:25
151:11
172:1,2
206:19

description
7:16 17:7
87:17
126:1
192:15

design 14:23
19:21
190:21
191:16
254:12,16
255:3,4

designed
15:23 90:4
98:5 151:3
253:9

designer
71:15
72:14
95:14
96:14,20
155:21
202:17,20
203:13,16,
19 204:20,
24 206:8,
10

designers
97:10
204:3,8

designing
253:17,21

desire 69:9

desired
71:5,13,19
72:15
174:10
175:10
182:6,11

details
15:25 33:8
226:7

determination
47:16,23
74:3

determine
14:8 15:20
50:20
62:16 96:2
102:13
130:18
192:17
218:13
219:1
224:10
246:22
248:22

determines
206:11
249:19

determining
83:10,11

developing
20:19

deviation
238:17,21
239:8,12,
13 244:21,
25

device 15:15
153:11

diameter
27:20
42:9,15,
16,25
43:3,15,16
44:7,8
45:16,21,
23 46:2,6
48:6,9,19,
22 49:6
59:25
60:2,4,5
61:17,18,
23 62:7,
12,24,25
83:19,23
99:22
100:10,21
101:4,10,
25 103:1
107:14
109:16,19
111:7,14
112:13
130:3,9
131:1
132:2
134:8
135:5
139:6,15
140:15,25

141:9,16, 21,25
142:9
143:1
144:12
145:20
149:14
151:17,23, 24 153:23, 24 173:21
177:10,12, 14 179:3
186:14,15, 24 189:11
190:7
191:22,24
192:17,20, 21,22,23, 25 193:1, 5,6,11,12, 14,15,17, 21,22
199:2,3, 10,11,15, 21 200:5,8
201:5,21
202:4,16, 25 203:2, 12 204:18, 22 207:24
208:1,2
210:9,11
211:17
213:13,16
214:13,17
215:18,23, 24 216:3
217:20
218:10
219:2,3,18
222:8
224:11
225:16
227:8,10, 11,12,19
228:20,22, 25 229:21, 23 230:21, 22 231:14
232:5
233:13,14
234:10
236:8
251:16

diameters
60:15
107:10,22
141:4
157:7,9
200:2
203:4
213:15
216:14,15
219:12
229:16

dictate
256:2

difference
50:14
53:17
54:23
55:8,11
87:6,10,11
150:8
203:3
235:3

differences
142:25
145:16
224:1

differently
144:17

difficult
90:25 94:2
132:25

digital
115:20,22
116:18
117:18,24
118:1,7,8
242:22
244:8
246:13
247:5,7,12
248:5,12, 18,22
249:5

dimension
85:9
104:24
201:17
205:17
239:15

dimensional
84:9 85:8, 21 137:21

dimensionalist
85:22
86:10,11, 13,16

dimensions
85:9
146:11
195:19
221:2
234:7
246:17

directed
32:21

direction
61:17
111:3
115:4,5
121:17,21, 22 146:2, 4,7,17
147:10,11, 14,24
148:5,17
149:16
156:6
159:20
162:17,20
164:3
165:24
166:7,17
167:2
168:4
170:2
196:12,25
200:18,19
210:22
219:21

directions
111:5
175:16
177:6,9

178:10
180:1
181:8
182:10,14
202:21

directly
83:7

disagree
214:1,3

disagreed
9:10,16
245:18

disagreeing
232:21

disagreement
232:25

disclosed
92:3,4
109:20,22
114:5
142:9,10

discloses
45:7
186:13

disclosing
12:15
127:5

disclosure
44:24
112:12
123:18
138:21
191:1

discrete
57:11
150:24

discuss
17:24
87:14
119:8,12

discussed
7:22
17:18,20
46:1 60:17
98:25
102:22
155:15
194:11

discussing
142:8

discussion
88:23
156:14,19
208:3

disqualified
237:22,24

distance
102:14,19
105:8
161:5
198:11,12
202:7,9
211:14
242:3

distances
231:12

distinguishes
136:15

distort
241:11,12,
13

distorted
241:10

distortion
241:14

divided
84:10 85:4

division
83:25

doctor 5:15
13:3,4
55:8 57:5
106:23
242:15

doctoral
13:6,7,11

doctorate
12:16

document
7:11 8:16
63:24

door 183:4,
5,6

dots 168:11

double
203:11

doubled
149:20

doubling
161:13

doubt 77:12

draft 7:11

drafting 7:3

drafts 7:24

draw 13:8
103:1,15
104:4
218:14
241:8

drawing
24:8,9
60:3 105:1
106:13,21
178:4
195:17,22
214:18
239:16
240:3
241:21,22

drawing's
195:20

drawings
195:8

drawn
104:10,17
195:3,8,9,
12 220:21,
24 228:8
236:5
240:9

drew 103:9
213:3,9
214:12
216:14
230:24
234:9

239:24
240:14

dry 22:21

dryer 22:20
23:1,5,6
24:16
25:15,20
35:24
36:1,2,4
152:23

drying 97:2

due 137:20

duly 4:2

Dupont 13:14

duties 16:11

dynamics
18:6

E

e.g 66:2

earlier
35:23 43:6
46:1 49:24
50:2,7,24
52:22 68:8
88:9 93:2
94:14
110:20
126:24
136:22
153:16
156:13
163:18
168:7
173:6
194:11,19
209:17
226:4
228:16
236:3,4
237:14
242:21
245:8
249:21
251:24

ease 158:13

easier 90:15
91:4 94:5
173:7
233:11

easily 89:25
90:9 175:9

east 37:7

easy 26:3,6
187:17

edge 102:9,
11 103:2,
3,8,9,15,
17,20,21,
24 104:3,
10,11,14,
18,19,20
160:19,20,
23 161:6,
10 166:23,
25 180:7
188:4
215:10
218:5,14,
15 222:15
223:7,9
240:19,20

edges
102:15,18,
19 105:2,
3,15 188:5
218:6,15,
17

editing 7:25

effect 17:10
27:19
58:19
146:4

effective
177:9,12,
14 180:19
189:12

effects
64:17

efficient
64:12,22
67:13

effort 7:12,
15

elaborate
94:21

elderly
37:17

electron
116:4,7,
10,17,24
249:22

electronic
245:11,14,
25 246:4,9

electronically
244:12

element
82:15
109:15
120:11,14
121:5,8,15
172:19
184:6

elements
143:21
173:1
174:4,24
175:8,13,
15 181:24
182:2,20,
22 184:5,9
185:10,16,
17 186:23
187:24
188:3,4,
15,18

embedded
15:13

embodiment
109:7
136:17,18
154:24
155:20
172:9,13

embodiments
142:14,18

employed
16:2,3
17:5 18:1,

21,23

empty 65:25

encompassed
114:5

end 8:16
22:15
49:18
71:5,13,
19,21,23
72:1,3,9,
15 81:20
82:14
95:23,25
96:18
100:12
101:8
123:20
166:14
173:4,13,
20 176:15
180:5
181:19
182:14,16,
18 187:20
194:15
229:9
252:9,21
253:19
254:2
255:14

end-use
205:5
251:20
252:2,8
254:7

ended 180:7

endless
36:18
82:13
98:13
155:12,13

ends 39:6
75:16
82:12
83:17
161:17
172:4
173:12,14
175:6,9

engineer
132:3
143:12
248:16

engineering
12:17,22,
24 13:5
15:15
18:13,14,
19 19:1
27:8 32:22
33:3,4,6
94:7,13
150:17
224:19
233:22
239:14
241:19

engineering-type 32:18,
20

engineers
224:17

enlarging
44:6

entire
30:18,19,
23 43:22
48:10
51:10,11
54:16
55:20
56:1,20
68:11
89:16 92:8
166:4

envision
60:3

envisioned
60:11

equal 60:15
89:7
124:21
125:1,15
127:21
129:2

equation
84:1,4
85:13

equipment
15:22
34:24

error 85:13
233:25
234:4
237:2

errors 11:3
237:6

essentially
228:7

establish
70:5

established
48:7 79:17
88:9

estimate
225:16
234:6

event 168:16

eventually
18:19
103:24
122:13

exact 10:25
239:11

EXAMINATION
4:5 106:7

examined 4:3
106:5

examples
204:3

exceed 44:25

excuse
27:22,23
29:9 30:5
34:6 43:12
52:8 74:7
86:20
112:18
122:25
128:1
146:8

217:25

executive
18:25

exerted
153:4

exhibit 5:24
6:2 20:10
42:3
63:16,17
78:9 99:1
106:11,19,
21 114:9,
10,12,14,
23 118:13
242:15
244:24
245:24

exhibition
63:13

exhibits
109:10
112:3

exist 197:17

expect 87:11
101:5,9
246:15

expensive
24:6

experience
107:21

experimental
13:16,17

experiments
11:19
92:11
98:18

expert 7:10
114:16

experts
114:15

explain 15:7
36:11
145:24
160:23
178:12

explanation
57:16
60:24,25

exposed
15:17
137:21

express
22:13,19

expressed
65:24 66:8

expressing
24:13

expression
233:21

extend
161:9,17
213:2
219:14

extended
215:19,22,
23 234:10
235:1

extending
155:6
229:13

extends
227:3

extension
235:6

extensive
108:13,14,
17

extraneous
252:20

F

fabric 14:22
16:5 19:20
21:21
23:12,16,
17,18,20
24:2,3,7,
9,13,16
25:13,24,
25 26:4,5,
20,21
27:7,10,
22,23 29:1
36:13,15,
18,23
37:8,10
38:5,20
39:5
40:10,12,
18 41:1,9,
13,21
43:9,22
45:13,18
46:2,8,23,
25 47:2,
13,14,22,
25 48:1,2
49:22
50:3,12,25
51:2 52:2,
11 53:1,3
54:3,12,
18,19
56:2,21
57:13,14,
21,22
58:8,11,
17,20 59:1
62:16
65:25
66:23
68:11
70:3,19,21
75:11,13,
16 83:13
86:25 87:2
89:6 91:17
92:14,22
94:24
95:15,17,
18,21
96:2,4,21
98:19
108:21
109:8,10,
19 112:15
120:8
121:12
122:5,15,
18 123:14,
16,18,19,

22,25
127:10
129:7,15,
16 130:12
131:4,14
141:11,18,
22 142:1
144:4,14,
17,18
145:2
146:17,19
147:6,8,
13,18
149:1,8,
11,15
150:19
151:23,25
152:1,2,3,
5 154:2,24
155:6,11,
13,14,16
156:3,5,24
157:24
158:1,2,4,
5,8 159:4,
15 161:10
162:9
164:5,6,
10,16
165:25
166:1
168:17,19,
21,22
171:4
172:5
176:9
189:10
191:2,21
192:3
197:7,9
201:21
202:17,24,
25 204:19,
23 231:19,
21 251:15
253:18,21
254:12,16

fabric's
24:14
45:12

fabrics
11:21
12:5,11
13:13
21:20,24
22:4,11,23
23:2,5,6
25:15,16,
17,18,20,
23 26:20,
24 27:17,
25 28:1,2,
5,7,11
29:6
31:11,12,
13,14,17,
18 32:6
35:4,6,14,
17,25
36:1,2,4,
6,9,12,22
37:21,24
38:9 53:16
54:9,10,
11,12,13,
23 55:9,12
57:5,8
62:19
76:22
77:5,17
78:4,18,21
79:7,15,
17,21 81:7
98:19
107:10
108:3
115:25
116:1
117:11,12
142:8,10,
14,15
148:1,6,21
151:3
172:6
203:22,23
218:22
245:20
251:12
253:8

faces 181:25

Fachshule
32:3

fact 76:3
81:6
150:15
206:2
213:11
229:11
241:4,5,6
251:19

fail 153:3,
16 154:3,5

fair 5:3,4
43:14
72:5,6
232:5

fairly 97:3

fall 110:18

falls
129:10,11

false 13:22,
23

familiar
21:20 22:8
23:1 51:17
57:7 58:3,
4 81:21
110:18
247:4
249:21,24

fashion
218:6
220:2

faster
173:10,11,
15

favor 249:23

feature
42:14
247:12

features
89:7 94:18
109:12
246:17
247:19

feel 12:7

felt 11:21
12:5,11
22:11,12,
23 25:10,
18 26:19
28:4 29:6
35:19
36:8,12,
13,21
37:21,24
56:2,21
57:5,8
58:11
62:15
65:23
66:8,23
67:25 68:1
73:7,17
78:4,18
79:7,15
80:25 81:7
87:2 89:4,
6 92:13,22
94:18,23
97:18,19
98:13,14
107:10,14
108:3,19
109:10
115:17
151:5,6
153:6,7
154:18,19
155:6
158:7
175:10
202:17,22,
24 206:8,
10 251:12
253:7,20

felts 22:8
27:1 35:17
57:24 64:7
94:14
117:7
152:23
153:10
171:18
180:19
189:12

fiber 15:13,
17,18
105:4
106:13,22
132:12,20
133:6,16,
18,25
156:22
157:9,25
168:14
214:16,18,
20 215:5,
11 240:20

fiber- 34:24

fiber-reinforced
15:4 34:23

fibers
14:19,20
22:2 28:12
57:12,19
111:14

field 13:4
15:8 25:8
167:19,20

figure
42:10,11
58:23
75:9,15,20
76:12
115:6,7,10
120:7,22
121:1
123:20,21
124:7,12
158:13,20
159:2,3,5
160:18
161:14,22,
25 164:1
165:6,8,20
166:2
167:11,13
168:8,12
169:3,9,10
172:19
175:19,24
177:18,20,
23 178:15
182:1,4,6
186:6,7
193:19,23,
24 194:3
195:3,5,12
202:6
206:20,21,
24 207:1,6
211:3
225:8
228:2,3
230:13
232:1
241:17
245:19
246:4,8

figures
154:18
155:12,17
240:25
241:18

filaments
83:22
111:3,4

filed 9:7
63:15,20
78:6,19

final 23:9
72:25 73:2
96:7,13,18

find 87:20
122:22,23

fine 5:11
20:13
99:13
149:13
252:24
254:22,24

finger 49:13

finish 5:7,9
242:14

finished
32:2 64:18
69:16,24

finishing
57:23

firstly

83:12
fit 48:8,22 49:5 174:8,17 212:4
fits 183:5
fixed 188:6
flap 94:20 95:9
flat 38:4 75:13 109:9 155:13 181:25 196:20 197:3,4, 21,22 242:6
flip 159:25 178:5
flipping 161:23
floats 27:17 150:13
flush 182:20,23 183:2
focus 30:25 31:2 34:9, 14
focused 31:16
focusing 167:17
226:25
fold 38:5 39:8 155:3
folded 36:19 37:8 38:20 75:16
follow 220:10 226:23 251:9
fooling 146:9
foot 149:12,17
force 22:18 44:2 58:24 59:8 149:5,7 200:13
forced 188:19
Ford 81:9
foreign 78:12
form 28:21 38:6,8,14 39:17 155:2
formed 36:12 39:12 41:9,13 82:13 108:20 122:2,4
155:16 171:20
forming 6:9 21:20,24 22:4 23:11,16, 17,18,20 25:16,17, 23,24 26:21,24 27:6,22, 23,25 28:2,7,11 29:1 35:4, 14 36:5 37:23 119:18
forms 28:22, 25
formula 85:25 173:23
Fort 4:11
foundation 51:15,24 53:6 79:24 80:18 81:3 87:4 96:23 107:12 108:5 112:8 116:20 146:21 181:18 228:10 245:3
frame 19:19
Friday 10:17,21
friend 167:11
front 76:16 78:10 101:23 108:18 110:11 173:20
fulfills 42:14
full 4:8 137:2 173:21 174:9 177:15,19, 20,21 196:13
full-width 109:9
function 21:24 22:10,22 23:4 24:1 65:22 66:7 143:2,6 145:22,25 146:18 148:5,8,9 149:23 150:3,14 151:4,10, 12,19,21

152:5,7,11
157:17

functional
95:18,20
96:3

functions
66:22
69:11

G

gap 209:4,6
210:25
211:16,18,
20,25
212:10
213:24
214:6,8,9
220:23
221:4,5

gaps 224:1,
5

garbage
233:22,23,
24

gave 51:25
52:9
114:21
214:16,20

gears 57:4
129:23

general 7:15
17:7
32:22,23
101:2,13,
14 135:22
136:12,13
140:9

generally
7:2 13:9
21:17 22:1
28:10
34:21 70:6
112:11
123:10
140:1,11,
13 250:21

generate
11:20 24:7
249:6
250:8

generated
12:3

geometric
147:21

Geometrically
231:3

geometry
241:4,5,6

Georgia
12:24
14:13,16,
24

Georgia-pacific
254:6,10,
11 255:2,
8,18

Germany 32:5

give 5:12
7:15 12:20
17:7 57:15
74:14 76:5
80:8,9
81:7
102:18
109:3
122:22
125:11
150:24
233:23
254:15,18,
19

giving
183:25
201:23
202:21
255:21,24
256:1

global 30:7
31:3 32:8

gluing 188:6

goal 97:11

good 4:7
22:16
209:7

government
16:17

grad
243:12,14

graduate
243:17,19
244:15

Gram 157:22

grams 107:16

great 253:6

greater
44:21 46:9
47:10,17
49:21
50:15,21
105:9,12,
13 151:23
152:3
238:23

green 207:7
213:10,11,
14,17
215:9,22
216:1,5,
18,19
217:24,25
218:1,2,3,
4,25
219:4,6
224:5,6
225:11
226:20
228:6,15
229:18
230:2,3,6,
11,24
231:23
232:1,4
233:6
234:9
235:4
236:5
238:10
239:22,23
240:9,13,
18

group 41:6 123:10
grow 77:18
guarded 15:16,23
guess 70:4 72:1 90:2 105:20 142:24 144:24 148:15 151:9 153:19 158:13 195:9 254:5
guy 116:9

H

habit 224:20
half 16:14, 16 100:11, 16,17 101:17,18, 20 162:9, 10 198:16 209:16,19, 21
halfway 64:3 124:5
hand 5:23 63:10 108:9 109:25 171:12 207:11 215:3
handing 114:9
happen 54:22 62:11 73:22,23 255:15
happened 214:4
happening 15:24
Harvard 33:14
hash 194:17
hat 94:7, 12,13
hate 154:16
heard 110:12,14 237:1 249:8 250:23
heat 13:22 15:17,18, 20 24:7,16 111:1 188:7
heated 23:8 58:7,8
heating 59:5,8
height 101:24 102:5
held 55:7
helps 128:13
high 45:1,9 89:11,23 90:7 91:14,24 93:7,15 149:19 152:24 153:15
higher 96:15,20 126:9,10 153:14
highly 90:5
hired 19:10
history 8:11
hold 66:1 82:7 109:3 126:7 160:8,13, 15 162:1 169:6 175:22 180:13
holding 54:5,8
hollow 110:8 111:5,16
home 4:11
hope 238:7
hoping 97:11
horizontal 60:6 61:23 62:7,11,25 193:21 200:18 202:7 220:2
horizontally 60:12
hot 15:16, 23
hour 75:2 142:4
hourly 37:17
hours 7:1 10:22,25
hundred 7:1 149:16
hurt 142:5
hydrophobic 28:12,13 29:10
hygroscopic 29:9
hypothesis 238:13
hypothetical 48:5 49:15 51:6,18 52:3,12 53:1 149:10 166:23

184:1

I

i.e. 125:2, 17 127:1, 22

idea 73:25 176:17 229:2 247:25 248:3 249:12,15

identification 106:22

identified 8:21 121:25 122:6 161:18 162:3 205:14 231:1

identify 11:3 12:10 50:14 54:21 69:23 70:8

illustrated 154:24

image 118:24 119:1,3,5, 17 244:8 245:13 246:12 247:13,18, 24 248:5, 13,19,22

images 114:22 115:16 116:6,11, 13,17,24 117:15,17 242:23 245:22 246:22 247:8 249:7,13 250:1,4,9, 18

imaging 118:7

impact 25:22 26:6,20 41:9,13 48:14 49:20 58:13,16 59:12 61:22 69:24 71:14,21 72:10 73:2,7,11, 13,17 91:11 223:10

impacted 46:9 50:21

imperfections 96:19

implemented 253:9

implicate 40:12

implies 212:6

importance 46:22 199:20

important 50:8 146:2 228:14

improper 225:23

improvement 52:13 53:3 54:22 111:3

inaccurate 236:23

inch 99:24 124:16 125:2,8, 12,17,21 126:14 127:2,6, 15,17,23 129:9,10, 13 134:11 135:8 139:9 140:18 180:19,20 181:3 189:12

inches 86:4, 8 107:23 181:4 189:13

include 34:13 35:6,17 142:18 187:5 194:5

included 31:18 34:11,12

includes 54:3 122:6 136:14 142:13 170:21 194:3 199:10

including 70:11

increase 76:23 77:6 93:23 94:4 148:13 153:8 179:4

increasing 94:1 177:9

indentation 50:11

independent 62:25 63:3,4

indicating
38:24
40:20
49:14
125:6
143:15,16,17,19
144:3,6
162:14
170:4,5
222:20,22
241:13
245:6

indication
81:8
195:11

indistinguishable 232:17

individual
39:18,20
41:3
57:11,18
147:15

industrial
30:8 31:6
34:18

industry
16:17
28:11 29:5
33:24 34:3
117:14
251:5
255:7

infinite
27:13
153:11

Infinitesimal
211:19,21

inform
217:23

information
46:19
50:16,18,20 51:1
53:9 55:16
59:16 80:9
81:5 96:1
245:1
246:19,22
250:2,5,9

informs
216:13

inherent
157:19

Initiative
20:24

inquiring
251:4

inscribed
234:11

insert
123:24
140:5
158:23
160:18
161:7,9,16
163:6,12,13,14,22,24 164:7,10,18
166:14,21,24,25
167:8,13
168:4
169:15,18,19 170:16,21,22
171:2,4
187:11,14

insert's
163:8

inserted
46:4
121:12
146:6
175:9
192:19
198:21
207:25
210:14

insertion
82:15
172:3
175:5
181:24
187:24
188:3,7,11,14

insertion... yes. 188:16

inserts
159:7,9
163:10

inside 53:22
54:20
180:3
184:24
185:22
212:4

instance
53:10 54:4
67:25 86:1
87:21
172:19
177:24
219:16
226:14
251:6,24
252:19

instant
111:1

Institute
13:1

institution
9:3

instructed
4:22

integrity
159:23

inter 49:9

interaction
22:21
41:23 42:1

interconnected
123:12

interconnecting 82:12

interdigitate
39:9

interdigitated
38:23

39:1,3,23 40:4,24 41:5,6 43:7,16 48:9,15,23 49:7,9,11, 17 51:7 53:2 54:16 55:21 56:2,20, 24,25 171:23,24

interengage 91:1

interengaging 82:14 83:17

interest 202:17,19

interesting 234:18

interestingly 234:25

interfabric 160:8

interference 41:24,25 42:1 109:11

interior 66:1

interlaced 27:12 145:6 150:15

interlacing 123:12

interlocked 57:13

interlocks 57:21

intermediate 22:14 95:10

internal 189:10,18 191:2,22 193:5,11 198:9,11, 21 199:1, 2,3,9,14, 20 200:5,8 201:5,21 202:4,15, 25 203:12 204:18,22

international 16:3,6,7, 13,15 17:19,21 19:12 20:3 33:17 255:16 256:2

interpret 71:1 72:2

interstructure 160:13

interwoven 123:11

introduce 76:24

introduced 79:18

introduction 77:7

intuitively 153:15

invention 110:25 111:1 121:14,16 136:21 146:5 154:20 156:8,15 158:24 172:2,8 201:25

inventors 34:6,7

involve 14:3 26:11,14

involved 27:25 59:4

involvement 115:22

involves 53:13 117:10

involving 33:18

IPR 5:20 6:6 11:22, 24 12:2,9 117:9

iron 97:3

ironing 58:9

ISO 252:13

Israel 31:25 32:2

issued 34:5

issues 96:14 252:18

item 67:11, 12 239:21

items 10:7 67:10

J

job 16:11 185:5

joined 75:17,25 76:10 77:17 186:23 187:4,5

judge 237:20

judgment 46:20 95:16 108:8

June 76:16

junk 237:21

K

KANE 4:6 106:8 121:6 189:5 217:8 256:11

Keyword 236:10

kind 13:25 46:5 95:25 97:18 149:3 150:21 183:8 190:4 208:19 211:3 220:2 236:2 242:14 244:4

kinds 203:4

knee 20:21

knew 205:11 242:2,3,4 251:5

knitted 13:13

knowing 243:10

knowledge 91:9

KONSTANTAKOPOULOS 7:17 28:19 29:2 33:10 40:14 43:17 46:11,15 47:20 48:16 49:23 50:4,17,23 51:14,23 52:6,15,23 53:5,19,24 54:7,24 55:13,23 56:4,11, 15,23 59:14 60:23 61:20 63:2 67:9 79:2, 10,23 80:7,17 81:2 87:3 89:8 91:8, 13,20 92:10 95:19,24 96:6,16,22 97:13 102:1,20 103:10,22 104:1 105:5,23 107:11 108:4 109:24 111:19 112:7 113:11 114:7 116:19 117:1,20 118:9 119:13 121:4 132:17,21 133:19 138:25 144:15 146:20 147:19 148:7 149:18 152:13 157:13 158:9 159:6 160:22 161:11,20 162:18 173:9 176:21 177:3,11 181:17 189:2 190:6 191:4 192:4,13 193:7,13 194:25 197:25 198:10,23 199:12,25 201:15 202:18 203:15,25 204:5,10 205:6 209:11 210:5,18 211:24 214:19 217:7 218:16 220:7,12 221:10,21 224:25 228:9 229:1 230:8,19, 25 231:2 232:19,23 233:4,8 234:15 235:10,22 236:9 237:3,12 238:12 239:3,25 243:16,25 244:3 245:2 246:1 247:14 248:23 250:19 251:22 252:10 255:5 256:13

L

lab 243:12

labeled
165:11
207:14
212:23
233:6

Laboratories
16:5

Lane 4:11

language
128:18

large 46:3

larger
41:17,19
44:2
130:11
131:3,13,
22 132:12,
20 133:6,
16,18,25
177:25
178:6,10
180:2
183:16,17,
19 193:18,
19,22
216:14

largest
192:18
198:20
207:25
212:3

late 76:24
77:7
158:19

laterally
103:1

lawyer 195:8

lawyers
11:13,15

layer 94:15
109:8,19

layers 57:7,
10,11
108:20
155:14

LD 42:15,24
44:20,22,
23 45:10,
13

LD/MD 192:6
233:15

LD/MDYD
42:18
44:12,20,
25 45:4,8,
15 46:9,22
47:10,17
48:14
49:21
50:15,21
51:13,21
52:5,13
53:4,14,21
54:18,20
55:9,22
56:3,22
89:25
90:5,9

lead 60:18
187:25

leading
173:16

leave 118:19

Lee 98:25
100:3,15,
23,25
101:1
106:24
109:22
111:17
112:5,12
114:4
120:4,6
123:19
124:2
129:22,24
131:7
132:15
133:15
134:5
142:9,10,
13,18
154:7,13
155:19
156:15,22
158:13

Lee's 107:8
122:10
123:17
129:14
141:10,17,
22 142:1

left 104:13
121:19
160:20
161:1,19
177:25
178:7,15
179:2,14,
17 196:1,3
208:15
213:18
215:25
216:5
217:1,5,
12,22
218:25
219:4
221:23
222:9,11,
15,19,21
223:6,9
225:8,11
232:2

left- 215:2

left-hand
78:11

legal 248:1

length 83:13
92:20
174:9
189:19,22
213:3
217:24,25
226:17,18
228:3

lengths
227:24

229:8

lengthwise
162:10

lens 242:3

levels
137:22

ligament
20:21

limit 137:12
138:23
142:2

limits 136:6
253:3

linear
107:15,25
143:1
145:20
149:12,17
151:18
157:7,10,
17 158:3

lined 41:1
213:11
215:18

lines 89:22
154:23
159:11
164:21,22,
25 165:1
193:21
194:17
196:12,13
202:8
207:3,7
211:9,16
213:3,9,
10,11,12,
14,24
214:12,18
215:18
216:14,16,
18,20,22,
23 217:25
218:1,3
219:7,11,
14 221:1
222:1
224:5,6
226:12,13
227:23
228:11,16
231:23
232:1,5
233:11
234:9,10
235:1,18
240:17
241:8

list 8:23

listed 52:21

load
153:14,15,
17,25
154:1,2

loading
152:24,25
153:1

loads
150:21,22
153:4

location
87:25
162:3
166:8
169:8
171:5
225:12,17
228:7
239:21
240:12

locations
161:6
212:8
222:6

lock 159:20
172:7
184:11

locked
184:12

long 10:20,
23 14:18
33:12
65:14 78:5
86:15
99:13
150:13
153:6
158:10

longer 62:13
103:13
174:4,25
176:9
213:16
219:18
228:21
229:19,21,
22 230:6
240:18

looked 7:7,
20 10:5
62:15
100:12
101:22,23
106:13
107:13
162:9
192:5
197:7
246:3

loop 39:2,
18,20
40:25
41:16,18,
20 42:24
43:8,14,
16,19,21
44:2,7,8
45:16,21,
23 46:2
48:9,22,
24,25
49:6,11,
12,13
53:10,11,
14,17
56:6,24
76:11
82:23
83:5,11,
19,22,23
86:6,21,
22,25 87:2
89:4,6,11,
23 90:5,7,

18,21
91:7,12,
18,22
92:14,23,
24 93:15,
17,20,23
94:1,4,17
95:4,5,14,
17 96:3,
15,20
97:24 98:9
160:20,24
166:15,18
169:15
170:3
171:3
183:16,17,
18,20,21,
22,23
184:23,24,
25 185:4,
5,22
186:8,11
190:22
192:18,19,
21,23
193:1,6,12
196:1
198:8,13
199:18
200:21,24
203:13
207:14,18,
24 208:1,
2,4,12
209:1,9,15
210:22
218:3
251:16

looped 82:19

loops 36:16,
18 37:9,
11,13,24
38:6,8,12,
15,17,18,
20,22,23
39:6,9,12,
17,23
40:4,13,
23,24,25
41:4,5,8,
12 42:14,
15 43:7,16
44:20
45:18
48:15
49:17
51:8,9
53:2 54:16
55:21
56:2,21,25
75:21 76:9
82:14
83:12 91:1
121:24
122:2
155:3
161:17
167:14
168:19
169:24
171:21,22,
23,24
173:17
174:8,19,
20,21
177:2
185:6,9,11
188:24
189:25
194:13,14,
15,18,19,
23 200:15,
23,24
208:6

loose 57:18

lost 4:16
153:9

lot 16:21
28:21 32:8
37:7 65:14
68:6 81:9
148:19
153:7
159:17
195:18
201:7
213:14
225:3
226:3
238:18
241:1

lots 136:14

low 89:11,
24 90:8,
13,14,18,
22,23
93:6,17
109:10

lower 91:22
93:6,10,
11,12,16,
17 94:4
142:2
147:16
152:18
153:17
215:10

lunch
105:22,23

M

machine
16:22,25
17:8 18:10
21:9,18,21
22:17
29:22
30:4,10
31:12
34:10,11
35:2 37:7
64:7 97:19
98:12,17,
18 111:2,
5,13 115:4
117:15,16
122:14
146:1
147:11,14,
24 148:11,
17 149:16
152:20,21,
23 153:4
156:6
167:2
205:4
210:14,22

215:9
256:4,6

machine-
146:16
148:4
168:3
219:20

machine-direction
37:12,13
43:2
146:18
147:25
150:5,6
162:24
163:3
167:25
168:5
196:9,11,17,19
197:24
208:25
211:10,15
215:5,17
217:2,11
220:25

machines
71:6 72:19
73:1,6,10,12,16
74:1,2
253:25

macroscopic
226:7
246:16,25

made 7:21
15:16 16:6
22:1 31:14
37:11,13
71:14,22
73:3,8
80:25
93:13
98:10
117:17,23
118:6
149:15
156:8
158:1,2
162:22
167:12
173:7
204:3,6
224:8,23
225:12
248:3
255:4

MAG 34:18,20

magnification
119:2
224:19

main 23:6

Maine 98:11

maintain
46:24

majors 33:1,2

make 4:22
5:8 34:24
46:19
47:7,15,22
61:18 72:4
74:3 78:25
79:8 82:13
92:12
94:5,23,24
95:1,16
98:3,8,14
104:9
106:18
108:8
148:16
154:10
166:14
170:24
171:1
173:7,11
181:10
182:18
187:17
192:2
198:18
202:22
204:8
225:1,4
234:20
237:17
253:25
255:13
256:1

makers 97:21

makes 37:10
61:21 94:1
97:23,25
173:10
206:7
212:2
230:9
232:10
236:12,22
255:4
256:7

making 72:3,8,15 73:13
96:8 97:18
105:14
117:15
146:10
205:20
221:7
237:15
238:22
252:23
253:1
254:22,24
255:11

manner
108:17

manually
244:12

manufacture
71:6
72:19,21
73:2,7,11,17 74:1,3
98:6

manufactured
205:4

manufacturer
253:22,23
254:7
255:1,12,17 256:7

manufacturers 78:17,24 252:21 256:5

manufacturing 14:19 35:5 57:17 72:24,25 253:8

March 6:19 9:7 78:15

mark 106:9, 19 196:5

marked 5:24 76:5 106:22,25 108:10 171:13 196:6,7

market 80:12 81:6

marketing 30:7 31:3 32:8 33:1, 2

marking 47:5 50:11 64:13 67:3,8,17 87:23 91:16,24 92:1,3,5, 9,15,16, 18,22 96:9,10, 14,19 97:4 252:3,6,19

marks 92:19 252:20

mass 157:22,23

Massachusetts 13:1

master 30:6

master's 12:25

material 8:13 11:8 18:7,17 22:14 62:3,4,7, 10,14 63:4 105:17 136:6 157:15,19, 20 252:3,6

materially 92:15

materials 8:20 13:21 18:18 28:8,10 29:4,14 30:9 31:6, 10 39:15 135:11,12, 17 215:1

matter 6:10, 13 110:4 119:18

MD 42:16 44:23 58:20 59:9,13, 19,23 60:1,6,10, 15,19 61:4,6,9 62:17 83:13,16, 21 109:15 121:17,22 122:2,4 127:10,14 146:10 151:14 155:2 207:7,11 217:14,18 233:13

MDYD 42:16 43:2 45:10

meaning 28:13 145:7

means 13:20 17:17 24:4,5,6 28:18 42:24 43:2,12 67:24 78:3 127:25 136:1,23 147:3 175:1 179:16 190:7 199:11 201:8,22 202:6,7 233:15

meant 89:20 113:13 151:11 199:9 221:1 228:17

measure 15:12 70:3 83:20 102:14,17 148:16,25 149:1 195:15,16 210:9 214:17,23 215:13 216:9 218:10 219:10 223:13 224:12 231:5,6,9, 11 237:8 239:5 240:21,22, 23,24 241:8 247:19

measured 70:1 103:2 107:14,15 150:9

210:8
216:22
223:2
226:16
227:17
228:1,3
229:24
233:12
240:16,17
247:12

measurement
92:17
105:14
225:12
227:16
228:12
237:2,6
241:20
244:7
249:6

measurements
55:3,5
224:17
231:8,18
232:11
234:21
236:12,22
237:2,4,
15,18
238:19
243:4
244:5,9
249:6,19

measures
148:22
239:4

measuring
106:14
148:21
189:23
213:12,13
216:2,3,23
221:25
222:1
224:4,5

mechanical
12:17,22
13:5 15:14
19:1 22:13
23:15,19
24:4,5
41:22,24,
25 59:8
153:11

mechanically
22:24 44:6

mechanics
18:6
148:24

meet 213:6
252:15
255:2

meeting
10:16,20

mentioned
14:6 24:20
156:2,18
251:25

met 244:21

meters 84:2
86:12
107:16

method 70:3
214:22
219:8
231:24
232:7
233:18,20
244:16,22,
23

methods
224:12
252:12,13

microscope
116:10,17,
24 117:25
118:2,8
167:18
247:10

microscopes
116:4,7
118:3,4
249:5

microscopy
115:20,23
116:18
117:18
242:22
244:8
246:13
247:5,8,13
248:5,13,
19,22
249:22

middle 65:21
104:22,23
105:4
124:5
126:25
154:17
162:6
164:18,20
165:25
167:7,9
168:3,17,
20 170:21
171:4
179:4
181:22

mil 180:19
189:12
190:22
191:16

millimeter
101:4,7,
10,25
102:25
107:5,8,9
109:19,22
112:4,5,14
113:6,10

millimeters
83:14,16
84:3,6,10,
12 85:2,
10,20 86:3
99:22,23
100:22
103:3
104:15
105:10
107:23
109:16
111:8,15,

18 112:14, 23,25 113:1,17, 19,23 130:9 131:2,13 132:13 134:9 135:6 139:6 140:16,24 141:3,6, 10,17,21, 25 144:13 156:23 203:3,6,24

mils 111:8 181:3 189:11,18 190:2,4,23 191:3,22, 24 192:3,7 193:5,11, 18 199:9 200:3,9,10 201:5,22 202:5,8, 10,15,16 203:1,22

mind 158:16,18

minimal 92:3,5,6,9

minus 239:16,17

minute 60:17

minutes 10:22 74:14 122:23 171:10 199:8 236:1

misinterpreted 9:20,23

missed 84:21

missing 126:2

misspoke 85:16,19 112:19 113:12 199:13

misunderstood 30:20

MIT 13:1,3, 5

mixed 22:3

mixing 144:7

modified 36:23 155:13

module 30:11,13 32:6

moisture 23:9 131:9 137:22

molecularly 29:11

money 153:7

monofilament 100:8 101:3,16 102:24,25 107:5

monofilaments 99:21 100:5 109:16 110:8 111:6,16 112:13 130:7 134:8 135:5 137:7,12, 14 139:5 140:15

months 31:23

morning 4:7 226:4 251:10,25

motivated 190:21 192:2

motivation 190:25 191:15

move 179:8, 17,22 184:14,15 188:24

movement 174:7

moving 183:6 188:2

multiaxial 109:9 122:13 155:15

multicomponent 137:8

multifilament 137:15

multiple 45:18

multiplication 84:18

multiplied 83:18

multiply 84:1 180:25

mutually 123:11

N

narrow 173:16

narrower 173:21

NASA 237:16

national 33:17

nature 19:6 37:15

necessarily
34:14
49:8,10
62:5,8,9
183:13
185:11
194:15
230:23
241:9

needle
57:12,16,
17 94:24

needles
57:20

nip 65:24
66:9

non-american
81:19

nondisclosure
17:24

Nonengineering
32:25

nonwoven
66:4
113:13
122:18
123:14
129:16
140:7
142:15,19
143:13
144:18
145:6,18
146:19
147:6,8,
13,25
149:15
150:4,11,
19 151:1,
7,14,23
152:2
153:22
155:14,16
157:6,24
158:2,5
159:4
165:21
251:15

normal 58:24

North 77:15

Northeastern
18:3 29:20

notary 4:3
106:5

noted 86:1
105:25
106:2
256:16

notice 69:7
237:22
245:5
246:3

noticed 11:8

number 6:3
63:12,13
76:8,13
83:12,15,
18 85:7,23
86:10,13,
17 93:8
99:12
123:3,4
165:10
201:11,12
226:25
228:2
232:13
233:5,6,25
234:13
235:6
236:4
239:11,21
240:4

numbers
86:15 99:7
150:25
239:6

numerator
45:17

nylon 28:21,
22,23,25
29:12,16,
17 137:20

nylons
110:19

O

oath 4:18

objection
28:19 29:2
33:10
40:14
43:17
46:11,15
47:20
48:16
49:23
50:4,17,23
51:14,23
52:7,15,23
53:5,19,24
54:7,24
55:13,23
56:4,11,
15,23
59:14
60:23
61:20 63:2
67:9 79:2,
10,23
80:7,17
81:2 87:3
89:8 91:8,
13,20
92:10
95:19,24
96:6,16,22
97:13
102:1,20
103:10,22
104:1
105:5
107:11
108:4
109:24
111:19
112:7
113:11
114:7
116:19
117:1,20
118:9
121:4

132:17,21
133:19
138:25
144:15
146:20
147:19
148:7
149:18
152:13
157:13
158:9
159:6
160:22
161:11,20
162:18
173:9
176:21
177:3,11
181:17
190:6
191:4
192:4,13
193:7,13
194:25
197:25
198:10,23
199:12,25
201:15
202:18
203:15,25
204:5,10
205:6
209:11
210:5,18
211:24
214:19
218:16
220:7,12
221:10,21
224:25
228:9
229:1
230:8,19,
25 231:2
232:19,23
233:4,8
234:15
235:10,22
236:9
237:3,12
238:12
239:3,25
243:16,25
244:3
245:2
246:1
247:14
248:23
250:19
251:22
252:10
255:5

objections
4:22

observation
93:13

observations
237:18

observe
14:10
62:21
234:8

obtain
250:2,4

obtained
83:20

obvious 7:8

occur 74:1
92:22

occurs 61:4

offer 235:17

offhand
19:18
26:10

office 119:7

official
12:18,20
13:3

on-machine
172:5

one-piece
183:11,15

open 200:16

operating
153:14

operation
187:21

opine 132:23

opinion
80:6,8,9
156:21
216:19
233:2
235:17

opinions 6:9
8:7 119:18
237:23

opposed 93:8

opposing
102:19

opposite
175:9,15
177:6,8
178:6,9
179:25
181:8
182:10,14

optimal
89:25 90:9
94:8,9
95:4

optimize
94:10

oranges
113:15
144:8

order 36:23
38:6
150:19
174:6
250:1
255:13

ordered
252:14

ordinary
192:1,11

orientation
81:22
186:22
218:1,2,4
227:15,22,
24 228:13,

14 229:3,5
230:16
233:5
240:9

oriented
32:14
175:8
182:1
228:16
230:11

orthogonal
27:11,16

oval 200:18

overestimates
231:14
233:14

overlap
111:17

overlaps
111:22,25
112:1

overseas
34:2,8

owner 7:7,13
9:22 66:25

owner's 9:6,
10,21
63:11

P

P-I-N-T-L-E
36:20

p.m. 106:2
256:16

PA 136:3
137:19

PA-6 134:22
138:17

PA-6/10
134:24
138:18

packages
249:5
250:8

pages 99:6
161:24

paper 16:22,
25 17:8
18:10
21:9,18,21
22:1,15
23:9 29:21
30:3,10
31:12
34:9,11
35:1
63:16,20
64:6 72:3,
4 73:13
96:7,8
97:3,18,
19,21
98:6,12,
17,18
116:15
117:15,16
122:13
148:11
152:20,23
252:24,25
253:1,22,
25 254:7,
22,25
255:17
256:4,6

papermaker
97:22
98:13
253:14,15
254:19,20

papermaker's
189:10
191:2,21
192:3
201:21
202:25
204:19,23

papermaking
97:5,9,17,
19,21
110:8
111:2,13
112:6

papers
246:13,21

paragraph
8:4,21
42:6,13,21
65:19,22
70:24
76:19
77:2,3
88:3,5,6,
13,18,22
125:25
129:17
137:2
139:11,25
142:21,25
143:5
144:20
156:1
185:24
186:5,12
187:6,22
190:9
206:14,17

paragraphs
65:6,15

parallel
123:11
162:16,19

parameters
17:11,12
24:25
25:22 45:9
251:17
252:9
254:15

paren 78:11

parent 16:15

parentheses
84:22

part 18:2
31:7 53:12
110:3
114:17
125:24
146:25
186:8
188:8
208:14

253:8

part-time
34:18

Partially
151:15

partners
125:3

parts 114:18
181:9

party
253:17,21

pass 26:3,6
38:25
39:1,11
41:20 43:7
48:14
49:16 51:8
55:20
56:1,19

passageway
37:10
38:21
39:12,22
40:3,12,23
41:4 48:10
51:10,11
174:18
177:4
181:25
182:3
185:2,3,4,
8 186:15,
25 187:2,
18 189:20,
22,24
199:17,21

passed 38:21
41:10

passing 53:1
54:13,15

past 64:2
89:18
116:25
227:15

Pastore 8:24
206:25
208:11
216:25
225:12
230:10,16
232:21
234:9
236:5
237:17
239:20
240:2,8

Pastore's
206:19
226:20
228:6
233:12
234:11

patent 6:3,
5,8 7:7,13
8:8 9:6,9,
21,22 10:6
12:14,15
20:22
33:17 42:2
43:5 44:11
45:7,11
58:1 63:10
66:25
76:2,3
78:5,9,19
79:1,9
80:16,22
81:1,13
82:25 83:8
87:5,17
88:11,14,
23 89:13
98:25
106:24
110:6
120:16
154:8
175:20
176:24
181:13
192:14,16,
17 193:3
195:5
248:1,8,19

patented
21:6

patents 7:7,
9,20 20:2,
4 21:14,
15,16
34:4,12
37:1,3
81:18,20,
24 99:1
108:11
153:5

pattern
40:10,11
55:6 68:4
149:24,25
150:10,14
251:14

patterns
19:20
27:3,13
109:11
150:1

Pause 74:15
88:25
98:24
119:20
128:24
129:21
190:15

PDF 245:12,
25

Pennsylvania
4:12

Penven 44:1,
4 171:12,
18,25
172:2
186:13
189:8
190:1,25
191:20
192:7
193:5,11
195:12
198:9
201:6,20
203:7,22
205:18

Penven's

171:20
191:1
202:14

people 80:10
237:7
252:12

percent
23:10
77:16
78:21
79:14,20
80:12 81:6
82:19,20
83:20,24
85:5,22
86:7,22
87:1,2
89:5,6,10,
17,19
90:17,18,
22,24
91:7,12,
18,19
92:14,16,
23 93:17
95:18 96:3
238:22,23

percentage
92:2

perfect
60:22
61:18 94:7
194:20,21
209:10,12,
24,25
210:4,7,
13,16
211:23
212:1,7,17
221:8,13,
16,18,20

perfectly
60:10,14
197:3,4

perform
58:10 87:1
89:5
143:2,5
145:21
146:17
151:18

performance
11:20
12:4,11
45:12
46:8,13,
14,17,22,
25 47:1
49:22,25
50:6,14,22
51:12,21
52:4,13,
19,21
53:3,18
54:21,23
55:11
59:12
69:10,24
70:9,11
91:17

performing
148:5

period 79:13

permanent
50:11
61:1,9,12
62:21

permeability
24:14
25:24
26:1,20,22
46:18 47:4
48:2 50:9
64:16
69:15,22
70:1,2,3,
12 87:6,8,
12,23
89:14,16,
19,24
90:8,14,
19,22
91:6,14,
22,23,25
92:1
93:16,21,
24 94:5
95:6 131:9
133:1
152:7

perpendicular
102:14
103:8
104:14,18
105:2,14
106:15
121:22
215:9
218:6,15,
17 222:4,6
223:14,17
228:17,18

perpendicularly 102:17
103:2

person
35:21,22
190:20
192:1,11

personally
7:11

perspective
69:10

petition
190:20
191:5,7,
12,14
193:20,25
204:12
233:12

petitioner
7:10

petitioner's
64:24
114:16
190:25

Philadelphia
18:15
31:24

phonetic
149:5

photo 243:1,
4,15

photograph

206:23

photos
242:16

physical
238:19
245:11
247:16
249:3

physically
143:6
144:14,21
152:16
153:2
214:20

pick 192:12
201:12

picked 34:12

picture
68:10,17,18,21
104:4,9
105:11
115:3
170:22
189:23
193:18
194:16
207:2,19,20 218:19,21 222:16,19 224:14,15 225:25
226:1,2,5,6 230:9
234:23
235:16
236:12
241:8,10,11,12,22,23,25
242:2,6
243:11,17,21,23
245:7

pictures
35:21
36:2,5,8
39:15
62:18,20
114:25
115:2,24
116:1
117:6,8
118:5,14,19 163:13
168:7
214:25
218:23
224:17
226:3
231:7,17
234:6,7,21
236:22
243:20

piece 15:22

pieces
177:19
180:1,3
205:21

pilot 98:12

pintle
36:17,19
37:9 38:21
39:11
41:10,13,15 43:6,8,12,13,15,25 44:7
46:3,5,6
48:6,7,15,19,21
49:4,16
51:8 53:1
54:13,14,15 55:20
56:1,19
76:1,10,14
95:2,11
172:3,10,25 173:7,21,22
174:3,7,8,17,24
176:2,5,15,18
177:10
178:5
180:11,18,24 181:9,10,24
182:22
183:11,15,21,22
184:2
185:10,16,17,19
186:7,14,22,24
187:12,17,24 188:3,4,5,9,15,17 189:11
191:16,17
193:3
194:3,5,9,12 198:20
199:22,24
200:9
202:1,20
205:20

pintles
172:4
176:20
177:6,8
178:13
181:8
182:9,13
202:21

Pinto 81:9

Pintos 81:10

pipeline
230:24

Pitney-
254:6

Pitney-bowes
254:9

pixels 223:2
231:13

place 160:8
172:7
188:25
203:5

places 34:2
120:24
148:13

215:16

plain 27:14 40:19 154:25 155:20 156:4,23

planar 123:10 140:1,4,9, 11,14 145:5

plate 15:16, 23

plays 146:2, 3

PMC 25:10, 11,12 67:8,18,21 72:14,24 90:3,4 97:15,16

PMCS 64:7, 11,21 67:14 71:11

point 38:17 46:24 64:3 132:8,9 180:24 212:23,25 213:21 221:7 223:1,4 229:4 230:13 232:24 235:13,15 254:5

pointing 88:21 166:8,10 217:15

points 121:18 198:13 210:23 232:21 233:2

polyamide 110:9,13, 17,21 111:6 134:22,24 135:15,16 136:7 137:18,19, 23 138:16, 18,24 156:8,9,22 157:7

polyamides 134:19 135:21 136:11,14 138:22 156:9,14

Polycarbon 110:12

polycarbonamide 110:9,13 111:7

polyester 13:21 110:9,13, 17,21 111:6

polymer 137:18 156:2 158:1,2

polymers 134:17 135:19 136:9 138:15

popular 13:13,18

portion 44:11 88:10 173:16 178:5,17 197:3,5 208:13 209:9 217:21

portions 172:10 173:7 176:14,18

POSITA 234:8

position 19:4 208:20,22

positions 70:22

possibly 73:15,19, 20,22

potentially 30:21 251:21

pounds 149:6,12, 16

power 117:24

powerful 117:25

practice 136:21

precisely 5:17,19 239:14

predominantly 22:4

preferably 99:19,23 126:9,13 134:6,9, 17,21 135:3,7,23 136:1 137:7,11, 17 138:13 139:15,23, 24 140:17 156:7,8 182:1 187:25

preferred 124:13,14

126:20
130:10
131:2
136:1,17,
18 137:20
231:20

preparation
10:10,11,
12,14

prepare 10:3

prepared
119:5

preparing
10:18
11:13,16
191:9

present
137:18

presented
124:7,12

presently
130:9
131:2
137:20

press 11:20
12:4,11
22:8,10,
12,22
24:2,3,7,
9,12
25:10,18
26:19 27:1
28:4 29:6
35:16,19
36:8,12,
13,21
37:21,24
54:10
56:2,21
57:5,8,24
58:8,11
62:15 64:7
65:23,24
66:8,9,23
67:25 68:1
73:7,17
77:16
78:4,18,21
79:7,15
80:25 81:7
86:25 87:1
89:4,5
92:13,22
94:14,18,
23 95:17
96:2 98:13
107:10,14
108:3,19
109:9
112:15
115:17
117:6
120:8
151:4,6
153:10
154:18,19
155:6
158:7
171:18
202:17,22,
24 206:8,
10 251:11
253:7,18,
21,24
254:12,16

pressed
184:16,18,
20 185:16

pressing
24:5,11,12
184:22

pressure
22:13
23:15,19

pretty 37:15
87:5

prevent
15:24
64:13
67:3,7,17
159:14
160:15

prevents
185:19

previous
71:2 208:3

previously
5:24 106:4
156:2,17

primarily
16:17
25:11

primary
22:22
23:11 24:1
25:2,4
65:22
66:7,22
205:19

principles
237:19

printed
238:15

prior 33:24
81:1
155:11

priority
76:16
78:12

privileged
7:18
119:15

problem 47:5
87:23
95:5,12
97:4

problems
255:20

proceed 7:23

proceeding
5:20
63:16,17,
21

process 7:2
13:15 35:5
36:22
57:18
60:18
61:10
94:2,5
95:13

97:2,5,9
172:3

processes
22:7 57:23
59:4

processing
58:2

produce
64:17
69:16
95:23

product
64:18
69:16,25
71:5,13,
19,21,23
72:1,3,15,
25 73:2,13
95:23,25
96:8,13,18
98:5,6
205:3
252:1,2,9
255:11,14

products
31:11 72:9
78:25
79:8,22
80:3,25
96:9
251:20
252:5
254:1

professor
14:13
18:2,13
19:1 30:24

professor's
94:6,12,13

program 30:6
31:22
32:11,12

project
98:11
203:14,17,
20

projects
25:5

proper 58:23
225:19,22
230:15
236:23
242:4

properly
41:2 245:7

properties
50:9 95:7
145:4

property
61:6

proportion
32:16
77:17

proportional
132:2

proposed
232:17

proprietary
16:21
17:1,2,4,
14,15 19:8
21:13
26:13,18
28:9

prosecution
8:11

prove 7:8
137:23
156:10

proven 77:18

provide 7:23
65:25
99:23
114:20
135:7
139:8
140:17
246:18

provided
6:13 8:7
11:10 12:3
66:3
124:20,21,
25 125:15
127:20
174:6
182:7

providing
13:21
174:3

public 4:3
21:6 106:5

publication
248:2

publish
19:13,15

published
246:12

pull 176:18
178:9
179:2,8,
11,25
184:10
187:17
239:4

pulled
175:15
182:3

pulling
160:16
177:5,8
179:5,6,7,
20 181:7,
11 182:9,
13

pulls 23:16

pulp 22:2

punch 57:16,
17 94:24

punched
57:12

purchased
16:6

purpose
21:24
23:6,11
25:2
130:10,15,
16,18,22,

25 131:5, 6,7,16,19, 21 132:5, 6,7,14,15, 16 133:3, 7,9,13,16, 20,22 158:7 187:16 227:23

purposes 160:1 182:10 227:16

pushing 185:9

put 22:20 47:7 49:9 77:25 84:18 94:6 95:2,10 123:24 133:8 163:7 172:14 173:2 181:9 183:5 200:9 206:25 219:11 228:12 247:23

putting 172:4,9

Q

qualifications 243:18

qualified 243:21,24

qualitatively 146:14

quality 245:21,23, 24

quantify 92:21,25

quantitative 248:4 249:19 250:2,5

quantitatively 146:15 247:20

question 5:3,10 14:5 21:1 23:13,22, 23 28:20 40:2 41:11 45:2 48:17 49:4 51:16 52:24 53:25 55:10 56:18 60:8 67:4 73:9 74:24 76:9 79:5,6 80:20 83:4 89:1,2 96:17,24 97:25 102:21 117:2 119:16 121:6,10 123:13 128:11,25 129:1 133:23 139:2 141:12,15 169:1 170:18,25 181:6 193:8 198:7 200:7 201:19 202:3 204:15 205:8,16 206:9 217:10 230:5 236:3 237:9,13 238:3 239:19 240:1 242:9,10

questions 5:1,7 256:12,14

quote 74:4, 5,8 186:13

quoting 65:10 88:2

R

rams 149:5

ran 116:9

range 23:10 27:13 31:10 53:22,23 54:19,20 89:16 90:17 92:8 100:22 107:8 109:22 111:17,21, 22 112:5,6 114:1,4 125:11 126:13,20 129:10,11 139:8,22 140:15 141:5 198:17 200:2

ranges 90:5 114:5 140:21

Rarely 94:7

rate 80:16, 21

ratio 42:18
44:10,12,
20,21
45:8,15,22
46:9,22
47:10,17
48:14
49:21
50:15,21
51:13,21
52:5,13
53:4,14,21
54:6,18,20
55:9,22
56:3,7,9,
10,14,16,
22 89:25
90:5,9
192:6
233:15

ratios 44:25
45:4

reaching 8:6

read 9:6
12:14
39:15 77:3
83:7 89:9
93:14
123:9
124:11
125:13
128:10
133:12
137:5
139:13
145:15
186:2
188:13
190:14
237:25
238:1

reading
85:16
110:10
128:17,19
131:15
143:3
191:12,14
256:14

real 222:8

realized
147:22

reason 5:12
77:12,24
78:3 80:24
81:4
108:1,6
112:4,9
113:9
115:12
119:11
160:11

rebutting
237:25

recall 9:13
21:4
25:14,21
28:8,9
29:3,19
32:15,16
33:11 36:7
83:3
106:16
118:16
119:21,22
148:21
156:13
187:9
216:22
223:3
241:24
244:11
246:2,20,
23 250:3

recess 37:19
75:3 142:6
171:11
189:7
242:13

reciprocal
153:19
236:2

recognize
114:22,24
115:1

record 4:8
30:24
63:14
106:18

record's
85:15

red 114:17
115:14,15
186:7
193:20
202:7
206:25
207:13,16,
20,22,23
208:11
209:9
210:12,21
211:12,14
215:16
219:24
220:18
221:16,18,
20 224:2
229:7,9,10

reduce 23:8,
14 24:3

reduced
89:14,15,
19

refer 13:2
107:17
125:21
198:25
212:24

reference
74:11
110:2
115:13
120:5

references
74:17,22
112:13
171:15

referred
120:13
121:1
140:8,10

referring
71:2,10
88:11

127:10
130:19
154:18
156:18

refers 42:11
89:12
123:8,10

region 70:10
164:4
227:13

regions
155:3

reinforced
34:25

related
19:20
29:21 30:3

relates 74:8
171:18

relating
11:20

relation
239:12

relationship
193:4,10
198:8
214:12
227:25

relative
188:24

relaxed
13:24

relied
243:24
244:1

rely 119:17
243:4,6,15
246:15
248:18

relying
22:12
190:25

remember
5:17,18
14:17
15:1,24
19:18
20:15,16,
18 26:9,23
30:17 32:7
37:21,22
48:18
68:24
118:17
142:10
143:11
163:18
172:6
191:10
235:11
237:14
248:25

remote 69:11

removal
17:11
21:19
24:25
25:6,11,23
64:12,22
67:14

remove 22:5,
24 37:5
38:5 95:1,
3

removed 37:8
66:2

repeat 45:2
48:17
51:16
52:24
55:24 60:8
67:4 73:9
96:17
128:10
141:2
240:1

repeating
64:11
221:12

replacement
20:20

report
238:23,24

reporter 5:5

represent
63:19
120:2

representation
236:7

representations 232:5

representing
60:4

required
135:25
136:2
222:2

requirement
64:21
67:8,14,
18,21
152:20

requirements
64:12
67:19
71:3,11
244:21
251:21
252:15
253:7,11,
16

research
14:15 15:2
16:5,7,9,
12,13,14,
16,18,19,
24 18:25
19:3,7,9,
11,13,15,
20 21:9
25:3,4,5

reserve
256:14

reservoir
65:23
66:10,13,
19

resin 15:13

respect
12:4,11

16:24
21:18
25:9,10
27:6,22,25
28:7 30:3
64:22
70:12
81:24

respond 5:8

response
9:7,10,16,
17,21
63:11 67:1

rest 47:2,
13,22
50:25 51:2
52:1,11
70:11
218:3

restraint
147:21

result
83:16,23
89:23,24
90:7,8

resulting
50:12

resumed
106:4

retained
5:15 14:9

Reutlingen
32:2,4,5

review 7:24
9:3

reviewed
63:24
108:12
110:3
171:16

reviewing
10:18 11:2

role 34:22
146:2,3

rollers 58:7

roughly
167:13
169:7
170:12
198:12
219:17

round 100:10

route 231:16

run 121:21
160:19

running
60:11,12

Rydin 74:20
94:19,20
95:8
206:23,25
207:2

S

S-T-U-A-R-T
4:10

sabbatical
33:15

sake 131:18

sample
234:24

sat 116:8

scale 195:4,
8,9,12,13,
14,18,21
196:15,16
197:14,15
241:7,10,
15 243:1,5
244:24
245:5
246:3,18,
22 247:2,
12,15,16,
23 248:5,
22 249:19
250:2,5,8

scaled
241:21

scanning
116:4,6,9,
17,23
249:22

scenario
48:7 61:15
62:23 72:8

scholar
33:14

School
18:14,17,
19

science
12:25 13:4
18:7 30:7
237:21

scientific
237:19

scientists
32:13

screwing
146:8

scrim 168:14

seal 188:7

seam 37:24
38:6,8,12,
15,16,18,
20,22,23
39:6,9,12,
17,18,20,
23 40:4,
13,23,24
41:8,12,
16,18,19
42:14,15
43:7,8,13,
16 44:20
46:4 47:5,
8,12,18
48:9,15,
23,24,25
49:6,7,11,
12,13,17
50:3,5,8
51:7,9
53:2,13,
14,16
54:16

55:21
56:2,6,20
68:9,13
69:2,6,7,
11 70:7,9,
10 75:21
80:25
82:4,12,
13,14,18
83:11,12,
15,19,21
86:21,25
87:22 90:6
91:1 95:1
121:24
122:2
146:3,4,
24,25
147:1,3,7
148:12,14
150:20
151:4
168:18
169:2,7,
15,24
170:22
171:3,18,
20,21,22,
23,24
172:5
173:8
174:5,7,
13,17,25
176:3
177:2
179:4
180:2,3,5
182:7
186:15,25
187:2,18
188:7
189:9,17
190:22
191:1,21
192:2,18,
19,21,23
193:1,6,12
194:12,14,
15,18,19,
23 198:8,
13,18
200:14,21
201:20
202:15,24
203:13
204:19,23
207:14,18,
24 208:1,
2,4,6,12,
25 209:8,
14,15
251:16

seamed 76:22
77:5,17,18
78:4,17
79:7,15,17
81:7
98:14,20

seaming
94:2,5

seams 35:7,
17,19
36:3,4,6,
9,12,24
38:14
146:22
166:9,10
174:9,13

search 87:19

searches
34:13

second-to-last
93:5

section
30:8,14,22
64:2 67:25
100:9
110:24
118:19
162:22,25
163:5,21
167:14
168:17
169:23
170:20
176:2,5
177:16
178:6,23
182:19,24
196:13

sectional
178:11

sectional-shaped 135:5

sections
115:24
117:11
170:19
171:6

secured
174:21

self-explanatory
17:17

SEM 117:18,
23 118:2,8
242:22
243:15
244:8
246:13
249:23,24
250:1,4,9,
17

semester
30:15

semicircle
198:16
209:16,22,
24 210:2,4
211:23
212:1

SEMS 117:11

senior 16:8,
12,19

sense 61:19,
21 66:18
153:3
166:14
212:2
230:9
232:10

sensitive
96:14,19
252:6

sentence

42:12,13, 21 64:10, 24,25 65:10,21 67:6 69:13 70:14,17, 23 71:2,18 72:18 77:5 79:3 85:16 90:1,2 93:5,14 99:18 108:19 123:9 124:6,11 125:6,13 126:4,23, 25 127:18 128:23 129:4,5 130:2,25 131:15 132:8,9 134:6 135:19 136:5,9 137:5,13 138:7,8 139:13,18, 25 140:23 151:17 174:14

separate 20:10 54:10 172:13 247:15

separately 172:10

series 49:17 51:7 54:16 55:21 56:1,20

set 111:1

setting 13:22

setup 48:18

seventies 13:12

severed 188:4,5

shape 40:12, 22 56:5,7, 9 59:19 62:16 130:8 131:1 190:5 194:24 195:14 198:15 226:7 247:1

shapes 197:19

sheet 22:14 65:24 66:9

Shenkar 31:25 32:1

shift 57:4 129:23

shoe 226:8, 9

shorter 103:12,13 230:1,23 239:23 240:13

shortest 102:19

show 123:19 196:13 205:21 227:22,23, 24 228:13 231:24 232:7 234:13 244:20 246:16

showing 196:8 228:19,20

shown 76:22 77:6 106:13 120:21 124:6,12 130:3 154:20 155:12 172:19 178:14 206:20 244:24

shows 94:19 105:11 123:19 178:4 179:19 189:24 193:18 196:16 197:2,24

side 39:2 78:11 101:23 104:13 160:20,21 164:20 166:11 176:25 177:25 178:1,5,7, 15 179:16 209:9 210:23 215:3 219:23 221:23 225:9

sides 82:15 184:10 200:20,22

sign 84:18

signature 6:17 8:17

signed 17:23

signing 256:15

similar 13:25 26:21,24

116:23
159:3
165:5
167:11

similarly
50:19
161:16
170:23
179:19

simple 47:8
239:19

simplest
27:14
200:23

simultaneously
175:9

single 56:24
99:20
108:20
109:8,18
134:7
140:14
184:6
186:11

sir 75:6,8
76:14,21
78:16
81:16
109:4,17
111:24
120:6
124:1,3
171:14
175:25
190:13

sit 55:18
139:1
201:2

sitting
50:13,19
178:14

situation
85:8

size 26:8,
15,16,25
27:4,5
41:8,9,12,
13 48:8
51:8 108:2
130:3
192:12
199:24

sized 48:21
49:5

skill 190:21
192:1,12

skinny
197:4,5

Slash 84:14

slide 188:20

slight 64:16
69:15
211:16

slip 160:9

slurry 22:3
23:18

small 41:18
221:22

smaller
43:8,11,
13,15,19
130:4
178:20,21,
23,24
180:1
183:17
198:21

smallest
41:16,19
43:8,13,15
44:7,8
46:2 48:4,
8,22 49:5

smooth
252:25

sneaker
117:12

sneakers
117:10

software
249:4,16,
18 250:8,
11,14,17

sold 81:9

solution
94:8,9

someplace
159:18

sooner
154:3,5

sort 60:11
106:14
118:7
250:17

space 66:1
163:15
182:19
186:8

spaces
163:16
165:13

specific
49:3 65:10
73:25 90:4
205:4

specifically
90:25
110:25
186:13

specification
92:19

specifications
255:3

speculate
130:20

speed 172:3

spell 32:3

spent 6:22
10:18

spin 22:18

spiral-wound
122:13

sponsored
13:14
14:21

sponsoring
17:3

sponsors
20:3

squared
84:3,6,11,
13 85:10
132:3

stability
137:21

stable 14:6,
7,8

stacked
108:20

stand 11:9

standard
238:16,17,
21 239:8,
9,12,13,18
244:20,25
248:6
252:12

standards
148:20
237:5,16

staple 14:1,
20

start 60:10
82:3 88:16
103:15
109:5
111:12
124:23
126:25
146:8,9
154:15
160:17
186:21
206:16
218:14

started
16:4,8
18:17 34:1
104:17
166:18

starting
42:5 59:22
82:2,5
83:10
172:21
173:25
180:12
181:22
187:23

starts 42:6,
9 64:6
88:13,22
122:24
124:6
127:19
140:1
150:15
216:25
228:6

state 4:7
22:21

stated 35:23
38:19
50:7,24
63:23 68:8

statement
83:20
238:5

states 8:6
33:25

statics 18:5

stay 189:8

Staying 51:6

stays 62:10
180:8

steam 23:8

steps 188:25

sticking
36:21

stipulate
101:19

stitch
159:19

stitching
54:4 68:6
159:14,17,
22 160:3,
4,12
166:20

stop 159:18
169:3

stopping
180:23

straight
224:8

strands
170:8

Strategic
20:24

Straub 74:17

street 225:3

strength
46:18 47:6
48:2
131:8,25
132:1,2,6,
16 143:16,
18,19,25
144:1,2,3,
4,5 145:25
146:2,3,4,
24 147:6,
17,22,24
148:9,10,
12,14,16,
21,23,25
149:2,4,
11,15
150:4,9,16
151:4,12,
14,24
152:3,5,9,
11,18,19
157:17,19,
20

strengths
147:15

stretch
200:14,16

stretched
101:22

stretching
189:3

strike 12:8
27:23
30:25
45:13
101:5
111:12
190:23

strips
155:16

strong
157:1,2,11
158:11

structural
64:14
67:21,23
70:16,18

structure
20:23,25
25:25
58:25 66:3
113:2,6,7,
10,13,17
114:2
120:8
121:12,18
122:5,10
127:10
130:12
131:4,14
133:6,16,
17,18,25
141:11,18,
22 142:1
146:10
150:24
153:22,23
155:15
160:15,19
163:22
170:15

structures
33:18 66:4
113:14,23
129:7
143:7
144:11

Stuart 4:9

student
243:17
244:15

students
31:19,21
32:13,22,
25 33:3,4,
5 84:9
85:6 93:5
234:24
243:12,14,
19

studied 7:9
33:16

studying
24:25

subcontractor
252:15

subject 6:6
13:7 30:11

subjective
92:18

subsequent
22:7 97:2

substance
197:24
198:1

substantial
76:23 77:6

success
80:16,21

successful
80:2,4,10

successfully
78:25 79:8
95:22

suction 66:2

Sudre 75:9

sufficient
148:12

suggest
190:5

suggests
199:5
201:13

suitable
77:19
137:23
138:22
143:6
144:14,16,
21,23
150:19
151:4
152:16,19
153:3
156:10

summary
110:24

supplier
254:15

supposed
175:7
182:5

surface
58:25
64:13
67:2,7,17
102:6,11
104:21
223:14,17
228:18

surfaces
184:20

swadge
172:17

swedge
172:14,17,
18 186:23
187:4,6,
11,17
188:1,8,10

sworn 4:2,18
106:5

system 97:6,
9 118:7
253:9

Systems
34:19

T

table 239:5

takes 57:18 72:14 236:11,21

taking 13:20 115:24 131:16 165:24 188:25 223:5 234:23

talk 11:12, 15 16:20 19:24 94:14 107:20,21 146:23 153:5 158:25 216:4

talked 11:25 30:10 43:6 107:24 149:25 157:6 163:17 194:19 198:15 199:1 209:17 232:13 242:21 251:10,19

talking 5:6 37:20,23 38:16 41:3,4 46:17,18 52:20,25 57:3,4 64:6 69:3 72:24 89:10 90:24 101:12 104:5,7 107:4 110:19 130:17 131:8,9, 10,11,20 137:3 138:2 144:10 145:17 146:1 148:9 149:24 152:8 156:4 166:4 169:4 172:17,25 173:1 193:24 209:19 210:11,12 212:9 228:2 240:11 245:21 251:10 252:18

talks 139:11 154:7,17 199:2,3

tangential 220:2,4,5, 6,9 222:2, 3 228:17

tape 239:4

taper 172:8 173:23,24 174:4,24 175:13 180:4,6, 11,18,24 181:3 189:12 205:23

tapered 44:1 172:4 173:7 176:2,5 177:22

target 191:17

taught 15:1, 2 18:5 30:7,12, 14,18,19, 23 31:5, 22,23,24 32:6

teach 29:21 30:2

teaching 78:25 79:9 117:14 155:19 202:14

teardrop 194:24 198:15 200:17 209:18

Tech 12:24 14:13,16, 24

technical 31:11,14, 17,18 32:10

technically 32:14

technician 116:9

technologies 14:4

technology 12:25 13:2 18:18 33:7,9 64:3 77:18

telling 46:19 97:8 133:15 150:23 151:20 152:1 225:7,18 228:11 241:4,5,6

tells 132:15 181:13 192:7

195:17
200:1

Temple 118:5

temporary
61:2

ten 232:11, 12 239:5

tend 96:15, 20

tensile
152:24
154:1,2

tent 226:8, 10

term 13:3
37:6
123:5,9
135:22
136:12,13
172:18

terms 16:20
19:24
48:19
107:22,24
199:9
230:13

test 238:20

testified
4:4 106:6

testifying
93:19

testimony
5:13 225:7
235:20,23
243:3

textbook
245:9,14

textile
12:24,25
18:13 27:8
30:7,8
31:3,6,11
32:4,8
33:4,6,8, 18,24
57:17
132:3
143:11
150:16
224:16

textile-engineered
144:11

textiles
18:14,18, 20 32:1,7
34:12,15, 16 238:21

textured
13:8,25

texturing
13:12,18

theoretical
13:16

theory 13:17
226:15

thereof
156:10

thermal
15:12
22:20 24:6
58:1

thermally
23:8

thermoplastic
13:20
28:12,16
111:3

thesis 13:6, 7,10,12

thin 175:5
176:14
198:3,5

thing 84:8
85:6 87:18
93:6 106:9
120:25
144:10
150:3
167:12
183:9
194:21
209:12,25
220:4,8
221:13
224:16
234:16
238:1
249:3
251:9

things 9:15
10:18 25:1
27:17 32:9
47:24
53:13
54:5,9
68:7 80:10
92:20
96:12
115:25
132:4
146:10,12
148:10
160:14
184:7
195:14
218:21
237:18
240:24
241:8
252:16,18

thinking
203:20

thinks
203:22,23

thought 9:20
30:20
88:19
169:21
198:6
243:24

thread 59:23
60:1,7,10, 15,19
61:4,7,9
83:14
208:12,21, 24,25
209:1
211:10
217:2,12,

15,18,21
218:11
219:21
220:25
221:7,19
222:10,16,
17,23
224:2,7,11
225:16
226:19,21,
22 227:5,
13,18,20
228:4,5,8
229:25
230:1,3,
17,18
231:14
233:14
236:8
251:15

threads
42:16
58:20
59:9,13,20
62:17
83:16,18,
21 150:6
207:11
229:13

throwing
132:4

tight 91:1
174:5,8,16
182:18
183:5

tightening
188:3,14,
17

tilted 242:7
243:9,10

time 5:20
6:22 13:11
14:18 18:2
19:19
20:23
29:20 32:1
33:12,23,
25 35:8,
10,16
65:13
74:25
80:11,13
98:21
105:20,25
106:2
117:14
153:8,12
181:10
189:3
234:24
239:15
255:16
256:12,16

times 4:15
84:24
143:18
171:3
239:5

title 12:18,
21

today 4:19
5:7,13
10:4,19
11:18
50:13,19
117:25
251:12

toilet 72:3

told 101:2,
3,6 226:4

tolerances
252:16,17

tool
187:13,19
188:8,10

top 15:17
69:19
70:23
75:15 82:2
84:25
86:8,12,
15,19
95:10
99:19
101:24
102:5,9
103:2,8,
15,17
104:10,14,
17,19
107:4
122:25
134:14
135:2
138:8
139:4
162:6
163:4,21
164:17,19
169:19
176:6
178:14
196:20
215:21
216:25
217:1
218:5,14
219:17,19
220:2
226:19,21
227:3,5,18
228:2,5,8
230:1,2,18
240:19

topic 171:8

topics 19:15
21:17

tops 194:14

total 46:25

totally
160:11

touch 208:12
213:21,22,
25

touched
215:17

touches
208:16,18
220:13
224:6

touching
208:21,24
209:2
210:12,22

212:7,14, 15 214:5 215:12 219:13,23 221:24 222:10,13, 14,23 223:6,8

towels 72:4

trade-off 73:14 90:11,12, 13 93:20

trade-offs 71:1,10, 14,18,22, 24,25 72:4,10,16 73:3,8,11, 18,25

traffic 225:3

transferred 34:8

transmitted 15:21

transport 65:23 66:8,11, 13,15

transports 66:19

transverse 15:19 57:20 111:5 152:25

transverse- 111:2

transversely 15:21 100:18,20 101:3,7,18

trends 33:17

trimmed 188:6

true 48:13 131:12 147:23 153:21 160:18 161:12 163:2 219:12 228:20,22, 24 233:14

trust 246:8 248:4

truth 4:19

tube 120:13,20, 22 121:2, 8,13,24 122:10,11, 12 123:17, 20,21 127:11,14 146:5 147:2 161:10 163:4,18, 21,23 164:6,10, 17 170:15 171:5

tunnel 76:13

turn 6:15 8:2 42:2 64:1 65:1 75:4,7 76:19 81:12,15 99:16 108:24 110:22 120:4,7 124:2 134:3 142:3 206:13 233:15

Turning 35:4 66:25

twill 27:17 40:20 150:13

twist 13:22, 23

twisting 174:7 185:21,22

two-part 201:25

two-piece 194:9,12 205:20

tying 188:6

type 16:18 21:21 25:12 26:22 46:14,17 61:3 72:8 85:9 205:3,4

types 21:17 28:15 29:4,14,17 31:19 137:22

typical 28:24 108:2 112:6 189:9,17 191:1,21 192:2,12 201:10,11, 13,20 202:15,23, 24 203:5,9 204:11 205:18

typically 45:19 57:23 59:3 148:18 188:2 190:3 192:8 206:2

typo 11:7
85:14
174:9,12
175:20
182:5,6

U

U.S. 6:3
33:24
34:1,7
81:24
110:6

Uh-huh
225:14

ultimate
152:5

ultimately
146:24

unable
225:15

unaware
248:24

underestimated
233:16

undergraduate
12:21,23
33:5

undergraduates
33:5

underneath
23:16

understand
4:17,21
12:15,16
14:5,12
36:22
37:2,4
39:13
42:24
68:25 72:7
73:10
82:23 83:5
89:20
93:18,19
99:9 100:7
102:21
104:7
116:3
118:15,16
125:20
127:4,8
131:17
136:18
140:4
145:10,12
149:9
156:18
158:25
171:25
173:5
174:16
175:2,3
176:17,23
187:11
189:16
190:19,24
191:5
199:19
201:4,20
206:22
207:5,16
233:19
236:14
238:2,25
249:18
252:17
254:5

understanding
36:11 38:4
39:14 40:7
46:21
59:11 61:3
66:21
72:17
73:24 91:9
97:7 107:9
116:14
118:6
122:9
174:22
198:19
250:7,13

understood
5:3 9:25
44:3 63:7
115:15
116:2

uniform
64:13
67:2,7,16
155:5

Union 14:21

unit 83:12
92:20
148:23,25
149:2
150:4
157:22,23
174:7,8
180:11,18
186:14,24
189:11

United 33:25

units 84:2
148:17
149:3

universal
254:4

universities
31:23

university
18:3 29:21
31:24 32:5
33:14

unstable
13:15

unsuccessful
79:21
80:13
81:1,10

unsuitable
158:7

untwisting
13:24

unwound
224:7

upper 207:10
208:13,14
215:10
222:18

usage 76:23
77:6

useless
218:23,24
user 255:14

V

vacuum 23:15
24:8,10,15
66:2,17,20
values
142:8,9
145:21
variability
205:14,15,
16
variable
203:13
204:8,19,
23 206:10
variables
94:11
97:10
251:11
variation
47:3 69:24
174:20
185:13
variations
64:17
69:15
237:7
varied
185:13
vary 41:7
71:5,19
72:1
varying
137:22
version
158:22
207:6
245:12,14,
17 246:4,
9,10
versions
35:6
versus 53:22
72:3 91:7,
19 92:23
106:15
133:6
145:17
157:24
159:4
170:12
171:4
219:9
245:25
246:4
vertical
60:4 61:16
62:24
193:22
200:19
vertically
60:12
202:9
Victor 4:11
view
204:16,17,
22 239:20
viewed 193:1
208:2
viewer
229:15
viewing
90:16,21
virtue
109:11
visible
64:17
69:16
visiting
33:13
visual 69:23
70:7
234:16
visually
14:10
68:13,15,
19 69:4
70:2
void 65:25
189:10,18,
19,21,23,
24 190:1,
22 191:2,
22,24
192:24
193:5,14,
17 198:9,
11,22
199:1,2,3,
9,14,20
200:5,8
201:5
202:4,15
203:12
204:18,22
Voith 5:16,
21,24 9:7,
19,22
11:25 12:4
63:15,20
92:11
255:9
256:7
Voith's
9:16,17
volume 65:25
157:22,23
volumetric
63:6
157:14,18,
21

W

Wait 125:22
126:7
138:14
162:10
217:5
242:9
wanted 13:14
34:4
215:17
251:9
wash 22:17
washing
22:17

Washington 4:12

water 17:11 21:19 22:3,4,6, 13,19,24 23:14,16 24:4,13, 14,15,25 25:7,11,23 26:3,6 28:13 29:11 64:12,22 65:24 66:1,8,11, 13,15,18 67:13 91:15

ways 37:4 38:8,14 148:19

weaker 147:3,4 158:4

weave 26:8, 11,22,25 27:2,7,8, 11,13,14, 15,19 40:9,11, 19,21 55:6 66:3 68:4 143:20,21 149:24,25 150:1,14 154:25 155:20 185:12

weaving 14:22 15:3 19:20 21:1,3 150:9 251:14

web 64:13, 23 67:14

wedge 183:4, 5,20 185:17

wedged 177:1,2,4 181:20 182:14,17 184:24 185:2 194:12

wedging 175:14 176:19,24 181:15 182:6,11 183:3,12 184:2,4,5, 8 188:21, 23

weeks 30:16

well-known 195:7

west 37:7

wet 97:3

wide 172:7 181:4

width 148:23 149:2,4,7 150:5 155:6 173:24 174:5,25 176:9 180:20 182:7 189:13,20 214:17

widthwise 162:11,12

wife 11:17

wire 57:19 76:14 187:25

wonderful 106:10

wood 22:2

word 15:23 87:19 90:23 131:5,16, 18 133:8, 12 145:7 182:13 199:10 204:11 219:6 245:20

worded 84:17,19, 20

wording 84:4 85:11 182:12

words 47:8 193:3 212:17 215:21

work 6:9 11:21,24 12:2,9 13:14,16, 17 14:3, 15,17,20, 22 15:4,7 16:14 17:8,23 19:10 21:8,18 24:19 25:3,7 26:11,14 27:21,24 28:2,4 33:20 34:8,9,21 35:24 36:1 98:4,8,11 107:18 110:3 115:16,19 116:3 128:22 185:6 226:3 232:8 237:21

worked 5:21
14:12
15:14
18:2,12
20:19,22
24:24
25:4,13
34:17
97:15,16,
20,22

workers
172:5

working 6:22
7:6 15:1
17:9 24:20
25:15,16,
18 34:23
35:9,11,
12,16
255:19,21

works 7:16
250:14
255:7

world 31:22

worried
96:10

worry 96:11

woven 13:13
20:20,22,
25 27:10
28:1,3,5,6
36:15,18,
21 37:21,
24 38:4,9
39:5 40:18
66:4 70:19
75:11,13
108:20
109:8,9,19
111:1
112:10,16,
18,19,20,
21,22
113:2,6,7,
10,14,17,
22 114:1
123:16,18,
19,22,25
142:14,19
144:14,17
145:2,17
146:17
147:16,18,
25 149:11
150:4,23
151:1,3,8,
13,24
152:3
153:23
154:2,24
155:12,13,
14 156:4,
23 157:3,
6,24
158:1,4,
21,22,23,
24 159:4,
15,21

write 128:13
133:10,11

writing
252:24,25

wrong 93:2
121:7
190:12
231:24
236:13
248:15

X

Xu 110:5
112:21,22

Y

yarn 14:1
27:15,18,
20 40:15,
17 43:2
70:20
99:24
100:11,20
101:3,4,7,
12,16,21
102:6,7,
23,24,25
107:10,19
108:2
122:15
124:15,22
125:1,7,
16,23
126:5,7,
15,17,20,
24,25
127:5,8,9,
13,21
128:1,3,7,
8,12,16
129:1,3,6,
14 131:22
134:10
135:7
137:6
139:8
140:2,17,
25 141:4,
9,16,20,24
142:8,9
143:1,17,
19,22,25
144:1,2,3,
12 145:2,
20 147:20
151:17,22,
24 153:22,
24 155:14
166:18
170:8
195:25
196:4,21
197:1,2
198:3,5
215:17

yarns 13:8
14:4,19
26:8,15,16
27:1,4,5,
11,18 28:8
29:1,5
31:14,15
37:5,6,12,
14 38:6
40:18
83:14,15
85:17,19
99:20,24,
25 100:4,

15 101:13,
14 107:6
122:3,4,6
123:11
124:16,20,
24 125:2,
8,11,14,
17,20
126:14
127:1,6,
10,12,14,
15,16,19,
23 128:20
129:9,10,
13 130:4,
5,11
131:4,14
134:6,10,
18,21,23
135:3,8,
14,15,20
136:10
137:3,5,8,
15,19,23
138:2,15,
17,23
139:9,16
140:1,9,
13,18,25
143:14,15,
18,23,24
144:4
146:17,18
147:1,2,
15,25
148:5
149:14
150:6
151:14
155:2
156:3
159:16,17,
20,21
160:16
162:23,24
163:3,9,
12,13,20,
23 164:17
165:9,13,
17 166:21
167:1,25
168:4,5,9,
15,23,24,
25 195:2
196:9,12,
17,18,19,
25 197:24
198:18
207:7

year 5:18
98:16

year-long
32:11,12

years 78:18
248:16

yellow
211:17
213:3,11,
20 214:12
219:11,14
226:12,13,
16,17,18
227:2,13,
14,17,23
228:1,4,24
229:24
230:7,12,
17 235:1,4
236:6
238:11
239:22
240:10,16,
17,19

yesterday
10:17,23,
24

Yook 74:19
88:1,2,7,
19 89:12,
13 95:9

Z

Zoom 10:16,
20