



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Application Number: 15/245,948

Filing Date: 24 Aug 2016

Appellant(s): Stephens et al.

Davis M. Chin Jr.

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/23/2019.

(1) Grounds of Rejection to be Reviewed on Appeal

Every ground of rejection set forth in the Office action dated 1/2/2019 from which the appeal is taken is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

The following ground(s) of rejection are applicable to the appealed claims.

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).

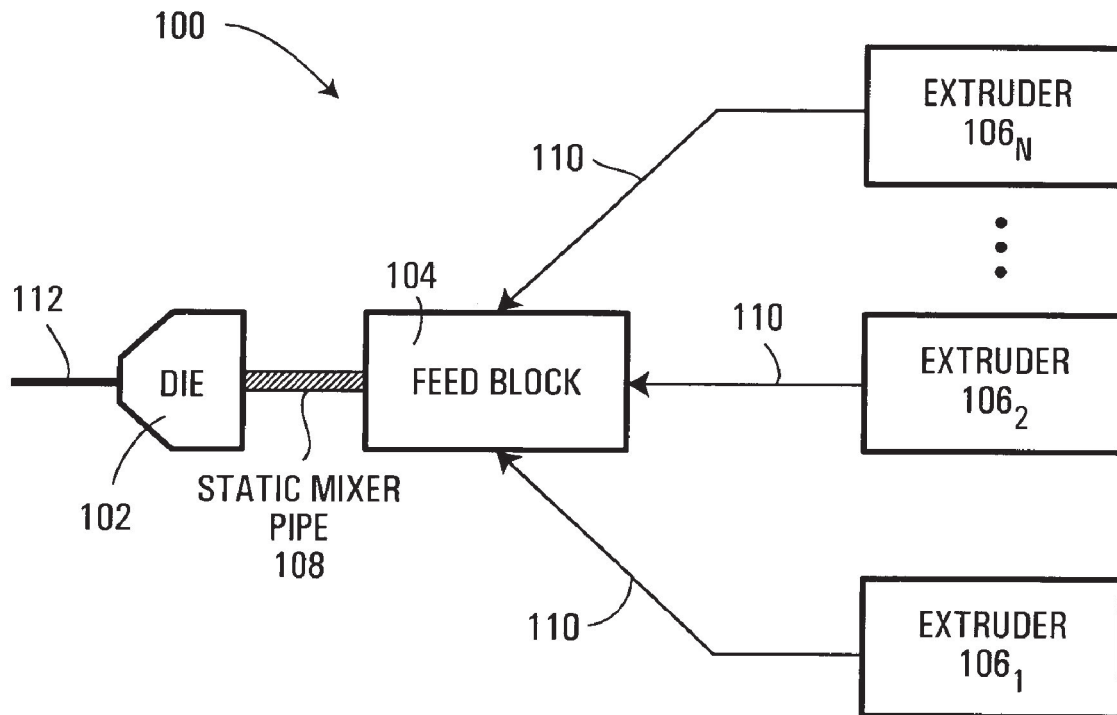


FIG. 1

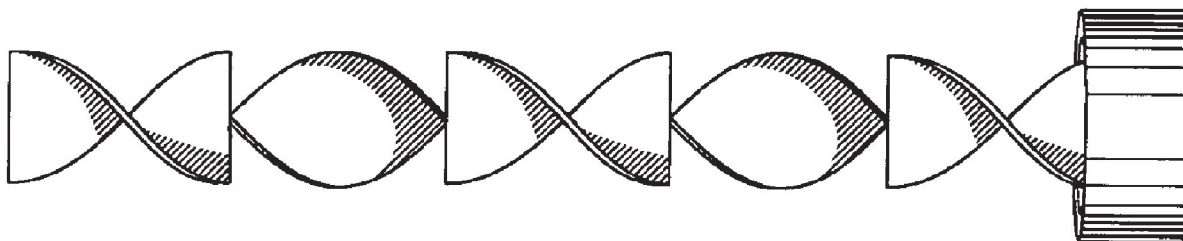


FIG. 3

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).

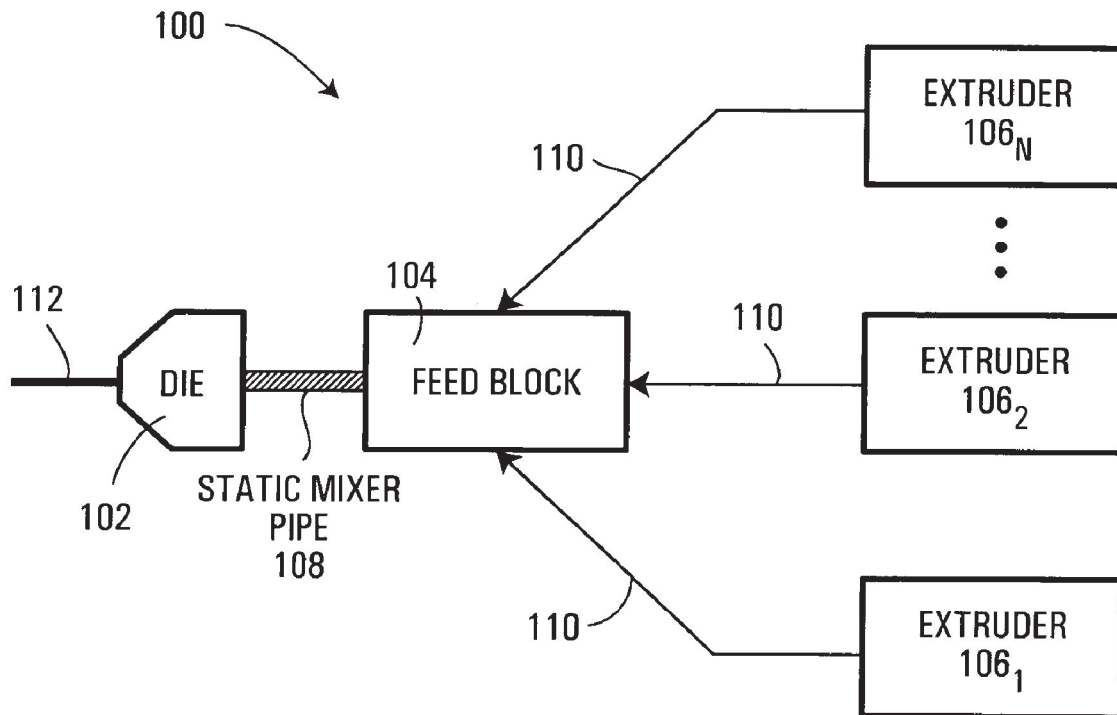


FIG. 1

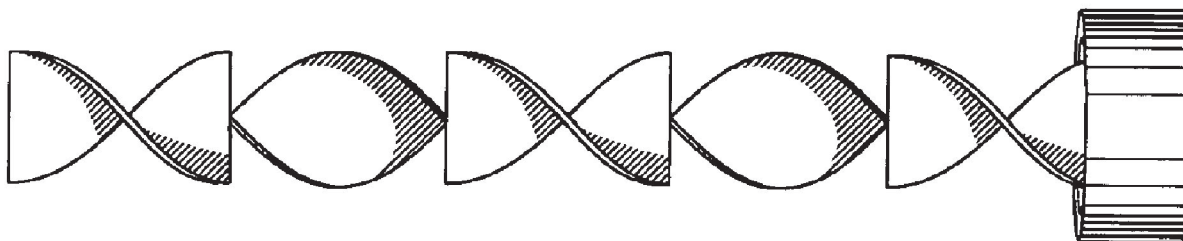


FIG. 3

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 burled 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 re Auer, 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 re Auer, 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).

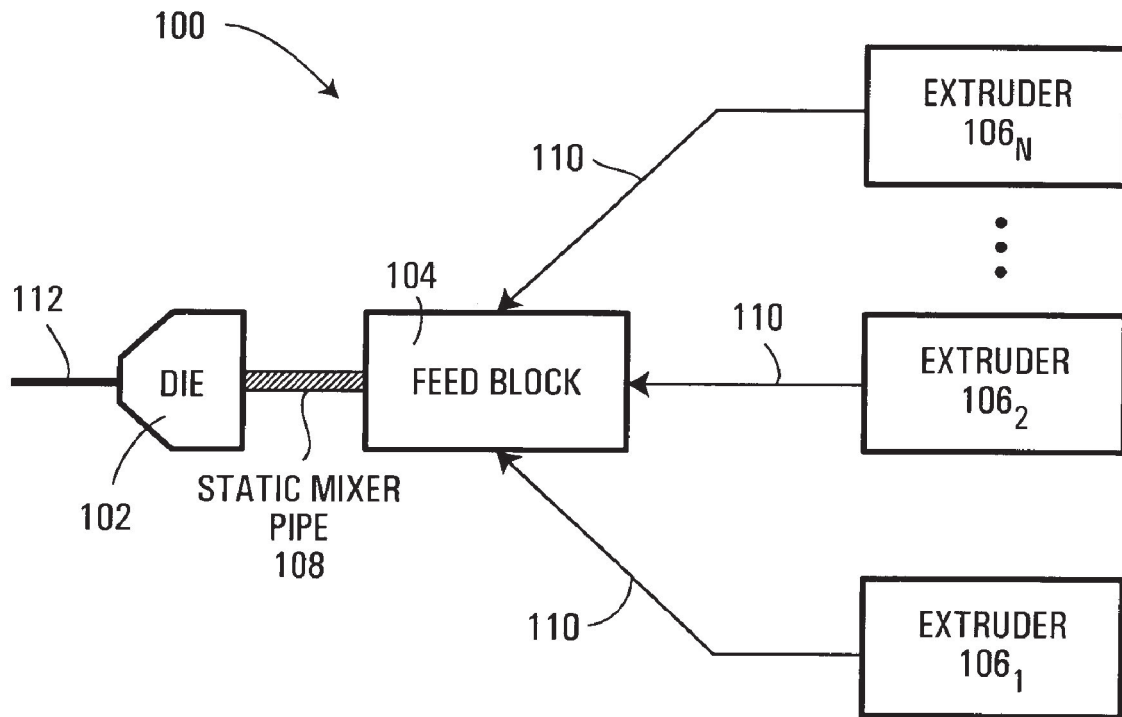


FIG. 1

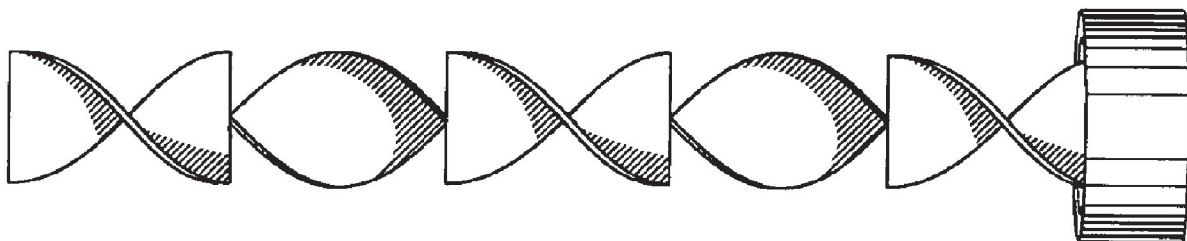


FIG. 3

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 re Auer, 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 re Auer, 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).

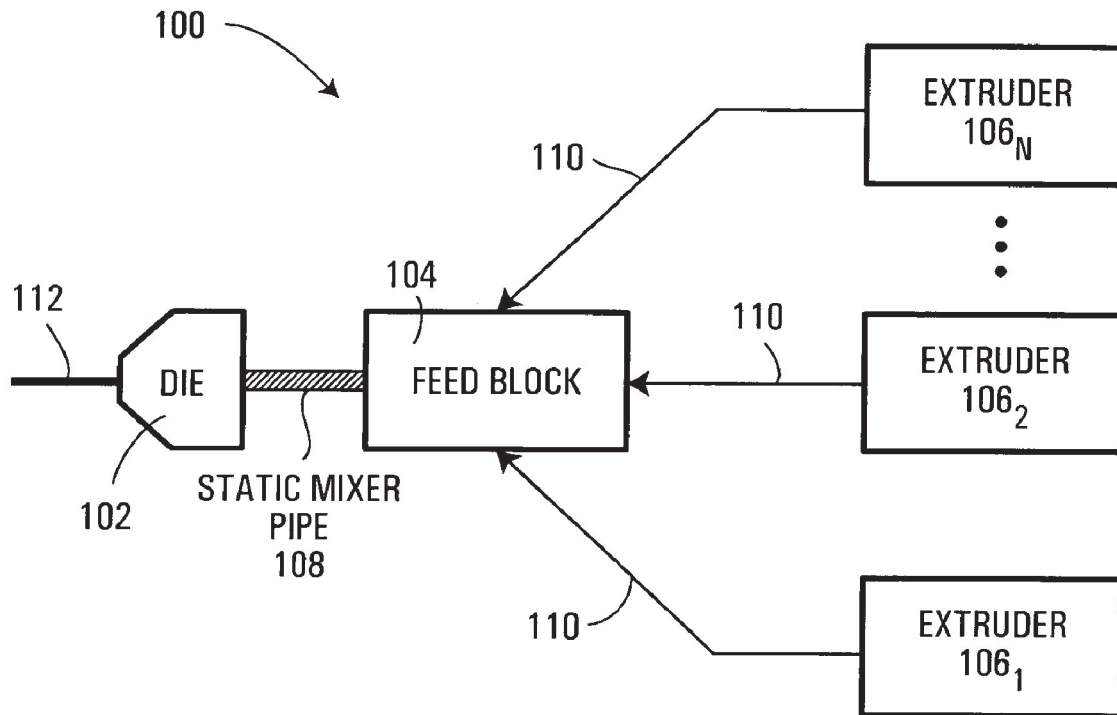


FIG. 1

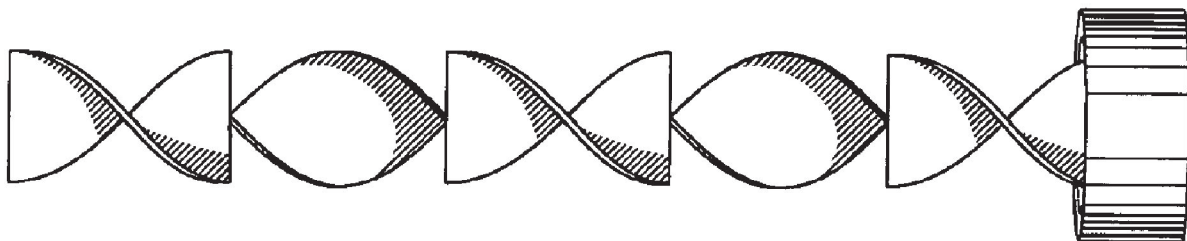


FIG. 3

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 re Auer, 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).

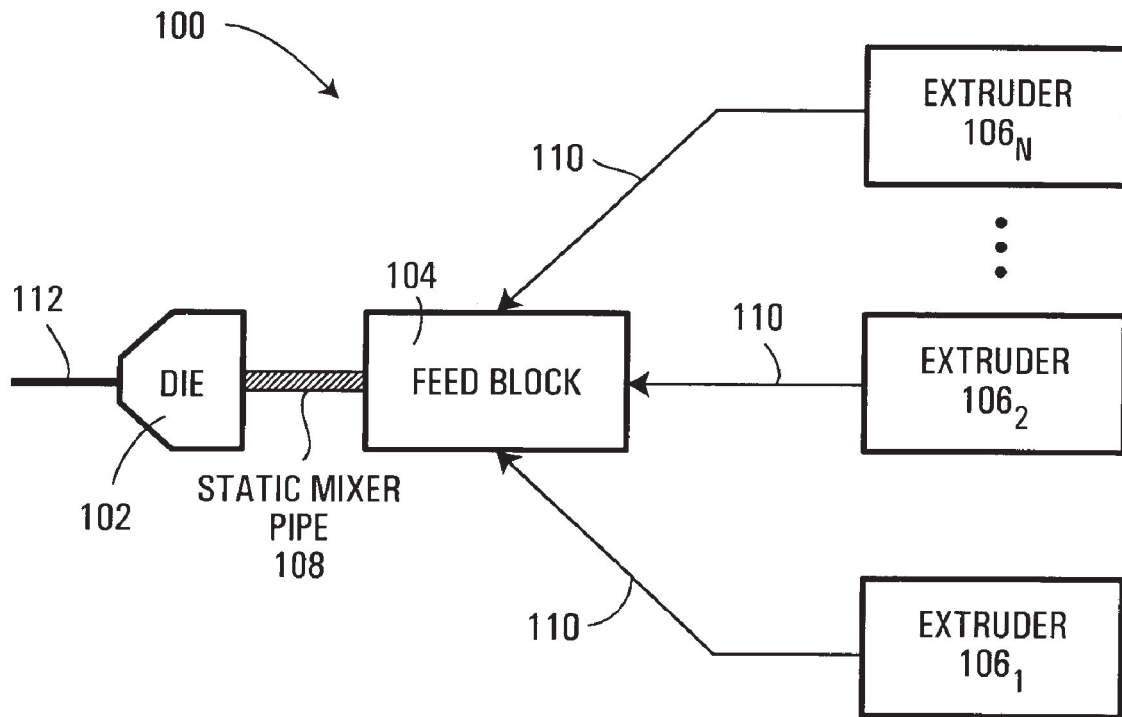


FIG. 1

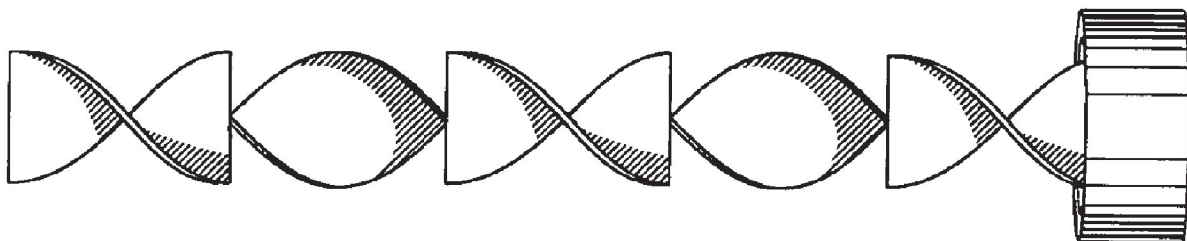


FIG. 3

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.

(2) Response to Argument

On pages 8-10, appellant asserts that the office action incorrectly relies on the processes of Piedboeuf as evidence of obviousness over the simulated wood grain polymers of claims 1, 10, 21 and 25. In particular, appellant asserts that the processes are not identical such that the feed blocks of the Piedbouv system and that of appellant invention are different as illustrated in figures 2 of each reference and would therefore not ultimately result in the final products which are appellants claimed invention.

The examiner first notes that the final products being the simulated natural wood grained polymers appear to be highly dependent on the methods of forming the polymers (Figure 1 and 5A-5G). As such, the processes are to be taken into consideration in a search for the final product, which resulted in the reference of Piedbouv which teaches an overlapping method forming products, such as those in figures 6A, such that the process includes

coextrusion and a helical mixture (Col. 5, Line 66-Col. 6, Line 19). Similarly, per appellant's disclosure, the wood grain appearance is dependent upon intermixing of polymers of varying colors using co-extrusion, a flow divider and adapter (see Appellant's specification paragraphs 0036 – 0041).

The examiner concedes that the feed blocks appear to be physically different; however, in the instant invention and in the prior art, they allow for the combination of the flows of various materials before entering the mixer (See Piedbouf, Col. 4, Lines 42-47; See Appellant's Specification, Pg. 7, Paragraph [0035]). As such, the difference in the feed block does not appear to contribute to the "wood-grained" appearance of the polymers. This features appears to be dependent upon the helical mixer illustrated in figures 5A-5G (See Appellant's Specification, Pg. 7, Paragraph [0035]). The helical mixer or flow divider 140 is comprised of sections 141-147 which "cut across and redirect the combined flow." These inserts within the helical mixer allow for the "linear graining and layering aesthetics of the product" (paragraph 0042 of Appellant's specification). Likewise, the prior art of Piedbouf has a similar mixer 108 (see figure 3) which is designed to mix the fluids coming from the feed block (Col. 5, Lines 66-67; column 6, lines 40-55). This mixing ultimately results in the products illustrated in figure 6A. As such, the examiner contends that although the feed block of Piedboeuf and that of Appellant are different, the wood-grained appearance results from the mixing done in the helical mixer and as such because Piedboeuf teaches the mixing and layering in the static mixer 108 results in a product with multiple bands with color variation as claimed, it is this final product which the examiner considers as equivalent to the polymer layers which are in appellant's claimed invention.

As the examiner points out, the claim requires "a simulated wood-grained polymer board..., comprising: a first set of polymer layers extending along the length direction and containing a first colorant, a majority of the first set of polymer layers extending along the

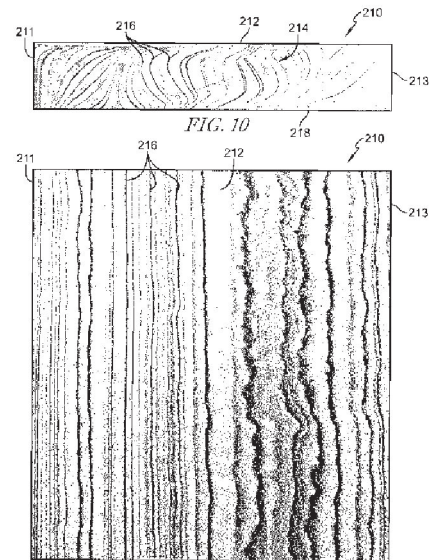
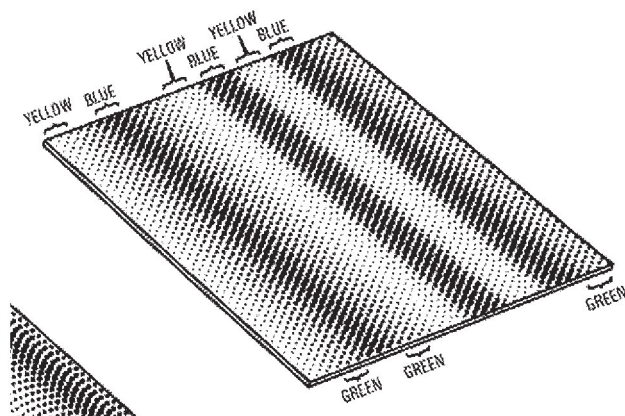
length of the entire board; a second set of polymer layers extending along the length direction and containing a second colorant different than the first colorant, a majority of the second set of polymer layers extending along the length of the entire board; and wherein a plurality of individual layers 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 the second side of the board.” Piedboeuf teaches a product exiting an extruder, comprised of a first set of polymer layers (note Piedboeuf teaches first bands or one color, see Col. 4, lines 55-65) and a second set of polymer layers (note Piedboeuf teaches second bands or more of another color, see Col. 5, lines 25-30; 35-40) wherein the resultant product has individual layers alternating within the board as claimed (see Col. 6, lines 40-50).

On pages 11-15, appellant asserts that the previous office action includes a hindsight bias such that the system of Piedbouf is being compared to that of appellant’s specification. However, the systems are still different including that of the feed blocks as mentioned above and the resulting product would still be different from that of appellant’s claimed inventions, citing figure 6A of Piedbouf and figure 11 of appellant’s disclosure.

As indicated above, the examiner notes that the wood-grained polymers appear to be highly dependent on the processes of forming the products. As such, a comparison to appellant’s specification is necessary in order to determine if a product described in a prior art reference is an equivalent of the claimed invention. However, the examiner contends the comparison of the Piedbouf reference to appellant’s specification is done without hindsight bias as indicated in the rejection, but is done to compare the final products which result from the processes. With respect to the final products of Piedbouf and appellant’s claimed invention, the examiner notes that figures 6A and 6B illustrate the products which results from the process

taught by Piedbouf which teaches the mixing of polymers with two varying colors which may result in a third color formed by combining the two colors, illustrated as yellow, blue and green in the figures. The rejection then turns to the products which are formed from the process which include kayaks and canoes, which one of ordinary skill in the art would appreciate may simulate a wood-grain. Furthermore, the blending of the two polymer materials with different colors may be adjusted in order to further simulate a variety of materials, including having sharp transitions from colors, slower gradation of colors, wavy or curved lines of colors, straight lines and so on (Col. 6, Lines 40-60). The examiner further notes that these sharp transitions and slower gradations are further illustrated in the comparison between figure 6A of Piedbouf (on the left) and figure 11 of appellant's specification (on the right) recreated below.

As illustrated in the figures above, Piedbouf illustrates sharp transitions on the right side of the sheet formed and gradual transitions on the left side of the sheet. This is also featured in



appellant's figure as well such that there are sharp transitions on the left side of the board and more gradual ones on the right side.

Appellant continues to argue (see page 14 of Appellant's brief), that the examiner has improperly shifted the burden to Applicant to rebut the rejection. Appellant additionally argues

that the examiner has not properly produced a *prima facie* case of obviousness and has concluded that the products are the same without providing evidence to show otherwise. The examiner respectfully disagrees. The examiner has pointed (as noted above), that the prior art processes *and the* resulting product as taught by Piedboeuf based on the teachings and citations in the reference do render the claims obvious. The conclusion by the examiner is based on evidence in the reference and not simply without support.

Furthermore, the examiner maintains that because the Piedboeuf reference, taken alone, teaches the variations of the colorants in the layers, the examiner concludes that the product based on the teachings in the reference renders obvious a simulated wood-grain appearance.

It is additionally noted, however, that the examiner has also rejected the claims over the combination of Piedboeuf in view of Sudano. Appellant addresses this set of rejections (see page 16 of Appellant's brief), by arguing that the Office Action fails to cure the deficiencies in Piedboeuf by introducing Sudano. Appellant argues that the Office Action only relies on supposed similarities in the process but fails to provide evidence as to the obviousness of the claimed products. The examiner respectfully disagrees. It is first noted that Piedboeuf is cited (see page 8-9 of the final rejection) as teaching and rendering obvious the extrusion apparatus *and the features of the final product* wherein the product possesses a plurality of layers of different colors as claimed. Sudano was brought in to provide further evidence *that the colorants can be used to produce a simulated natural wood-grain appearance* (see page 9 of the final rejection.) As noted in the rejection, Sudano teaches a co-extrusion process for making moldings with a wood-grain appearance. The use of polymers to simulate wood allows (per the rejection), for the aesthetic benefits of wood without the disadvantages of repeated painting,

insect or wood rot (see page 9 of the rejection). Thus, the examiner contends that because both Piedboeuf and Sudano teach co-extrusion *and layered products of various color(s)*, it would have been obvious to make the product of Piedboeuf of colors simulating natural wood per Sudano for the purpose of avoiding the disadvantages as taught by Sudano. The claimed structure(s) *may not be expressly taught* by the references; however, the references (as combined in the rejection), *renders the claimed product obvious*.

In summary, the examiner therefore contends that because Piedboeuf teaches a process, apparatus *and* resulting polymer product, the product comprised of one or more layers, wherein the layers can include various colors in a plurality of banding configurations and color gradations and Sudano teaches a similar product with colorants simulating natural wood, the instant invention as claimed is rendered obvious.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/DANIEL P DILLON/
Examiner, Art Unit 1783

Conferees:

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

/CALLIE E SHOSHO/
Supervisory Patent Examiner, Art Unit 1787

Requirement to pay appeal forwarding fee. In order to avoid dismissal of the instant appeal in any application or ex parte reexamination proceeding, 37 CFR 41.45 requires payment of an appeal

Art Unit: 1783

forwarding fee within the time permitted by 37 CFR 41.45(a), unless appellant had timely paid the fee for filing a brief required by 37 CFR 41.20(b) in effect on March 18, 2013.