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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/245,948	08/24/2016	Andrew Stephens	64844-256633	1690
23644 7590 07/13/2018 Barnes & Thornburg LLP (CH) P.O. Box 2786 Chicago, ILLINOIS 60690-2786 UNITED STATES OF AMERICA			EXAMINER DILLON, DANIEL P	
			ART UNIT 1783	PAPER NUMBER
			NOTIFICATION DATE 07/13/2018	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patent-ch@btlaw.com

Office Action Summary

Application No.

15/245,948

Applicant(s)

Stephens et al.

Examiner

DANIEL P DILLON

Art Unit

1783

AIA Status

Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 7/9/2018.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☐ This action is **FINAL**.

2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1-15 and 17-25 is/are pending in the application.

5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-15 and 17-25 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

3) ☐ Interview Summary (PTO-413)

Paper No(s)/Mail Date ____.

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)

Paper No(s)/Mail Date 2/23/2018 and 2/27/2018.

4) ☐ Other: ____.

DETAILED CORRESPONDENCE

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 2/23/2018 and 2/27/2018 have been considered by the examiner.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 10, 21, and 25 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention. The terms "generally" and "substantially" in claims 1, 10, 21, and 25 are relative terms which renders the claims indefinite. The terms "generally" and "substantially" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, claims 1, 10, 21, and 25 are rejected for failing to point out and distinctly claim what is considered the subject matter that is

applicant's invention. For the purposes of examination the claims are to be interpreted as “the first/second set of polymer layers extending” and “along an uninterrupted curvilinear path.”

Claims 2, 11, and 22 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention. The term “generally” in claim 2, 11, and 11 is a relative term which renders the claims indefinite. The terms “generally” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, claims 2, 11, and 22 are rejected for failing to point out and distinctly claim what is considered the subject matter that is applicant's invention. For the purposes of examination the claims are to be interpreted as “the first set of polymer layers are thinner than layers of the second set of polymer layers.”

Claims 17, 19, and 24 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention. The term “substantially” in claim 17, 19, and 24 is a relative term which renders the claims indefinite. The terms “substantially” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, claims 17, 19, and 24 are rejected for failing to point out and distinctly claim what is considered the subject matter that is applicant's invention. For the purposes of examination the claims are to be interpreted as “the core is free of natural wood materials.”

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 10, 21, and 25 are rejected under 35 U.S.C. 103 as being unpatentable over Piedboeuf (US 7,204,944).

Regarding **claims 1, 10, 21, and 25**, Piedboeuf teaches processes for creating color effects in extrudable material (Col. 1, Line 8-10). The process includes the steps of providing a first and a second stream of viscous materials of different colors and combining those streams feeding them into a helical static mixer, shown in Fig. 3 (Col. 1, Lines 49-63). The system additionally includes a die, a feed block, and at least two extruders as shown below with the static mixer (Col. 1, Lines 64-66; Fig. 1).

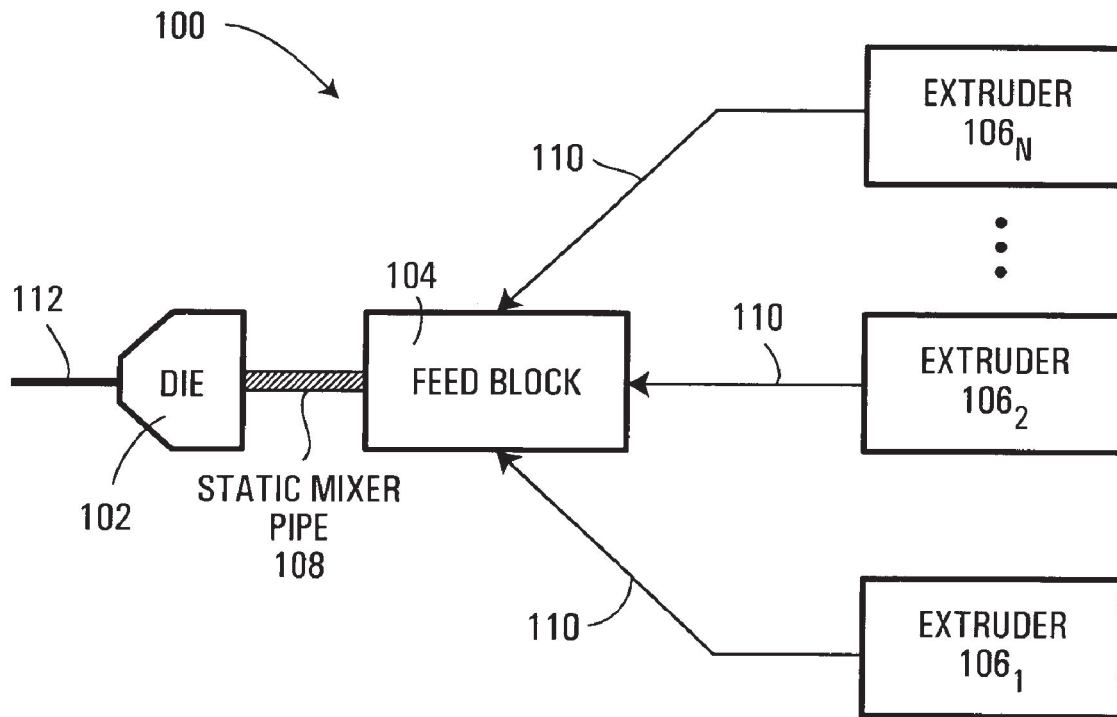


FIG. 1

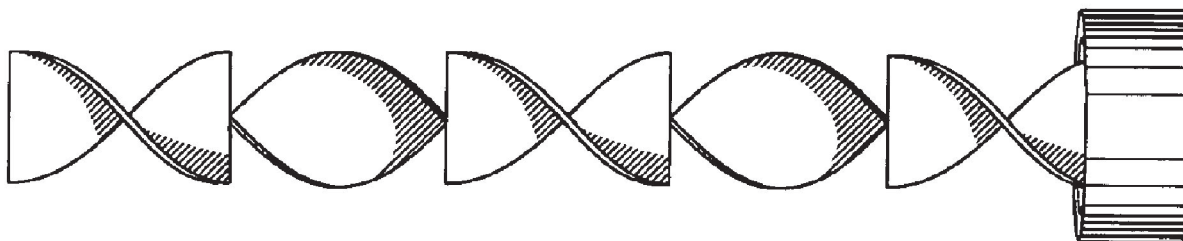


FIG. 3

The materials that are formed from the system are sheets or tubes of plastics that can be used in different applications (Col. 9, Lines 6-8). Additionally, the final product resulting from

the feed block of the system forms bands and layers, with the two being interchangeable, of at least two different colors with the two different colors being multi-layer or multi-band patterns of viscous plastic material (Col. 4, Lines 30-48).

It is noted that the system taught by Piedboeuf is nearly identical to the system which forms the simulated natural wood-grained polymer board as claimed by the applicant in that the system as defined by applicant's specification is formed by the input of two different materials having two differing colors which are then mixed through a static mixer similar to the one shown above taught by Piedboeuf, and then extruded to form the board as shown in Figures 1 and 5-5G. The examiner notes that the processing two polymer materials having differing colors taught by Piedboeuf would ultimately result in the in a plastic sheet having the shape of a board and would be formed of "a first set of polymer layers generally extending along the length direction and containing a first colorant, a majority of the first set of polymer layers extending along the length of the entire board; a second set of polymer layers generally extending along the length direction and containing a second colorant different than the first colorant, a majority of the second set of polymer layers extending along the length of the entire board; and wherein a plurality of individual layers of the first and second sets of polymer layers alternate within the board and extend along a substantially uninterrupted curvilinear path originating proximate the first side of the board and terminating proximate to the second side of the board" as required by claim 1.

Piedboeuf is silent with respect to the formation of the sheet such that the colors of the polymer layers entering the system are those that resemble and result in a sheet that simulates a natural wood-grain appearance.

However, Piedboeuf teaches the extrusion process may a product that can be thermoformed into different shapes or items including watercraft such as kayaks and canoes

(Col. 9, Lines 6-21) with differing color variations. Additionally, the reference teaches that the technique of laminating various different layers of colored material joined together to form a multi-colored sheet can be costly and time consuming due to the requirement of treating the material (Col. 1, Lines 30-40). As such, the Examiner contends that when looking to the teachings in the reference, it would have been obvious to one of ordinary skill in the art to form an extruded product such as, for example, a canoe or surfboard, which may have a wood grain appearance for aesthetics depending on the user and additionally, the use of the process of Piedboeuf allows the manufacture of such a product to be more cost effective than prior laminating techniques.

Claims 1-4, 6, 9, and 18 are rejected under 35 U.S.C. 103 as being unpatentable over Piedboeuf (US 7,204,944) in view of Sudano et al. (US 2011/0177291).

Regarding **claim 1**, Piedboeuf teaches processes for creating color effects in extrudable material (Col. 1, Line 8-10). The process includes the steps of providing a first and a second stream of viscous materials of different colors and combining those streams feeding them into a helical static mixer, shown in Fig. 3 (Col. 1, Lines 49-63). The system additionally includes a die, a feed block, and at least two extruders as shown below with the static mixer (Col. 1, Lines 64-66; Fig. 1).

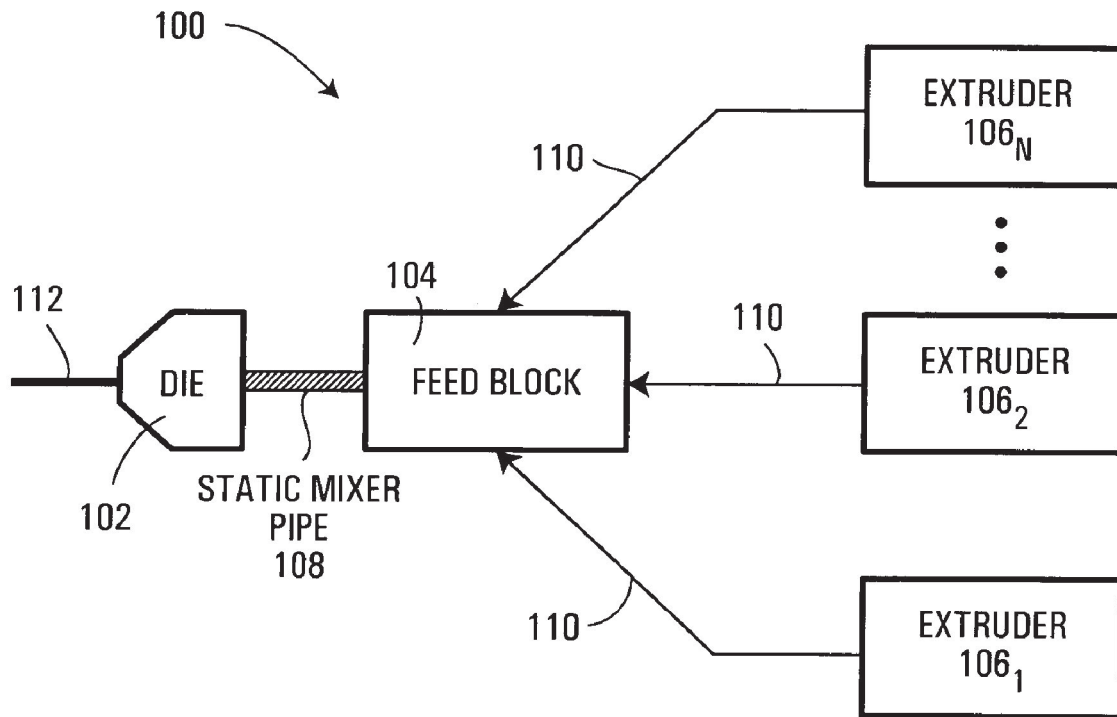


FIG. 1

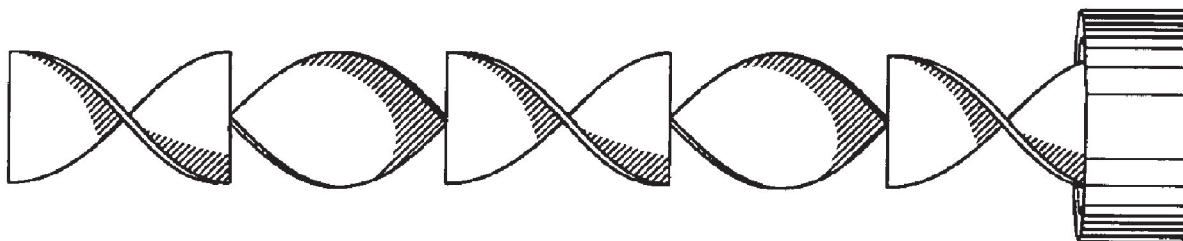


FIG. 3

The materials that are formed from the system are sheets or tubes of plastics that can be used in different applications (Col. 9, Lines 6-8). Additionally, the final product resulting from

the feed block of the system forms bands and layers, with the two being interchangeable, of at least two different colors with the two different colors being multi-layer or multi-band patterns of viscous plastic material (Col. 4, Lines 30-48).

It is noted that the system taught by Piedboeuf is nearly identical to the system which forms the simulated natural wood-grained polymer board as claimed by the applicant in that the system as defined by applicant's specification is formed by the input of two different materials having two differing colors which are then mixed through a static mixer similar to the one shown above taught by Piedboeuf, and then extruded to form the board as shown in Figures 1 and 5-5G. The examiner notes that the processing two polymer materials having differing colors taught by Piedboeuf would ultimately result in the in a plastic sheet having the shape of a board and would be formed of "a first set of polymer layers generally extending along the length direction and containing a first colorant, a majority of the first set of polymer layers extending along the length of the entire board; a second set of polymer layers generally extending along the length direction and containing a second colorant different than the first colorant, a majority of the second set of polymer layers extending along the length of the entire board; and wherein a plurality of individual layers of the first and second sets of polymer layers alternate within the board and extend along a substantially uninterrupted curvilinear path originating proximate the first side of the board and terminating proximate to the second side of the board" as required by claim 1.

Piedboeuf is silent with respect to the formation of the sheet such that the colors of the polymer layers entering the system are those that resemble and result in a sheet that simulates a natural wood-grain appearance.

Sudano teaches a co-extrusion process for making mouldings that have a simulated wood appearance and the moldings thereof (Pg. 1, Paragraph [0006]). The method involves

mixing a base material and colored pellets of differing colors into a helical vein screw and then co-extruding the mixture onto a core of cellular polymer material (Pg. 1, Paragraph [0008]-[0012]). The formation of the simulated wood appearance without the use of actual wood material, but use polymers to simulate the natural appearance of wood in that the benefits of this include water and humidity resistance, insects/termite resistance, avoiding the use of chemicals for staining or painting, little to no maintenance, and easy installation due to lightweight and structural properties (Pg. 5, Paragraph [0073]-[0074]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form a sheet like product utilizing the system taught by Piedboeuf which requires the combining and mixing of materials having different colors, subjecting them to mixing and extrusion, such that the colors simulate that of a wood appearance as taught by Sudano which teaches the combining of differing colors of materials and subsequent mixing and extruding such that this sheet would give the natural appearance of wood having the benefits as described by Sudano.

Regarding **claims 2-4**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 1.

Piedboeuf is silent with respect to the sheet having a first set of polymer layers that are generally thinner than the layers of the second set of polymers (claim 2), and wherein a portion of at least one of the first side and the second side of the board is removed to expose portions of the first and second sets of polymer layers along the length direction (claim 3) and wherein the exposed portions forming a burl grain pattern (claim 4).

However, one of ordinary skill in the art would appreciate that the nearly identical systems for forming the sheet and the board would result in nearly identical products as well

such that the extrusion of the final product of the sheet formed with a simulated wood grain pattern would result in one set of polymer layers being thinner than the other and the core or exposing the core would result in a burl pattern being visible. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In *reAUer*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) See MPEP 2144.05 (II).

Regarding **claim 6**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 1. Piedboeuf additionally teaches the use of various thermoplastic including HDPE (Col. 3, Lines 63-64).

Regarding **claim 9**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 1. Piedboeuf teaches the formation of sheets utilizing the system described above with respect to claim 1. One of ordinary skill in the art would appreciate that a sheet has a similar polygonal shape to that of a board.

Regarding **claim 18**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 1. One of ordinary skill in the art would appreciate that the sheet product of Piedboeuf would comprise a third side and a fourth side spaced apart from the third side along a height direction different than the length direction and width direction, wherein the third and fourth sides define a height of the board, wherein the third and fourth sides extend along the length direction between the first and

second ends, wherein the core of the board extends between the first, second, third, and fourth sides and between the first and second ends

Piedboeuf is silent with respect to the individual layers of the first and second sets of polymer layers alternate within the core of the board along the height direction.

However, one of ordinary skill in the art would appreciate that the nearly identical systems for forming the sheet and the board would result in nearly identical products as well such that the extrusion of the final product of the sheet formed with a simulated wood grain pattern would result in the individual layers of the first and second sets of polymer layers alternate within the core of the board along the height direction. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In *reAUer*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) See MPEP 2144.05 (II).

Claims 7-8 are rejected under 35 U.S.C. 103 as being unpatentable over Piedboeuf (US 7,204,944) in view of Sudano et al. (US 2011/0177291) as applied to claim 1 above, and further in view of Rohatgi et al. (US 2003/0021915).

Regarding **claims 7-8**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 1.

Piedboeuf is silent with respect to the sheet further including a UV inhibitor or a foaming agent (claim 7) and a foaming agent (claim 8).

Rohatgi teaches the formation of wood-like boards formed from thermoplastics and cellulosic materials having low density and enhanced strength (Pg. 1, Paragraph [0001]). The board may include a UV-stabilizer to protect from ultraviolet degradation (Pg. 5, Paragraph

[0046]). A foaming agent may also be added causing the board to expand and thus reducing the density of the final product (Pg. 3, Paragraph [0037]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form the sheet product having a wood appearance as taught by Piedboeuf in view of Sudano in which the starting materials of the system also include additives such as a UV stabilizer to protect from ultraviolet degradation and a foaming agent to cause the sheet to expand reducing the density of the sheet making the final product light weight as taught by Rohatgi.

Claim 5 is rejected under 35 U.S.C. 103 as being unpatentable over Piedboeuf (US 7,204,944) in view of Sudano et al. (US 2011/0177291) as applied to claim 1 above, and further in view of Franco et al. (US 2004/0038002).

Regarding **claim 5**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 1.

Piedboeuf is silent with respect to the sheet further embossed with a wood grain pattern.

Franco teaches the formation of a colored thermoplastic polymer material that simulates natural wood (Pg. 1, Paragraph [0001]). The thermoplastic materials are mixed and extruded with the veins of the natural wood appearance being visible and then undergoes an embossment process on one or both sides to impress a pattern in the extrudate thus enhancing the veins in the extruded part (Pg. 3, Paragraph [0030]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form the sheet product with a simulated wood appearance as taught by

Piedboeuf in view of Sudano in which the extruded product is then embossed to give the simulated wood appearance an enhancement by the impression of a pattern as taught by Franco.

Claims 10-12, 15, 17, and 19-20 are rejected under 35 U.S.C. 103 as being unpatentable over Piedboeuf (US 7,204,944) in view of Sudano et al. (US 2011/0177291).

Regarding **claim 10**, Piedboeuf teaches processes for creating color effects in extrudable material (Col. 1, Line 8-10). The process includes the steps of providing a first and a second stream of viscous materials of different colors and combining those streams feeding them into a helical static mixer, shown in Fig. 3 (Col. 1, Lines 49-63). The system additionally includes a die, a feed block, and at least two extruders as shown below with the static mixer (Col. 1, Lines 64-66; Fig. 1).

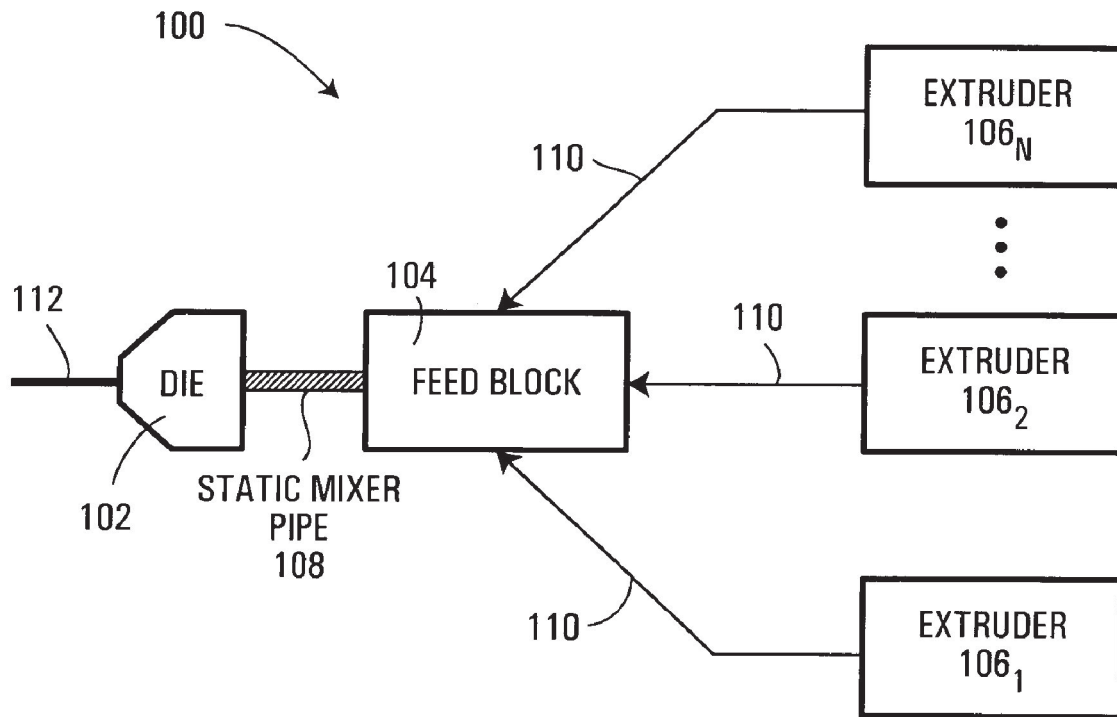


FIG. 1

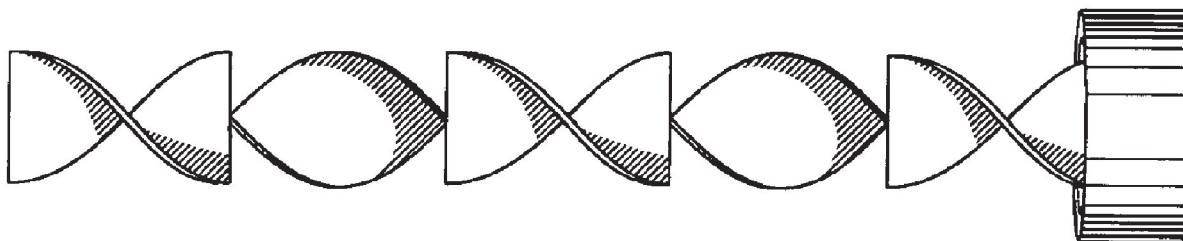


FIG. 3

The materials that are formed from the system are sheets or tubes of plastics that can be used in different applications (Col. 9, Lines 6-8).

It is noted that the system taught by Piedboeuf is nearly identical to the system which forms the simulated natural wood-grained polymer board as claimed by the applicant in that the system as defined by applicant's specification is formed by the input of two different materials having two differing colors which are then mixed through a static mixer similar to the one shown above taught by Piedboeuf, and then extruded to form the board as shown in Figures 1 and 5-5G. The examiner notes that the processing two polymer materials having differing colors taught by Piedboeuf would ultimately result in the in a plastic sheet having the shape of a board and would be formed of "a first set of polymer layers generally extending along the length direction and containing a first colorant, a majority of the first set of polymer layers extending along the length of the entire board; a second set of polymer layers generally extending along the length direction and containing a second colorant different than the first colorant, a majority of the second set of polymer layers extending along the length of the entire board; and wherein a plurality of individual layers of one of the first and second sets of polymer layers alternate within the board and extend along a substantially uninterrupted curvilinear path originating proximate the first side of the board and terminating proximate to the second side of the board" as required by claim 1.

Piedboeuf is silent with respect to the formation of the sheet such that the colors of the polymer layers entering the system are those that resemble and result in a sheet that simulates a natural wood-grain appearance.

Sudano teaches a co-extrusion process for making mouldings that have a simulated wood appearance and the moldings thereof (Pg. 1, Paragraph [0006]). The method involves mixing a base material and colored pellets of differing colors into a helical vein screw and then co-extruding the mixture onto a core of cellular polymer material (Pg. 1, Paragraph [0008]-[0012]). The formation of the simulated wood appearance without the use of actual wood

material, but use polymers to simulate the natural appearance of wood in that the benefits of this include water and humidity resistance, insects/termite resistance, avoiding the use of chemicals for staining or painting, little to no maintenance, and easy installation due to lightweight and structural properties (Pg. 5, Paragraph [0073]-[0074]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form a sheet like product utilizing the system taught by Piedboeuf which requires the combining and mixing of materials having different colors, subjecting them to mixing and extrusion, such that the colors simulate that of a wood appearance as taught by Sudano which teaches the combining of differing colors of materials and subsequent mixing and extruding such that this sheet would give the natural appearance of wood having the benefits as described by Sudano.

Regarding **claim 11**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 10.

Piedboeuf is silent with respect to the sheet having a first set of polymer layers that are generally thinner than the layers of the second set of polymers.

However, one of ordinary skill in the art would appreciate that the nearly identical systems for forming the sheet and the board would result in nearly identical products as well such that the extrusion of the final product of the sheet formed with a simulated wood grain pattern would result in one set of polymer layers being thinner than the other. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In reAUer, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) See MPEP 2144.05 (II).

Regarding **claim 12**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 10. Piedboeuf additionally teaches the use of various thermoplastic including HDPE (Col. 3, Lines 63-64).

Regarding **claim 15**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 10. Piedboeuf teaches the formation of sheets utilizing the system described above with respect to claim 1. One of ordinary skill in the art would appreciate that a sheet has a similar polygonal shape to that of a board.

Regarding **claim 17 and 19**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claims 10 and 12.

Piedboeuf is silent with respect to the core being substantially free of natural wood materials.

Sudano teaches the simulated wood extruded product as discussed above with respect to claim 10. Sudano additionally teaches including real wood material is problematic in terms of material and manufacturing cost, material compatibility, and the properties of the final product (Pg. 1, Paragraph [0003]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form the sheet product simulating a wood appearance as taught above by Piedboeuf in view of Sudano, such that the materials are free of natural wood materials so as to avoid problems such as material and manufacturing cost, material compatibility, and the properties of the final product as further taught by Sudano.

Regarding **claim 20**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 1. One of ordinary skill in the art would appreciate that the sheet product of Piedboeuf would comprise a third side and a fourth side spaced apart from the third side along a height direction different than the length direction and width direction, wherein the third and fourth sides define a height of the board, wherein the third and fourth sides extend along the length direction between the first and second ends, wherein the core of the board extends between the first, second, third, and fourth sides and between the first and second ends

Piedboeuf is silent with respect to the individual layers of the first and second sets of polymer layers alternate within the core of the board along the height direction.

However, one of ordinary skill in the art would appreciate that the nearly identical systems for forming the sheet and the board would result in nearly identical products as well such that the extrusion of the final product of the sheet formed with a simulated wood grain pattern would result in the individual layers of the first and second sets of polymer layers alternate within the core of the board along the height direction. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In *reAUer*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) See MPEP 2144.05 (II).

Claims 13-14 are rejected under 35 U.S.C. 103 as being unpatentable over Piedboeuf (US 7,204,944) in view of Sudano et al. (US 2011/0177291) as applied to claim 10 above, and further in view of Rohatgi et al. (US 2003/0021915).

Regarding **claims 13-14**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 1.

Piedboeuf is silent with respect to the sheet further including a UV inhibitor or a foaming agent (claim 13) and a foaming agent (claim 14).

Rohatgi teaches the formation of wood-like boards formed from thermoplastics and cellulosic materials having low density and enhanced strength (Pg. 1, Paragraph [0001]). The board may include a UV-stabilizer to protect from ultraviolet degradation (Pg. 5, Paragraph [0046]). A foaming agent may also be added causing the board to expand and thus reducing the density of the final product (Pg. 3, Paragraph [0037]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form the sheet product having a wood appearance as taught by Piedboeuf in view of Sudano in which the starting materials of the system also include additives such as a UV stabilizer to protect from ultraviolet degradation and a foaming agent to cause the sheet to expand reducing the density of the sheet making the final product light weight as taught by Rohatgi.

Claims 21-24 are rejected under 35 U.S.C. 103 as being unpatentable over Piedboeuf (US 7,204,944) in view of Sudano et al. (US 2011/0177291).

Regarding **claim 21**, Piedboeuf teaches processes for creating color effects in extrudable material (Col. 1, Line 8-10). The process includes the steps of providing a first and a second stream of viscous materials of different colors and combining those streams feeding them into a helical static mixer, shown in Fig. 3 (Col. 1, Lines 49-63). The system additionally includes a die, a

feed block, and at least two extruders as shown below with the static mixer (Col. 1, Lines 64-66;

Fig. 1).

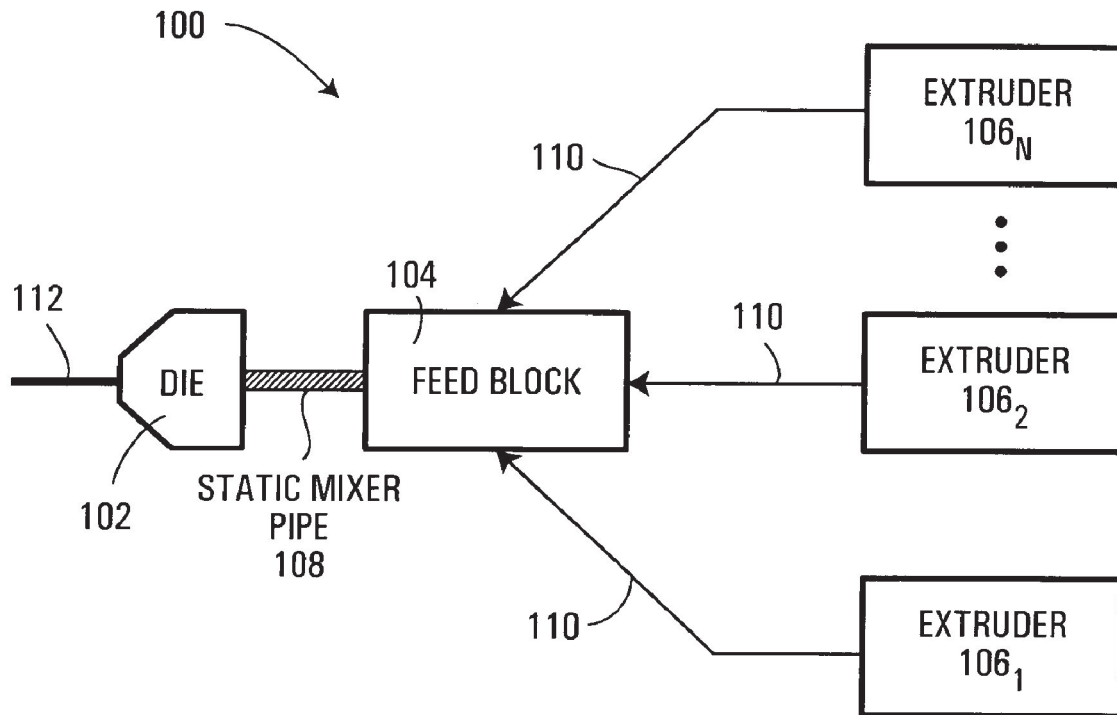


FIG. 1

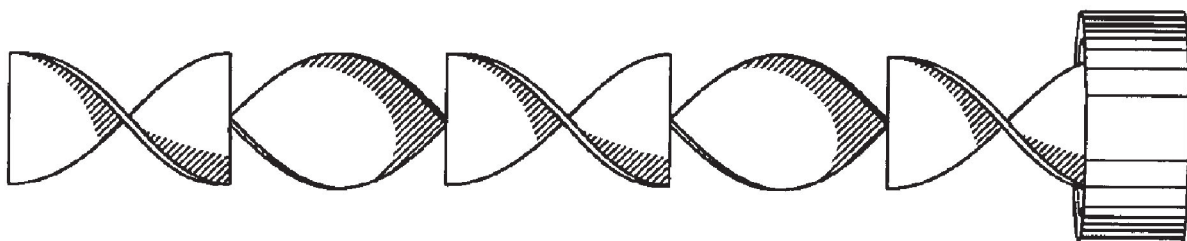


FIG. 3

The materials that are formed from the system are sheets or tubes of plastics that can be used in different applications (Col. 9, Lines 6-8).

It is noted that the system taught by Piedboeuf is nearly identical to the system which forms the simulated natural wood-grained polymer board as claimed by the applicant in that the system as defined by applicant's specification is formed by the input of two different materials having two differing colors which are then mixed through a static mixer similar to the one shown above taught by Piedboeuf, and then extruded to form the board as shown in Figures 1 and 5-5G. The examiner notes that the processing two polymer materials having differing colors taught by Piedboeuf would ultimately result in the in a plastic sheet having the shape of a board and would be formed of "a first set of polymer layers generally extending along the length direction and containing a first colorant, a majority of the first set of polymer layers extending along the length of the entire board; a second set of polymer layers generally extending along the length direction and containing a second colorant different than the first colorant, a majority of the second set of polymer layers extending along the length of the entire board; and wherein a plurality of individual layers of one of the first and second sets of polymer layers alternate within the board and extend along a substantially uninterrupted curvilinear path originating proximate the first side of the board and terminating proximate to the second side of the board" as required by claim 1.

Piedboeuf is silent with respect to the formation of the sheet such that the colors of the polymer layers entering the system are those that resemble and result in a sheet that simulates a natural wood-grain appearance.

Sudano teaches a co-extrusion process for making mouldings that have a simulated wood appearance and the moldings thereof (Pg. 1, Paragraph [0006]). The method involves mixing a base material and colored pellets of differing colors into a helical vein screw and then

co-extruding the mixture onto a core of cellular polymer material (Pg. 1, Paragraph [0008]-[0012]). The formation of the simulated wood appearance without the use of actual wood material, but use polymers to simulate the natural appearance of wood in that the benefits of this include water and humidity resistance, insects/termite resistance, avoiding the use of chemicals for staining or painting, little to no maintenance, and easy installation due to lightweight and structural properties (Pg. 5, Paragraph [0073]-[0074]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form a sheet like product utilizing the system taught by Piedboeuf which requires the combining and mixing of materials having different colors, subjecting them to mixing and extrusion, such that the colors simulate that of a wood appearance as taught by Sudano which teaches the combining of differing colors of materials and subsequent mixing and extruding such that this sheet would give the natural appearance of wood having the benefits as described by Sudano.

Regarding **claim 22**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 21.

Piedboeuf is silent with respect to the sheet having a first set of polymer layers that are generally thinner than the layers of the second set of polymers.

However, one of ordinary skill in the art would appreciate that the nearly identical systems for forming the sheet and the board would result in nearly identical products as well such that the extrusion of the final product of the sheet formed with a simulated wood grain pattern would result in one set of polymer layers being thinner than the other. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the

optimum or workable ranges by routine experimentation." In reAUer, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) See MPEP 2144.05 (II).

Regarding **claim 23**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claim 21. Piedboeuf additionally teaches the use of various thermoplastic including HDPE (Col. 3, Lines 63-64).

Regarding **claim 24**, Piedboeuf in view of Sudano teaches the formation of a sheet having a simulated wood appearance through a system that is nearly identical to that described in applicant's specification as discussed above with respect to claims 21.

Piedboeuf is silent with respect to the core being substantially free of natural wood materials.

Sudano teaches the simulated wood extruded product as discussed above with respect to claim 10. Sudano additionally teaches including real wood material is problematic in terms of material and manufacturing cost, material compatibility, and the properties of the final product (Pg. 1, Paragraph [0003]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form the sheet product simulating a wood appearance as taught above by Piedboeuf in view of Sudano, such that the materials are free of natural wood materials so as to avoid problems such as material and manufacturing cost, material compatibility, and the properties of the final product as further taught by Sudano.

Claim 25 is rejected under 35 U.S.C. 103 as being unpatentable over Piedboeuf (US 7,204,944) in view of Sudano et al. (US 2011/0177291).

Regarding **claim 25**, Piedboeuf teaches processes for creating color effects in extrudable material (Col. 1, Line 8-10). The process includes the steps of providing a first and a second stream of viscous materials of different colors and combining those streams feeding them into a helical static mixer, shown in Fig. 3 (Col. 1, Lines 49-63). The system additionally includes a die, a feed block, and at least two extruders as shown below with the static mixer (Col. 1, Lines 64-66; Fig. 1).

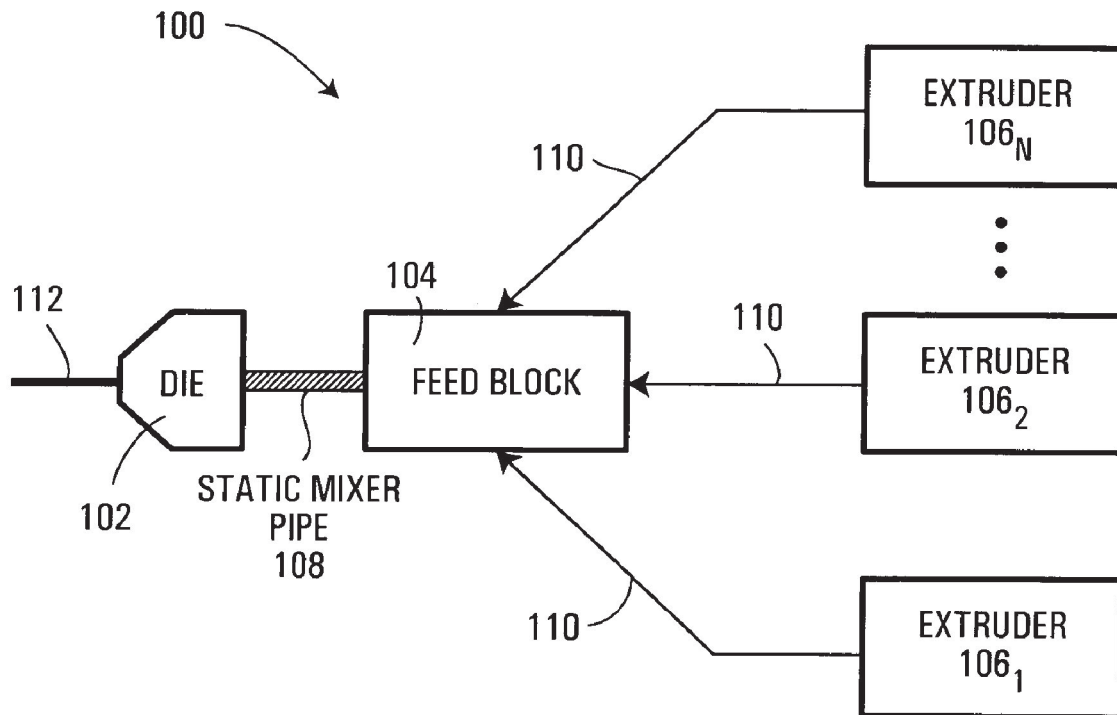


FIG. 1

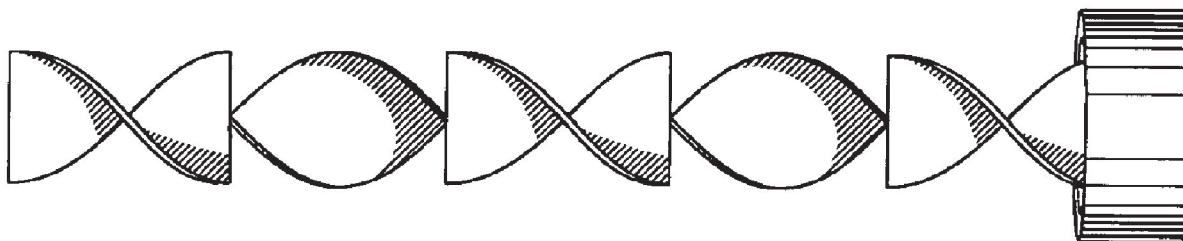


FIG. 3

The materials that are formed from the system are sheets or tubes of plastics that can be used in different applications (Col. 9, Lines 6-8).

It is noted that the system taught by Piedboeuf is nearly identical to the system which forms the simulated natural wood-grained polymer board as claimed by the applicant in that the system as defined by applicant's specification is formed by the input of two different materials having two differing colors which are then mixed through a static mixer similar to the one shown above taught by Piedboeuf, and then extruded to form the board as shown in Figures 1 and 5-5G. The examiner notes that the processing two polymer materials having differing colors taught by Piedboeuf would ultimately result in the in a plastic sheet having the shape of a board and would be formed of "a first set of polymer layers generally extending along the length direction and containing a first colorant, a majority of the first set of polymer layers extending along the length of the entire board; a second set of polymer layers generally extending along the length direction and containing a second colorant different than the first colorant, a majority of the second set of polymer layers extending along the length of the entire board; and wherein a plurality of individual layers of the first and second sets of polymer layers alternate within the board and extend along a substantially uninterrupted curvilinear path originating proximate the first side of the board and terminating proximate to the second side of the board" as required by claim 1.

Piedboeuf is silent with respect to the formation of the sheet such that the colors of the polymer layers entering the system are those that resemble and result in a sheet that simulates a natural wood-grain appearance.

Sudano teaches a co-extrusion process for making mouldings that have a simulated wood appearance and the moldings thereof (Pg. 1, Paragraph [0006]). The method involves mixing a base material and colored pellets of differing colors into a helical vein screw and then co-extruding the mixture onto a core of cellular polymer material (Pg. 1, Paragraph [0008]-[0012]). The formation of the simulated wood appearance without the use of actual wood

material, but use polymers to simulate the natural appearance of wood in that the benefits of this include water and humidity resistance, insects/termite resistance, avoiding the use of chemicals for staining or painting, little to no maintenance, and easy installation due to lightweight and structural properties (Pg. 5, Paragraph [0073]-[0074]).

Therefore, it would have been obvious to one of ordinary skill in the art before the filing of the invention to form a sheet like product utilizing the system taught by Piedboeuf which requires the combining and mixing of materials having different colors, subjecting them to mixing and extrusion, such that the colors simulate that of a wood appearance as taught by Sudano which teaches the combining of differing colors of materials and subsequent mixing and extruding such that this sheet would give the natural appearance of wood having the benefits as described by Sudano.

Response to Arguments

Applicant's arguments, see Pg. 8, filed 5/21/2018, with respect to the rejection(s) of claim(s) 1-16 under 35 U.S.C. 103 have been fully considered and are persuasive.

In particular, applicant argues that Rohatgi and Franco fail to teach a plurality of individual layers that alternate within a board and extend along a substantially uninterrupted curvilinear path originating proximate the first side of the board and terminating proximate the second side of the board.

The examiner concedes in that the spiral layer of Rohatgi only shows one continuous line extending from one side of the board to the second side and does not teach a plurality of these layers extending from side to side.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Piedboeuf in view of Sudano as discussed above and as a result the rejection is non-final.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL P DILLON whose telephone number is (571)270-5657. The examiner can normally be reached on Mon-Fri; 8 AM to 5 PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, a pplicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MARIA V EWALD can be reached on 571-272-8519. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DANIEL P. DILLON
Examiner

Art Unit 1783

/MARIA V EWALD/
Supervisory Patent Examiner, Art Unit 1783