

Search history

Search PN=(US2018194663) (Results 1)

1:

Search [SP]: 1. a method for bending thin glass, comprising: stacking one or more sheets of the thin glass onto a full surface bottom mold applying a partial surface top mold to said stack of thin glass, said top mold contacting the glass in at least the periphery area of the glass heating said thin glass to its glass transition point and allowing thin glass to sag under the force of gravity. 2. the method of claim 1, wherein the thickness of the thin glass is of less than 1.8 mm. 3. the method of claim 1, further comprising applying a clamping force to the glass by clamping means. 4. the method of claim 1, further comprising aligning said glass and molds by aligning means. 5. the method of claim 1, wherein the full surface bottom mold is formed by bending a sheet of glass having a glass transition point that is sufficiently higher than that of the said thin glass and having a thickness sufficient for said mold to retain its shape during bending of said thin glass. 6. the method of claim 1, wherein the said partial surface top mold comprises a ring type structure. 7. the method of claim 1, further comprising applying pneumatic pressure to said partial surface top mold constructed such as to enclose a volume of air and serve as a plenum. 8. the method of claim 1, further comprising applying vacuum to said full surface bottom mold constructed such as to enclose a volume of air and serve as a plenum to allow evacuation of air between full surface mold and thin glass. 9. an apparatus for bending thin glass, comprising: a bending mold base a bending mold female ring that receives a bended glass to form a full surface female mold a male ring mold placed onto the thin glass. 10. the apparatus of claim 9, wherein additional weight is added to the male ring mold. 11. the apparatus of claim 9, wherein clamps are used to force the thin glass to conform to the full surface female mold. 12. the apparatus of claim 9, wherein the top side of the male ring mold is enclosed to form a top plenum. 13. the apparatus of claim 12, wherein the top plenum is pressurized using hot air. 14. the apparatus of claim 9, wherein the bottom side of the bending mold female ring is enclosed to form a bottom plenum. 15. the apparatus of claim 14, wherein vacuum is applied into the bottom plenum to assist bending. 16. the apparatus of claim 15, wherein vacuum is used alone or in conjunction with a top plenum formed by enclosing the top side of the male ring mold. 17. the apparatus of claim 15, wherein the full surface female mold has vacuum holes to facilitate vacuum. (Results 0)

Search [SP]: cross-reference to related applications[0001] this application claims the benefit, under 35 u.s.c. 119(e)(1), of provisional patent application ser. no. 62/440,444 titled "method and apparatus for bending thin glass," which was filed on dec. 30, 2016, by the same inventors of this application. the aforementioned provisional application is incorporated herein by reference in its entirety, as if it were disclosed in the present document. field of invention[0002] the present invention relates generally to the field of light weight automotive laminates and, more particularly, to an improved method and apparatus for bending thin glass. background of the invention[0003] in response to the regulatory requirements for increased automotive fuel efficiency as well as the growing public awareness and demand for environmentally friendly products, automotive original equipment manufacturers, around the world, have been working to improve the efficiency of their vehicles.[0004] one of the key elements of the strategy to improve efficiency has been the concept of light weighting. often times, more traditional, less expensive, conventional materials and processes are being replaced by innovative new materials and processes which while sometime being more expensive, still have higher utility than the materials and processes being replaced due to their lower weight and the corresponding increase in fuel efficiency. vehicle glazing has been no exception.[0005] for many years, the standard automotive windshield has had a thickness of 5.4 mm. in more recent years, we have seen the thickness decrease to 4.75 mm. while a reduction of 0.65 mm may not seem significant, at a density of 2600 kg per cubic meter for standard soda lime glass, each millimeter that the thickness is reduced, decreases the weight by 2.6 kg per square meter. the weight of a typical 1.2 square meter windshield going from 5.4 mm to 4.75 mm is reduced by a little over 2 kg. on a vehicle with a total of 6 square meters of glass, a 1 mm reduction on all of the windows translates into a savings of 15.6 kg.[0006] however there are limits as to how thin the glazing can be. stress under wind load has always been a factor. with the trend towards increasing in the size of windshields in particular, wind load is even more of a concern. glass is also becoming a structural element in more and more vehicles. the glazing contributes to the stiffness and strength of the car. fixed glass, once bonded with a relatively soft curing poly-urethane, is being mounted with higher modulus adhesives. as a result, the glass, once isolated by rubber gaskets and soft butyl adhesives, is now much more subject to loading from the bumps in the road and vehicle torsion.[0007] today, windshields with a 2.1 mm outer ply, a 1.6 mm inner ply and a 0.76 mm plastic interlayer totaling just under 4.5 mm in total thickness are becoming common. this may be close to the limit of what can be done with conventional annealed soda lime glass.[0008] annealed glass is glass that has been slowly cooled from the bending temperature through the glass transition range. this is done to relieve stress in the glass. annealed glass breaks into large shards with sharp edges. in a laminate, two sheets of annealed glass are glued together using a sheet of thermo plastic. if the laminated glass should break, the plastic layer holds the shards of glass together, helping to maintain the structural integrity of the glass. the shards of broken glass are held together much like the pieces of a jigsaw puzzle. a vehicle with a broken windshield can still be operated. on impact, the plastic layer also helps to prevent penetration by the occupant or by objects striking the laminate from the exterior.[0009] heat strengthened glass, with a compressive strength in the range of 10,000 psi, can be used in all vehicle positions other than the windshield. heat strengthened (tempered) glass has a layer of high compression on the outside surfaces of the glass, balanced by tension on the inside of the glass. when tempered glass breaks, the tension and compression are no longer in balance and the glass breaks into small beads with dull edges. tempered glass is much stronger than annealed laminated glass. the limits of the typical automotive heat strengthening process are in the 3.2 mm to 3.6 mm range. this is due to the rapid heat transfer that is required. it is not possible to achieve the high surface compression needed with thinner glass using the typical blower type low pressure air quenching systems. fortunately, there are other materials and processes available.[0010] glass can be chemically tempered. in this process, ions in and near the outside surface of the glass are exchanged with ions that are larger. this places the outer layer of glass in compression. the maximum strength of chemically tempered soda lime glass is limited. however, with some other glass compositions, compressive strengths in excess of 100k psi are possible. the practice of chemically tempering glass is well known to those of ordinary skill in the art and shall not be detailed here.[0011] unlike heat tempered glass, chemically tempered glass breaks into shards rather than beads. this property allows for its use in windshields. however, in standard windshield thicknesses of 2.0 mm or greater, chemically strengthened glass would actually be too strong. in the event of a crash and a head impact, the windshield must break, absorbing the energy of the impact rather than the head of the occupant. therefore, depending upon the tempered strength, thicknesses of 1.1 mm or less must be used.[0012] the majority of the vehicles on the road today have windshields that were made using the gravity bending process. in this process, the plies of glass that form the windshield are placed onto a mold, which supports the glass near the edges, and heated. the glass softens and sags to shape. sometimes, for more complex shapes, gravity is assisted by pneumatic pressure and/or a partial or full surface pressing. as the plies of glass to be laminated are bent in sets, the surfaces, while they may have substantial variation from windshield to windshields, are a near perfect match.[0013] a growing portion of windshields are made by the singlet pressing process. with this process, single sheets of glass are bent using a press to form the glass to shape. the resulting shape is much closer to design and the process can hold tighter tolerances across the surface. but, when the individually pressed sheets are glass are laminated, surface to surface variation can be more of a problem than with gravity bent glass. thin glass is difficult to bend using either of these bending process.[0014] during gravity bending, the edges of the sheets of glass have a tendency to lift off of the mold and form wrinkles. if the plies of glass are of different compositions, with softening points that are too far apart, it may not be possible to gravity bend at all as the glass with the lower softening point will become too soft leading to marking and distortion. in this case, the different glass types must be bent separately.[0015] however, singlet pressing also has problems. the glass is conveyed through the heating section on rolls. the thin glass tends to bend under its own weight resulting in the leading edge hitting the rollers and even falling through. as can be appreciated, a better process is needed. summary of the invention[0016] accordingly, it is an object of the present invention to provide an improved method and apparatus for bending thin glass.[0017] in carrying out the above object, the method of the invention comprises the steps of: stacking one or more sheets of the thin glass onto a full surface bottom mold applying a partial surface top mold to said stack of thin glass, said top mold contacting the glass in at least the periphery area of the glass heating said thin glass to its glass transition point and allowing thin glass to sag under the force of gravity.[0018] furthermore, the apparatus of the invention comprises a bending mold base, a bending mold female ring that receives a bended glass to form a full surface female mold and a male ring mold placed onto the thin glass. description of the drawings[0019] fig. 1 is a view of the female bending mold[0020] fig. 2 is a view of the female bending mold with flat sheet of glass having a higher glass transition point than the thin glass to be bent[0021] fig. 3 is a view of the female bending mold with the higher glass transition point bent to shape[0022] fig. 4 is a view of the female bending mold loaded with thin flat glass[0023] fig. 5 is a detailed view of the female bending mold loaded with thin flat glass[0024] fig. 6 is a detailed view of the mold with male ring in place[0025] fig. 7 is a view of the top plenum in raised position[0026] fig. 8 is a view of the top plenum and mold[0027] fig. 9 is a view of the bottom plenum[0028] fig. 10 is a view of the full surface female mold with vacuum holes. reference numbers 2 bending mold base 4 bending mold female ring 6 thin glass 8 male ring mold 20 flat sheet of glass used to form full surface female mold 22 full surface female mold 30 vacuum holes 32 top plenum air inlet 34 top plenum back 36 bottom

plenum back38 bottom plenum vacuum inletdetailed description of the invention[0040] referring now in detail to the illustrative embodiment depicted in the accompanying drawings for (Results 1)

Search FT=(glass and plastic) and PA=(agg and america) (Results 38)

4:

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Search [SP]: *** warning: ocr data - may be incomplete ***** please email the publication number to patbase@rws.com of any affected text for review ***campo de la invencion la presente invencion se refiere al campo cristales automotrices laminados de seguridad.resumen de la invencion la seguridad automotriz mejorada ha llevado a un aumento en el robo de vehiculos y crimenes a mano armada. el vidrio templado ofrece poca resistencia a los ataques. el vidrio laminado mejora la resistencia a la penetracion, pero solo algunos segundos. al induir un marco rigido en el laminado y una capa interior de plastico, la presente invencion aumenta significativamente la cantidad de tiempo que un ocupante tiene para reaccionar que sea posible escapar de un ataque conduciendo o para que el ataque sea detectado. en el caso de un accidente, la invencion tambien proporciona una retencion mejorada del ocupante, especialmente para el vidrio movil que no esta unido al vehiculo.description del estado del arte en los ultimos anos, la seguridad de los sistemas de ignicion de vehiculos automotores ha sido mejorada hasta el punto en que se ha vuelto practicamente imposible robar un automovil sin tener las llaves o un remolque. del mismo modo las puertas y las cerraduras se han mejoradas lo que hace extremadamente dificil entrar en un automovil sin las llaves o romper el vidrio. mientras que estas mejoras disminuyen la incidencia de robo de vehiculos han llevado a un aumento de los delitos mas graves conocidos como "atracos a mano armada" y "robo de vehiculo" puesto que los ladrones se han adaptado a la nueva tecnologia. en un crimen a mano armada, el ladrón rompe una ventana y agarra un monedero, computadora, gps u otro objeto valioso. en un robo de vehiculo, el conductor se ve obligado a entregar el vehiculo al ladrón.los vehiculos son especialmente vulnerables a este tipo de delitos debido al tipo de vidrio que se utiliza en la mayoría de ellos. una ventana cerrada no disuade a un ladrón determinado debido a la facilidad con que la mayoría de las ventanas de los automotores se pueden romper.el vidrio utilizado en las puertas, ventanas traseras y ventanas laterales de la mayoría de los vehiculos esta hecho de vidrio templado (figura 5a). el vidrio templado es mucho mas fuerte que el vidrio ordinario. se puede utilizar vidrio resistente al calor, flotado templado de cal sodada, con 1 5 10 15 20 25 30 una resistencia a la compresion de al menos 70 mpa, en todas las posiciones del vehiculo distintas del parabrisas. el vidrio reforzado termicamente (templado) tiene una capa de alta compresion en las superficies exteriores del vidrio, equilibrada por la tension en el interior del vidrio, que se produce por el rapido enfriamiento del vidrio ablandado en caliente cuando el vidrio templado se rompe, la tension y la compresion ya no estan en equilibrio y toda la pieza de vidrio se rompe en granos pequenos con los bordes desgastados. si bien el vidrio templado puede soportar cargas elevadas, puede romperse facilmente al golpearlo con un objeto duro o mediante el uso de un punzon central accionado por resorte. cuando el vidrio templado falla, toda la abertura de la ventana queda desprotegida.otro problema que presenta el vidrio templado es cuando falla durante un accidente. en este caso, y especialmente en un accidente de vuelco, el vidrio se desintegra dejando la abertura de la ventana sin nada para evitar la expulsion del ocupante. la expulsion del ocupante y la extension de partes del cuerpo a traves de las aberturas de las ventanas es una causa importante de muertes y lesiones en accidentes de trafico.los parabrisas, mostrados en la figura 9, por otra parte, estan hechos de vidrio laminado recocido (figura 5b). el vidrio recocido es un vidrio que se ha enfriado lentamente desde la temperatura de curvado a traves del rango de transicion vitrea. esto se hace para aliviar cualquier tension en el cristal. el vidrio recocido se rompe en fragmentos grandes con bordes afilados. en un laminado, se pegan dos laminas de vidrio recocido utilizando una lamina termoplastica. para aplicaciones automotrices, la capa de union 4 mas comunmente usada o capa intermedia es polivinilbutilo (pvb). ademas del polivinilbutilo, pueden usarse tambien polimeros ionoplasticos, acetato de etileno-vinilo (eva), resina liquida fundida (cip) y poliuretano termoplastico (tpu).si el vidrio laminado se rompe, la capa de plastico sostiene los fragmentos de vidrio juntos, ayudando a mantener la integridad estructural del vidrio. los fragmentos rotos de vidrio tienden a interbloquearse mucho como las piezas de un rompecabezas. un vehiculo con un parabrisas roto todavia puede ser operado, a menudo por un periodo extendido si el dano no es en las zonas de vision o si no es demasiado extenso. en situaciones de impacto, la capa de union plastica 4 tambien ayuda a evitar la penetracion del ocupante en caso de colision o la penetracion de objetos que golpean el laminado desde el exterior del vehiculo.debido al menor costo y a la mayor resistencia del vidrio templado, el vidrio templado se ha favorecido para todos excepto en la posicion del parabrisas donde no se permite el vidrio templado.sin embargo, en algunos vehiculos de gama alta, el vidrio laminado se ha utilizado para las puertas en lugar de vidrio templado. esto es, al menos en parte, para mejorar la seguridad de los ocupantes, 2 5 10 15 20 25 30 pero tambien para el amortiguamiento mejorado de sonido mejorado que proporciona un laminado y para facilitar el uso de revestimientos que reflejan calor para el control solar. el vidrio laminado tambien se ha utilizado para las ventanas laterales de algunas furgonetas de pasajeros, principalmente para mejorar la retencion de los ocupantes en caso de un accidente de vuelco.con una ventana lateral laminada, el tiempo de intrusion en el vehiculo por un atacante se incrementa significativamente. sin embargo, el tiempo que tarda un atacante agresivo determinado en penetrar un laminado convencional se mide en varios segundos. una demora suficientemente significativa que podria ayudar a superar la ventaja de la sorpresa y proporcionar tiempo suficiente para escapar, pero sigue siendo menos que ideal. en el caso de un accidente de vuelco, el vidrio que no esta pegado en la abertura del vehiculo, se ha encontrado que es poco mejor que el vidrio templado. una vez que el vidrio laminado se rompe, ofrece poca resistencia a la penetracion.otro problema encontrado cuando se usa vidrio laminado como alternativa a las ventanas laterales templadas es el espesor. una ventana laminada requiere una capa de union de plastico. para mantener el mismo espesor, se debe usar menos vidrio. una ventana templada de 4 mm, figura 5a, podria sustituirse por un laminado compuesto por dos capas de vidrio de 1.6 mm unidas con una capa de pvb de 0.76, figura 5b. esto reduce el espesor del vidrio presente en 0.8 mm o 20 percent dejando la ventana mas susceptible a la rotura de los tirones de la puerta y de otros choques.incluso si el vidrio de 1.6 mm esta reforzado termicamente, no es posible alcanzar el mismo nivel de resistencia que con un vidrio de 4 mm de espesor debido a las limitaciones del proceso de templado de aire de baja presion convencional comun en la industria. el limite para el temple completo es de aproximadamente 3,2 mm. si se aumenta el grosor, es posible que sea necesario cambiar los canales 20 y las juntas para acomodar.claramente, un cristal que pudiera superar estos inconvenientes seria deseable.breve descripcion de la invencion el laminado resistente a intrusos de la invencion es un conjunto que comprende: una capa de vidrio 2, una capa de plastico 10, un bastidor 12, un separador 14 y capas de union 4 (figura 5c). el bastidor 12 rodea sustancialmente y encierra el area de vision del laminado (apertura de luz diurna o dlo). el bastidor 12 esta unido a las caras principales de la capa de vidrio y la capa de plastico 10 por las capas de union 4. el separador 14 es un material transparente que tiene aproximadamente el mismo espesor que el bastidor 12 y se utiliza como separador 14 entre las dos 3 5 10 15 20 25 30 capas de union, una de cada una es adyacente a cada una de la capa de vidrio 2 y la capa de plastico 10.el separador 14 esta dimensionado para ajustarse con precision a la porcion interior del bastidor 12. el separador 14 puede estar hecho del mismo material que el utilizado para la capa de union u otro material transparente. en algunas modalidades, el borde del bastidor 12 y la capa de plastico pueden estar desplazados hacia dentro desde el borde del vidrio para acomodar los sellos y canales 20 en los que el vidrio debe encajar. esto permite utilizar una composicion mas gruesa como sustituto directo de un cristal convencional mas delgado sin modificacion de los canales 20, sellos u otros componentes que comprenden la puerta y el mecanismo de accionamiento. como resultado, la instalacion en el vehiculo no requiere mas tiempo y esfuerzo de lo que normalmente se requiere para reemplazar la ventana.las ventajas incluyen: sustitucion directa de cristales convencionales. fuerza de operacion requerida similar al cristal convencional. no se necesitan modificaciones en los canales 20, sellos y otros componentes necesarios para la instalacion. instalacion rapida y facil alto nivel de resistencia a la intrusion (hasta 3 veces el de una ventana laminada similar). mayor proteccion contra la expulsion de los ocupantes en caso de accidente. costo mas bajo.breve descripcion de las figuras la fig. 1 muestra una vista por componentes de una modalidad de ejemplo de la presente invencion.la fig. 2a muestra una vista isometrica del laminado de la figura 1.la fig. (Results 1)

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7:

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9:

Search 9 and thickness (Results 81)

10:

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11:

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16:

Search (16) AND IPC=(B32 OR C03 OR E06) (Results 21)

17:

Title: QUICK RELEASE SAFETY WINDSHIELD

Abstract: 1329878 **Transparent glass laminate** SAINTGOBAIN 19 April 1971 [16 March 1970] 24244/71 Heading B5N A windscreen for vehicles comprises an internally facing sheet of a cellulose ester e.g. cellulose acetate butyrate between 0A2 and 0A5 mm. **thick**, an intermediate sheet of polyvinyl butyral of at least 0A7 mm. **thick**, and an externally facing sheet of silicate **glass** of greater dimensions than the internally facing and intermediate sheets to provide a peripheral portion of the externally facing sheet to be held by a rebate in the bodywork of the vehicle, the sheets being adhered to each other. The cellulose ester sheet may carry a superficial coating of an organopolysiloxane. In a preferred embodiment, a further sheet of **glass** may be **bonded** to the cellulose ester **layer**. An alcoholic or aqueous solution of tin chloride, of an amino-silane or of an epoxy-silane may be used to adhere the sheets together.

Classifications:

International (IPC 8-9): B32B17/10 B32B27/36 B60J1/00 B60J1/02 B60J10/02 B60J10/70 C03C27/12 (Advanced/Invention); B32B17/06 B32B27/36 B60J1/00 B60J1/02 B60J10/02 C03C27/12 (Core/Invention)

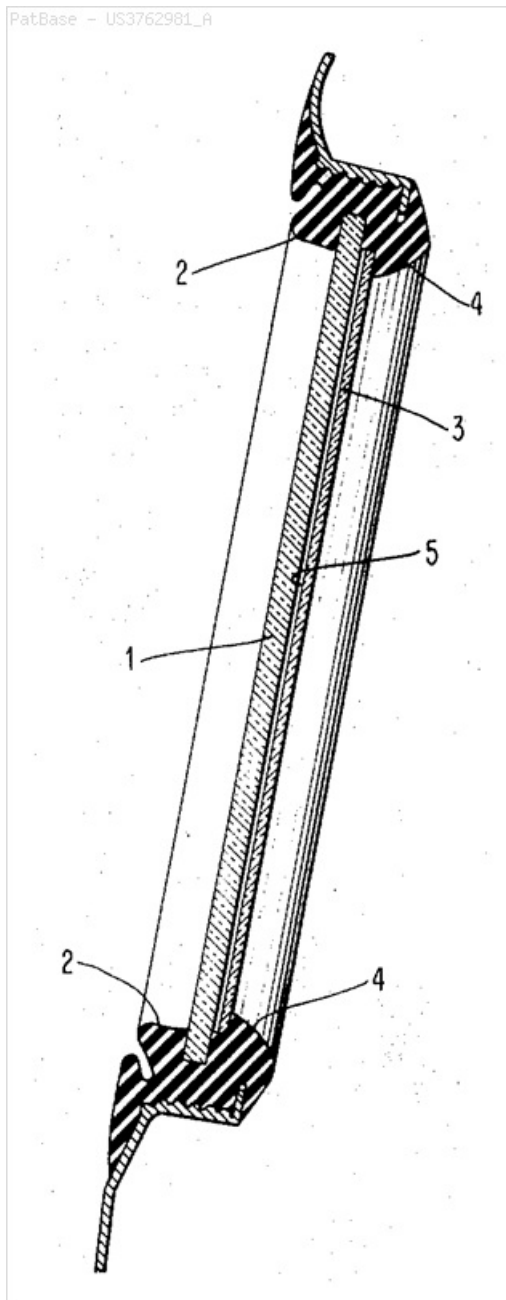
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US: 156/106 156/99 161/139 161/4. 296/8.4R 296/84.1 296/96.22 428/189 428/332 428/409 428/410 428/43 428/437 428/447 428/452 428/527 52/208

PatBase - US3762981_A

**Family:**

Publication number	Publication date	Application number	Application date
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Priority:

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Probable Assignee: SAINT GOBAIN

Assignee(s): (std): CIE DE SAINT GOBAIN ; CIE DE SAINT GOBAIN PONT MOUSS ; CO DE SAINT GOBAIN ; DE SAINT GOBAIN NEUILLYSUR SEINE FRANKR COMP ; DE SAINT GOBAIN COMP ; SAINT GOBAIN BOULEVARD V NEUIL ; GLASWERKE ZWEIGNIEDERLASSU VER ; GLASWERKE GMBH VER ; SAINT GOBAIN ; SAINT GOBAIN INDUSTRIES FR ; SAINT GOBAIN IND FR ; KRINGS HANS ; KRAMLING FRANZ ; SAINT GOBAIN PONT A MOUSSON ; SAINT GOBAIN PONT A MOUSSON FR ; VER GLASWERKE GMBH ; ST GOBAIN PONT A MOUSSON ; VEREINIGTE GLASWERKE ZWEIGNIEDERLASSUNG DER COMPAG ; VER GLASWERKE ZWEIGNIEDERLASSU

Assignee(s): VEREINIGTE GLASWERKE ZWEIGNIEDERLASSUNG DER COMPAGNIE DE SAINT-GOBAIN 5100 AACHEN ; BLANK KURT ; VEREINIGTE GLASWERKE ZWEIGNIEDERLASSUNG DER COMPAGNIE DE SAINT GOBAIN ; SAINT GOBAIN 62 BOULEVARD VICTOR HUGO 92 NEUILLY S ; SAINT GOBAIN 62 BOULEVARD VICTOR HUGO 92 NEUILLY SUR SEINE FRANCE ; SAINT GOBAIN IND ; GLASWERKE ZWEIGNIEDERLASSUNG DER COMP DE SAINT GOBAIN VER ; SAINT GOBAIN BOULEVARD V NEUILLY SUR SEINE FR ; SAINT GOBAIN INDUSTRIES ; SAINT GOBAIN NEUILLY SUR SEINE FRANKREICH ; SAINT GOBAIN NEUILLY SUR SEINE ; COMPAGNIE DE SAINT-GOBAIN NEUILLYSUR-SEINE (FRANKREICH) ; COMPAGNIE DE SAINT GOBAIN PONT AMOUSSON NEUILLY SUR SEINE FRANKREICH ; DE SAINT GOBAIN PONT AMOUSSON NEUILLY SUR SEINE FRANKREICH COMP ; COMPAGNIE DE SAINT GOBAIN ; CO DE SAINT GOBAIN FR ; COMPAGNIE DE SAINT GOBAIN PONT AMOUSSON NEUILLY SU

Inventor(s): (std): 5100 AACHEN ; BLANK K ; BLANK KURT ; BLANK KURT DR ; BRUEVKNER F ; CIE DE SAINT GOBAIN ; CIE DE SAINT GOBAIN PONT A MOUSSON ; DR SIEMONSEN HANS PETER DIPL I ; FRANZ KRAMLING ; GLASWEWERKE VER ; HANS KRINGS ; BLANK M KURT ; BRUCKNER FRITZ ; KRAEMLING FRANZ DIPL PHYS ; KRAMLING F ; KRAMLING FRANZ ; KREMLING F ; KRING H ; KRINGS HANS ; KRINGS HANS DR ; SIEMONSEN HANS PETER ; SIEMONSEN HANS PETER DIPLINGDR ; VEREINIGTE GLASWEWERKE ; SIEMONSEN HANS PETER DIPL ING ; BRUECKNER FRIEDRICH DR ; BRUCKNER E ; SIEMONSEN H ; KRAEMLING F ; BRUECKNER F ; KRINGS H ; HANS PETER DR SIEMONSEN ; FRANZ KRAEMLING ; BRUECKNER FRITZ DR

Inventor(s): KRINGS H DT ; PETER DR SIEMONSEN HANS ; KRAEMLING FRANZ ; KRAEMLING FRANZ DIPLPHYS ; M KURT BLANK ; SIEMONSEN H DT ; KRING H DT ; KRIGS H ; KRAMLING F DT ; BRUECKNER F DT ; HANS PETER SIEMONSEN ; KRAEMLING F DT ; FRITZ BRUCKNER ; FRITZ BRUECKNER ; BLANK KURT DR 5100 AACHEN ; BLANK K DT

Title: **LAMINATED** SAFETY WINDSHIELDS

Abstract: Safety **glass** windshields consisting essentially of polyurethane sheets **laminated** between moisture impervious sheets, such as **glass**, tend to separate. This separation has been discovered to be related to absorption of moisture in the polyurethane sheets along the exposed portion over an increasingly wider margin extending inward from the exposed surface during the time that the **laminated glass**-polyurethane window has its peripheral portion exposed until such time that its marginal portion is protected from exposure to atmospheric moisture when the windshield is installed with its marginal portion in a moisture impervious **frame** when assembled within an automobile or other vehicle. Bilayer windshields consisting essentially of a single **glass** sheet **laminated** to a polyurethane sheet also tend to delaminate on exposure to moisture. The present invention provides an adhesion promoting composition, such as a coupling agent, to a selected portion of the interface between **glass** and polyurethane to prevent separation of the windshield components. Care is taken to limit the proportion of the area of the interface treated with the adhesion promoting composition to control the overall adhesion of polyurethane to **glass** to a range in which the **laminated** windshield has an acceptable resistance to penetration, an acceptable lacerative injury rating and an acceptable Severity Index rating.

Classifications:

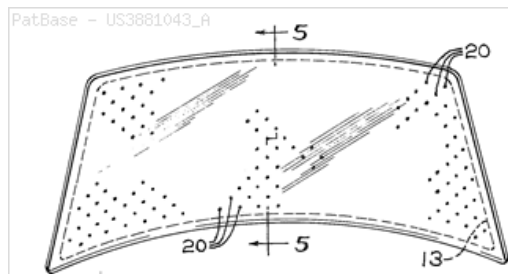
International (IPC 8-9): B32B17/06 B32B17/10 B32B27/00 B32B27/40 B60J1/00 B60J1/02 C03C17/32 C03C27/12 C08G18/10 C08G18/42 C08G18/66 C08G18/75 C09J157/06 C09J175/06 (Advanced/Invention); C03C27/12 (Advanced/Non-invention); B32B17/06 B32B27/00 B32B27/40 B60J1/00 B60J1/02 C03C17/28 C03C27/12 C08G18/00 C09J157/00 C09J175/06 (Core/Invention); C03B C07C (Subclass/Invention)

International (IPC 1-7): B01J1/00 B32B17/00 B32B17/06 B32B17/10 B32B27/00 B32B27/40 B32B7/00 B60J1/00 B60J1/02 C03B C03C17/12 C03C17/32 C03C27/00 C03C27/10 C03C27/12 C07C C08G18/42 C08G18/75 C08G22/00 C08G22/06 C08G22/10 C08G22/24 C08G22/28 C09D3/72 C09J3/16

CPC: B32B2605/08 Y10T428/24793 Y10T428/31601 B32B17/10 B32B17/10036 B32B17/10302 B32B2375/00 B32B27/36 B32B2307/412 B32B2605/006 B32B17/10018 B32B17/10688 B32B17/10697 B32B17/1077 B32B17/10853 B32B17/10981 B32B27/00 B60J1/02 C08G18/10 C08G18/42 C08G18/6633 C08G18/75 C09J157/06 C09J175/06

European: B32B17/10C2 B32B17/10E16B B32B17/10G12 B32B17/10G14 B32B17/10G30 B32B17/10L10B2B2 B32B17/10L22 B32B27/00 B60J1/02 C08G18/10 C08G18/42 C08G18/66M C08G18/75 C09J157/06 C09J175/06 L32B375/00 L32B605/08

US: 156/99 260/75NT 296/84.1 428/194 428/38 428/424 428/425.6 428/81 52/171.2 528/288 528/83 528/85



Family:

Publication number	Publication date	Application number	Application date
AR197780 A1	19740510	AR19720242651	19720619
AU197243570 A1	19740103	AU19720043570	19720619
AU197246507 A1	19740321	AU19720046507	19720911
AU463667 B2	19750731	AU19720043570	19720619
BE785125 A	19721220	BE19720785125	19720620
BE785126 A	19721220	BE19720785126	19720620
BR7203978 A0	19730531	BR19720003978	19720620
BR7206576 A0	19730925	BR19720006576	19720922
CA955621 A1	19741001	CA19720143590	19720531
CA974441 A1	19750916	CA19720143591	19720531
DE2229794 A1	19730111	DE19722229794	19720619
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FR2143063 B1	19800201	FR19720022002	19720619
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JP48041423 A2	19730618	JP19720061409	19720621
JP55051744 B4	19801226	JP19720061408	19720621
NL7208466 A	19721227	NL19720008466	19720621
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NL7209476 A	19730403	NL19720009476	19720707
NL7209476 A1	19730403	NL19720009476	19720707
NO133364 B	19760112	NO19720002197	19720620
NO133364 C	19760421	NO19720002197	19720620
US3881043 A	19750429	US19730395485	19730910
US3931113 A	19760106	US19720311043	19721130
US4041208 A	19770809	US19740472019	19740521
ZA7204156 A	19740227	ZA19720004156	19720616
ZA7204157 A	19740130	ZA19720004157	19720616

Priority:

US19710154944 19710621 US19710185627 19711001 US19720242347 19720410
 US19720246016 19720420 US19720311043 19721130 US19730395485 19730910
 US19740472019 19740521

Probable Assignee: PPG IND INC

Assignee(s): (std): PPG IND INC ; PPG INDUSTRIES INC ONE GATEWAY CENTER PITTSBURG P ; PPG INDUSTRIES INC PITTSBURGH PA US ; PPG INDUSTRIES INC

Assignee(s): PPG INDUSTRIES INC 15222 PITTSBURGH PA US ; PPG INDUSTRIES INC ONE GATEWAY CENTER PITTSBURG PE ; PPG INDUSTRIES INC PITTSBURGH PA V ST A ; PPG INDUSTRIES INC ONE GATEWAY

CENTER PITTSBURG PENNSYLVANIE E U A ; RIESER RAYMOND G ; SEEGER NELSON V ; PPG IND INC
PITTSBURGH PA V ST A ; CHABAL JOSEPH ; KAMAN ANDREW J

Inventor(s): (std); J CHABAL ; JOSEPH CHABAL ; KAMAN A ; AJ KAMAN ; ANDREW JOSEPH KAMAN ; KAMAN ANDREW JOSEPH
NORTON OHIO US ; NELSON VERNARD SEEGER ; SEEGER NELSON VERNARD CUYAHOGA FALLS OHIO US ;
SEEGER NV ; SEEGER NELSON VERNARD ; SEEGER N V ; RIESER RAYMOND GEORGE ; RIESER RAYMOND G
; RIESER R G ; RAYMOND GEORGE RIESER ; RG RIESER ; RIESER R ; SEEGER N ; KAMAN ANDREW JOSEPH
; KAMAN A J ; CHABEL JOSEPH ; CHABAL JOSEPH ; CHABAL J ; SEEGER NELSON V ; KAMAN ANDREW J

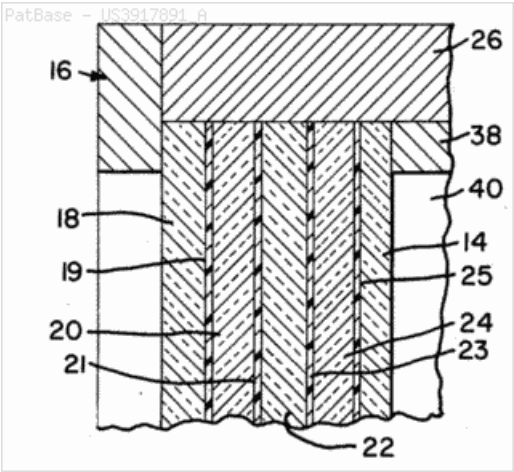
Inventor(s): R G RIESER ; A J KAMAN ; SEEGER NELSON VERNARD CUYAHOGA FALLS ; N V SEEGER ; NELSON VERNARD
SEEGER AND ANDREW JOSEPH KAMAN ; GEORGE RIESER RAYMOND ; KAMAN ANDREW JOSEPH NORTON

Title: FRAGMENTATION SHIELD FOR IMPACT RESISTING OPTICAL MEDIUM

Abstract: A fragmentation shield having capability of preventing fragmented particles of the shield material from becoming airborne due to high velocity impact is disclosed. The shield is in the form of a laminate including a plurality of layers of optical material and interposed bonding material layers or monolithic plastic. The bonding material or plastic displays an index of refraction closely matching that of the optical material. The shield is supported by a frame. A fragment shield likewise is supported by the frame. The fragment shield is disposed in parallel spaced relation to the laminate or plastic thereby to provide a closed air space therebetween.

Classifications:

International (IPC 8-9): B32B17/10 E06B5/10 E06B7/28 (Advanced/Invention); B32B17/06 E06B5/10 E06B7/00 (Core/Invention)
International (IPC 1-7): B32B17/08 B32B3/06 C03C27/10 F41H5/04
CPC: Y10S428/911 B32B17/10055 B32B17/10045 B32B17/10302 B32B17/10761 E06B5/10 E06B7/28 F41H5/0407 Y10T428/266 Y10T428/269 Y10T428/31634 Y10T428/31645 B32B2307/412 B32B2307/558 B32B2571/02
European: B32B17/10C4B B32B17/10C4B4 B32B17/10E16B B32B17/10G28 E06B5/10 E06B7/28
US: 156/107 156/109 428/337 428/339 428/438 428/441 428/911 89/36.02



Family:

Publication number	Publication date	Application number	Application date
US3917891 A	19751104	US19740460013	19740411

Priority:

US19740460013 19740411

Probable Assignee: ASG IND INC
Assignee(s): (std): ASG IND INC
Assignee(s): ASG INDUSTRIES INC
Inventor(s): (std): AGETT ALBERT H ; COOKE WILLIAM C

Title: LIGHTWEIGHT ARMORED VEHICLE AND METHOD OF MAKING SAME

Abstract: A lightweight armored vehicle and method of making the same is shown. The interior of a standard automobile to be equipped with lightweight armor is first stripped of its interior furnishings. Mechanisms to raise or lower the windows are removed. Doors and window frames are rebuilt to rigidly mount a bulletproof transparent window therein. Vertical walls of the automobile are bulletproofed by adding lightweight woven polyglass rigidly formed with a resin-catalyst mixture. Additional bullet resistant strength may be provided by multiple layers of ballistic nylon or Kevlar bonded to the rigid polyglass. For surfaces not normally subject to perpendicular penetration by bullets, only ballistic nylon or Kevlar is inserted. Upon reassembly of the automobile, including rebuilding portions of the exterior body around the doors and windows, options such as a tear gas dispersal system can be added. A steel screen between layers of the woven polyglass adds additional bullet resistant strength. The same material may also be used for new cars.

Classifications:

International (IPC 8-9): B60P3/03 E06B7/28 F41H5/04

F41H7/04 (Advanced/Invention);

B60P3/00 F41H5/00 F41H7/00 (Core/Invention)

International (IPC 1-7): B60J1/00 E06B3/24 E06B3/66 E06B7/12

F17C13/06 F41H5/04 F41H7/02 F41H7/04

CPC: E06B7/28 Y10S428/911 B32B17/02 F41H5/0464 F41H5/26 B60P3/03

F41H5/0407 F41H5/226 F41H5/263 F41H7/044 Y10T29/49716

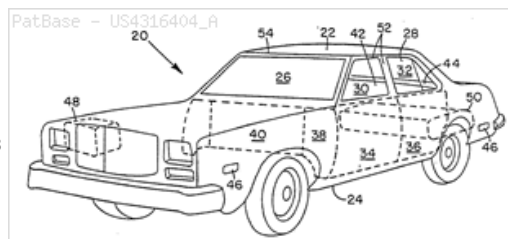
Y10T442/3252 Y10T442/3512

European: B32B17/02 B60P3/03 E06B7/28 F41H5/04B F41H5/04D4B

F41H5/22D F41H5/26 F41H5/26B F41H7/04D

US: 109/49.5 29/401.1 296/146.2 296/146.6 296/84.1 428/911 442/212

442/244 52/171.2 52/172 52/204.597 52/208 52/786.11 89/36.02 89/36.08 89/36.14 89/36A 89/36H



Family:

Publication number	Publication date	Application number	Application date
EP0016096 A1	19801001	EP19790900781	19800212
MX148723 A	19830606	MX19790178300	19790629
US4316404 A	19820223	US19780920715	19780630
US4333282 A	19820608	US19800146300	19800505
US4336644 A	19820629	US19800219882	19801224
US4352316 A	19821005	US19800220134	19801224
WO8000184 A1	19800207	WO1979US00458	19790628

Priority:

US19780920715 19780630

US19800146300 19800505

US19800220134 19801224

US19800219882 19801224

Probable Assignee: MIAMI NATIONAL BANK

Assignee(s): (std): MEDLIN R ; MEDLIN RICHARD C ; MEDLIN RICHARD COLE ; RICHARD COLE MEDLIN

Assignee(s): SAFEGUARD SECURITY SERVICES INC ; UNITED POWER CORP ; SAFEGUARD SECURITY SERVICES INC A CORP OF TX ; MIAMI NATIONAL BANK

Inventor(s): (std): MEDLIN R ; MEDLIN RICHARD C ; MEDLIN RICHARD COLE

Inventor(s): RICHARD COLE MEDLIN

Designated states: BR CH DE FR GB

Title: METHOD OF FORMING A BILAYER GLAZING PANEL

Abstract: A method of forming a bilayer glazing panel by providing an optically clear prelaminate of stretched polyester **film** coated with a cross-linked, self-healing polyurethane **layer**; assembling the prelaminate with a **layer** of plasticized partial polyvinyl butyral with the side of the polyester **film** without the polyurethane **layer** in facing contact with a subjacent textured surface of the partial polyvinyl butyral **layer**; clamping the assembled **layers** in a perimeter anchoring system; sequentially carrying out the following steps i), ii), iii), and optionally the above clamping step within an air autoclave; i) deairing the interface between the polyester **film** and plasticized partial polyvinyl butyral; ii) forcing localized regions of the **layers** within the perimeter anchoring system against a sheet of **glass**; and iii) subjecting the assembly of step ii) to elevated temperature and pressure while the **plastic layers** remain clamped within the perimeter anchoring system to firmly **bond** the **plastic layers** and **glass** sheet together.

Classifications:

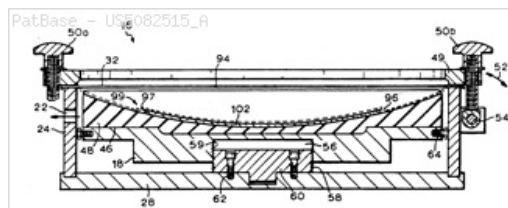
International (IPC 8-9): B32B17/06 B32B17/10 B32B27/36 B32B27/40 B32B37/10 B32B37/16 C03C17/32 C03C27/12 (Advanced/Invention); B32B37/10 C03C27/12 (Advanced/Non-invention); B32B17/06 B32B27/36 B32B27/40 B32B37/10 B32B37/14 C03C27/12 (Core/Invention)

International (IPC 1-7): B23F21/16 B29C59/00 B32B17/10 B32B31/00 B32B31/04 B32B31/20 B32B31/24 C03C17/32 C03C27/12

CPC: Y10T156/1028 B32B17/10577 B32B27/08 B32B2038/0076 B32B2305/72 B32B2307/412 B32B2307/518 B32B17/06 B32B17/10018 B32B17/10761 B32B17/1077 B32B17/10844 B32B27/36 B32B27/40 B32B2367/00

European: B32B17/06 B32B17/10C2 B32B17/10G28 B32B17/10G2D B32B17/10G30 B32B17/10L10B2B B32B27/36 B32B27/40 L32B367/00

US: 156/103 156/104 156/212 156/280 156/286 156/307.3 156/312 264/252

**Family:**

Publication number	Publication date	Application number	Application date
AU199190492 A1	19920625	AU19910090492	19911106
BRPI9107123 A	19931103	BR1991PI07123	19911106
CA2056096 AA	19920527	CA19912056096	19911125
CA2056106 AA	19920527	CA19912056106	19911125
EP0559759 A1	19930915	EP19920900885	19911106
JP6502836 T2	19940331	JP19910502255T	19911106
KR19937002153 A	19930908	KR19937001550	19911106
KR960004760 B1	19960413	KR19930071550	19930524
KR960004760 B1	19960413	KR19930701550	19911106
MX9102211 A1	19920601	MX19910002211	19911125
SK54093 A3	19930811	SK19930000540	19911106
US5082515 A	19920121	US19900617734	19901126
WO9209427 A1	19920611	WO1991US08262	19911106

Priority:

US19900617735 19901126 US19900617734 19901126 WO1991US08262 19911106
CA19912056096 19911125 CA19912056106 19911125

Probable Assignee: MONSANTO CO

Assignee(s): (std): MONSANTO CO

Assignee(s): MONSANTO CO A CORP OF DELAWARE ; MONSANTO COMPANY ; SIMON ROBERT H M ; PIRETTI CARL P ; CARTIER GEORGE E

Inventor(s): (std): PIRETTI CARE PETER ; SIMON ROBERT HERBERT MELVIN ; SIMON ROBERT H M ; CARTIER GEORGE ETIENNE ; PIRETTI CARL PETER ; PIRETTI CARL P ; CARTIER GEORGE E

Inventor(s): CARL PETER PIRETTI ; GEORGE ETIENNE CARTIER ; ROBERT HERBERT MELVIN SIMON

Agent(s): E F WELLINGTON AND CO; MCFADDEN FINCHAM; OSLER HOSKIN AND HARCOURT LLP

Designated states: AT AU BE BR CH CS DE DK ES FR GB GR IT JP KR LI LU NL SE

Title: BILAYER GLAZING PANEL

Abstract: A wrinkle-free bilayer glazing panel comprising sequentially: a) a sheet of **glass**; b) a **layer** of plasticized partial polyvinyl butyral; c) a **transparent** polyester **layer**; and d) a **layer** of cross-linked, self-healing polyurethane.

Classifications:

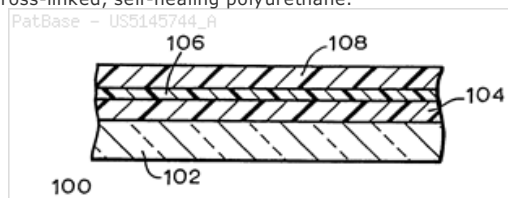
International (IPC 8-9): B32B17/10 B32B27/08 B32B27/36 B32B27/40 C03C27/10 (Advanced/Invention)

International (IPC 1-7): B32B17/10 B32B27/08 B32B27/40 B60J1/00 B60J7/00 C03C27/10

CPC: Y10T428/31565 Y10T428/3163 B32B17/10761 B32B17/10844 B32B27/30 B32B2307/554 B32B2329/06 B32B2375/00 B32B2419/00 B32B2605/00 B32B27/08 B32B17/10018 B32B17/1077 B32B27/36 B32B27/40 B32B2367/00

European: B32B17/10C2 B32B17/10G28 B32B17/10G30 B32B17/10L10B2B B32B27/08 B32B27/36 B32B27/40 L32B367/00

US: 428/423.7 428/437



Family:

Publication number	Publication date	Application number	Application date
AU199190744 A1	19920625	AU19910090744	19911106
AU647228 B2	19940317	AU19910090744	19911106
BRPI9107103 A	19931103	BR1991PI07103	19911106
CA2096526 AA	19930518	CA19912096526	19911106
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DE69109873 T2	19960111	DE19916009873T	19911106
EP0559760 A1	19930915	EP19920900914	19911106
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JP6503047 T2	19940407	JP19910502259T	19911106
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MX9102210 A1	19920601	MX19910002210	19911126
SK54193 A3	19930811	SK19930000541	19911106
US5145744 A	19920908	US19900617835	19901126
WO9209430 A1	19920611	WO1991US08302	19911106

Priority:

US19900617835 19901126 WO1991US08302 19911106

Probable Assignee: SOLUTIA INC

Assignee(s): (std): MONSANTO CO

Assignee(s): MONSANTO CO ST LOUIS MO US ; SIMON ROBERT HM ; PIRETTI CARL P ; ABLECO FINANCE LLC ; ABLECO FINANCE LLC AS COLLATERAL AGENT ; CPFILMS INC ; CITIBANK NA ; ABLECO FINANCE LLC COLLATERAL AGENT AS ; CARTIER GEORGE E ; MONCHEM INC ; MONCHEM INT ; FLEXXSYS AMERICA LP ; DEUTSCHE BANK TRUST CO ; DEUTSCHE BANK TRUST CO AMERICAS COLLATERAL AGENT A ; MONCHEM INT INC ; DEUTSCHE BANK TRUST CO AMERICAS COLLATERAL AGENT AS ; SOLUTIA INC ; MONSANTO COMPANY ; SOLUTIA SYSTEMS INC ; MONSANTO CO A OF DE CORP

Inventor(s): (std): CARTIER GEORGE ; CARTIER GEORGE ETIENNE ; CARTIER GEORGE E ; PIRETTI CARL PETER ; PIRETTI CARL P ; PIRETTI CARL ; MELVIN PIRETTI ROBERT HERBERT ; SIMON ; PETER GEORGE ETIENNE CARTIER C ; SIMON ROBERT HERBERT MELVIN ; SIMON ROBERT H M ; SIMON ROBERT

Inventor(s): SIMON ROBERT HERBERT MELVIN LONGMEADOW MA 01106 US ; SIMON ROBERT HM ; PIRETTI CARL PETER COLLINSVILLE CT 06022 US ; ROBERT HERBERT MELVIN SIMON ; CARTIER GEORGE ETIENNE SPRINGFIELD MA 01118 US ; GEORGE ETIENNE CARTIER ; CARL PETER PIRETTI

Agent(s): E F WELLINGTON AND CO ; MCFADDEN FINCHAM ; OSLER HOSKIN AND HARCOURT LLP

Designated states: AT AU BE BR CA CH CS DE DK ES FR GB GR IT JP KR LU NL SE

Title: Structure and preparation of automatic light valves

Abstract: A structure consisting of two cover **layers** sandwiching a polymer and solvent **layer** is useful for making automatic light valves. Mechanical and optical properties are improved by a novel continuous network of **bonds** which transmit stresses from one cover **layer**, to and among the polymer chains, and then to the second cover **layer**. The laboratory and factory preparation methods necessitated by this **layered** and **bonded** structure are described. These automatic light valves may be used for making optical displays, processing information, and building apertures.

Classifications:

International (IPC 8-9): A01G9/20 A01G9/24 B32B17/10 E04B1/76 E04B5/46 E04C2/54 E04D13/18 F24J2/40 F24J2/46 F24J2/48 F24J2/50 G02F1/01 (Advanced/Invention);

A01G9/20 E04B1/76 (Advanced/Non-invention);

A01G9/24 E04B1/76 E04B5/46 E04C2/54 F24J2/00 F24J2/40

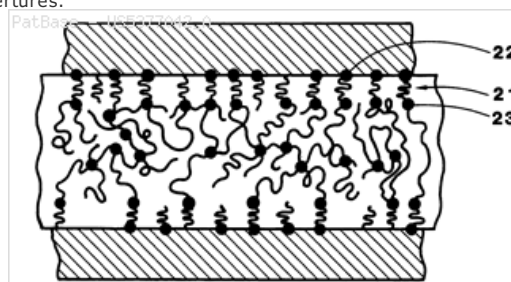
G02F1/01 (Core/Invention)

International (IPC 1-7): A01G9/00 A01G9/20 A01G9/24 B32B15/00 B32B3/00 B32B7/00 B32B9/00 E04B1/76 E04B5/46 E04C2/54 E04D13/18 F24J2/46 F24J2/48 F24J2/50 G02F1/01

CPC: Y10S359/902 Y10T428/12528 Y10T428/24917 Y10T428/24876 Y10T428/24893 B32B17/10486 G02F2202/022 Y02P60/124 A01G9/243 Y02E10/40 Y02B10/20 Y02A40/266 F24S50/80 F24S80/50 F24S80/56 G02F1/0147 E04C2/54

European: A01G9/24C B32B17/10E40D4 E04C2/54 F24J2/40D F24J2/50 G02F1/01T R24J2/50E S02F202/02B Y02B10/20 Y02E10/40

US: 126/572 126/622 126/635 126/643 349/16 349/20 349/88 349/89 359/228 359/241 359/288 359/289 359/296 359/342 359/52 359/902 428/204 428/206 428/209 428/620 47/17 52/1 52/173.3



Family:

Publication number	Publication date	Application number	Application date
AT186813 E	19991215	AT19930914162T	19930525
AT247207 E	20030815	AT19910920181T	19911024
AU199189283 A1	19921021	AU19910089283	19911024
AU199343924 A1	19931230	AU19930043924	19930525
AU199480191 A1	19950508	AU19940080191	19941018
CA2105973 AA	19930910	CA19912105973	19911024
CA2136759 AA	19941125	CA19932136759	19930525
DE69133301 D1	20030918	DE19916033301	19911024
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DE69327102 D1	19991230	DE19936027102	19930525
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EP0572411 A1	19931208	EP19910920181	19911024
EP0572411 A4	19940914	EP19910920181	19911024
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EP0650320 A1	19950503	EP19930914162	19930525
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KR100240692 B1	20000115	KR19930702793	19911024
KR19947000597 A	19940222	KR19937002793	19911024
US5377042 A	19941227	US19930169739	19931220
US5404245 A	19950404	US19920927537	19920714
US5524381 A	19960611	US19920888230	19920526
US5525430 A	19960611	US19930137535	19931018
WO9216702 A1	19921001	WO1991US07620	19911024
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Priority:

US19860948039 19861231	US19890441907 19891128	US19910670873 19910319
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US19930137535 19931018	US19930169739 19931220	WO1994US11817 19941018

Probable Assignee: CHAHROUDI DAY

Assignee(s): (std): CHAHROUDI DAY ; DAY CHAHROUDI

Inventor(s): (std): DAY CHAHROUDI ; CHAHROUDI DAY

Agent(s): EDWARDS ANTONY C

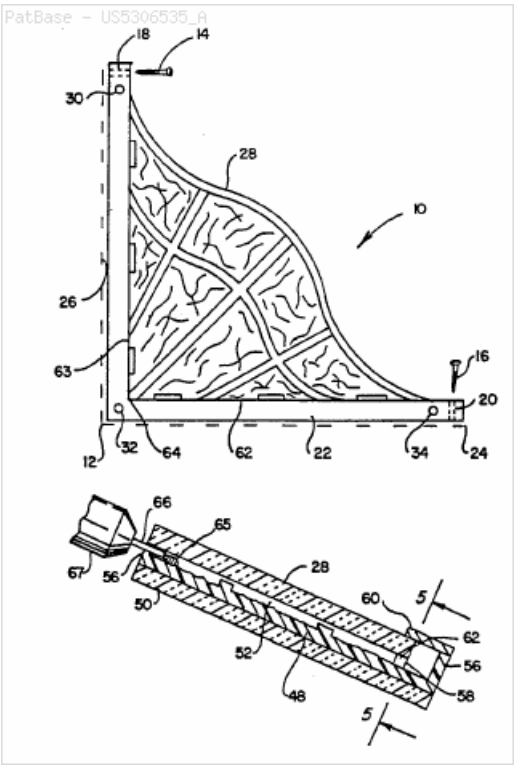
Designated states: AT AU BE BR CA CH DE DK ES FR GB GR IE IT JP KR LI LU MC NL PT RU SE SU UA

Title: DECORATIVE CORNER INSERT FOR WINDOW OR DOOR OPENINGS WITH CONTOURED **PLASTIC** RESIN **LAMINATED** TO **GLASS** FORMING THE INSERT

Abstract: An insert for mounting in the corner of a door or window **frame** opening includes two mounting flanges **bonded** along two edges of a **glass** panel. The flanges define an L-shape. Mounting within the **frame** is by fasteners which extend through apertures through the flanges.

Classifications:

International (IPC 8-9): B29C39/10 B29C70/68 B32B17/10 B44F1/06 E06B3/58 (Advanced/Invention);
B29C39/10 B29C70/00 B32B17/06 B44F1/00 E06B3/58 (Core/Invention)
International (IPC 1-7): B32B9/00
CPC: E06B3/5885 B29C39/10 B29C70/68 B29K2067/00 B29L2031/7782 B32B17/10018 B32B17/10247 B32B17/10908 B44F1/063 Y10T428/24777
European: B29C39/10 B29C70/68 B32B17/10C2 B32B17/10E12 B32B17/10L16B B44F1/06B E06B3/58F L29K67/00 L29L31/7782
US: 156/109 156/63 428/192 428/34 428/38 428/426 52/308



Family:

Publication number	Publication date	Application number	Application date
US5306535 A	19940426	US19920901201	19920619

Priority:

US19920901201 19920619

Probable Assignee: NGI INC D B A GLASSLAM
Assignee(s): (std): SHAFFER B JEREMIAH
Assignee(s): NGI ; NGI INC D B A GLASSLAM
Inventor(s): (std): SHAFFER B JEREMIAH

Title: **SPACER** FABRIC WITH INTERCONNECTED RIB FIBERS IN GLAZING ELEMENT

Abstract: PCT No. PCT/EP94/00068 Sec. 371 Date Sep. 12, 1994 Sec. 102(e) Date Sep. 12, 1994 PCT Filed Jan. 11, 1994 PCT Pub. No. WO94/15784 PCT Pub. Date Jul. 21, 1994. The glazing element in accordance with the invention comprises in its simplest form a pane and a textile **spacer** fabric arranged at the covering surface of the pane. The **spacer** fabric comprises at least two covering **layers**, which are connected together by rib fibers extending approximately transversely in relation to the panes. The glazing element in accordance with the invention possesses thermal insulating properties and may be utilized as safety **glass**, more particularly for roofs or overhead glazing arrangements.

Classifications:

International (IPC 8-9): B32B17/06 B32B17/10 B32B5/24 C03C27/12

E06B3/66 E06B3/67 (Advanced/Invention);

C03C27/12 E06B3/66 (Advanced/Non-invention);

B32B17/06 B32B5/22 C03C27/12 E06B3/66 (Core/Invention);

B32B17/06 (Core/Non-invention);

B32B (Subclass/Invention)

International (IPC 1-7): B23B17/10 B32B17/06 B32B17/10 B32B17/12

B32B5/24 C03C27/00 C03C27/10 C03C27/12 D03D11/00 E04B1/76

E06B3/24 E06B3/26 E06B3/28 E06B3/66

CPC: B32B5/14 B32B2260/021 B32B2260/046 B32B5/24 B32B17/10018

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B32B17/10366 B32B17/10568 E06B3/6715

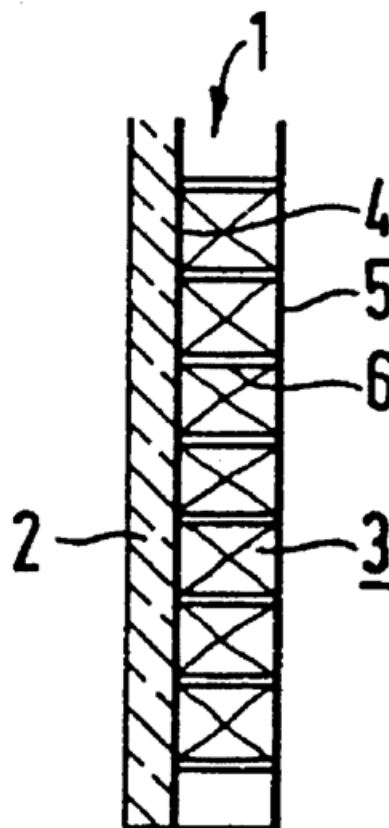
European: B32B17/10C2 B32B17/10C4B B32B17/10C4B4

B32B17/10E10 B32B17/10E16B B32B17/10E30 B32B17/10G2B B32B5/24

E06B3/67F

US: 156/109 428/34 52/786.1 52/786.11 52/786.13

PatBase - US5514428_A



Family:

Publication number	Publication date	Application number	Application date
AT179930 E	19990515	AT19940905035T	19940111
AU199458823 A1	19940815	AU19940058823	19940111
AU675823 B2	19970220	AU19940058823	19940111
BRPI9403509 A	19990601	BR1994PI03509	19940111
CA2131694 AA	19940908	CA19942131694	19940111
CN1105503 A	19950719	CN19941090014	19940111
CZ9402198 A3	19950614	CZ19940002198	19940111
DE4300480 A1	19940714	DE19934300480	19930111
DE59408224 D1	19990617	DE19945008224	19940111
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FI944112 A	19941031	FI19940004112	19940907
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HU67656 A2	19950428	HU19940002550	19940111
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NO943343 A	19941103	NO19940003343	19940909
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US5514428 A	19960507	US19940302791	19940912
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ZA9400151 A	19940818	ZA19940000151	19940111

Priority:

DE19934300480 19930111 DE19934300480 19930111 DE19945008224 19940111
WO1994EP00068 19940111

Probable Assignee: KUNERT

Assignee(s): (std): KUNERT ; KUNERT HEINZ ; KUNERT KHAJNTS

Assignee(s): DR HEINZ KUNERT ; DR HEINZ KUNERTDE ; HEINZ KUNERT ; KUNERT HEINZ DR ; KUNERT HEINZ DR 50935
KOELN DE ; KUNERT HEINZ DR 50935 KOELN

Inventor(s): (std): KHAJNTS KUNERT ; KUNERT HEINZ ; KUNERT HEINZ DR ; HEINZ KUNERT

Inventor(s): DR HEINZ KUNERT ; DRHEINZ KUNERT ; KUNERT HEINZ DR 50935 KOELN DE

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; GOUDREAU GAGE DUBUC

Designated states: AT AU BE BR CA CH CN CZ DE DK ES FI FR GB GR HU IE IT JP KR LI LU MC NL NO PL PT RU SE UA US

Title: **TRANSPARENT** SHEET COMPOSITES FOR USE AS BULLET-PROOF WINDOWS

Abstract: An improved **transparent** bullet-proof **laminate** is formed with an energy absorbing transition **layer** located between preformed laminae of **glass** and/or **plastic**, such as polycarbonate, the transition **layer** constituting a cured aliphatic urethane acrylate with optionally up to 70 percent of a monofunctional monomeric acrylate, the transition **layer** in liquid form having a viscosity preferably no greater than 1000 cps and in cured state having a toughness of at least 0.1 MPa, and elastic modulus no greater than 25 MPa and an elongation of at least 20 percent.

Classifications:

International (IPC 8-9): B29C41/22 B32B17/10 B32B27/30 B32B27/40 F41H5/04 (Advanced/Invention); B29C35/08 (Advanced/Non-invention); B29C41/22 B32B17/06 B32B27/30 B32B27/40 F41H5/00 (Core/Invention); B29C35/08 (Core/Non-invention)

International (IPC 1-7): B32B7/02

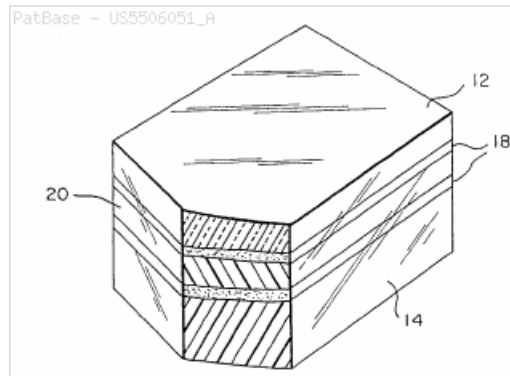
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European: B29C41/22 B32B17/10C2 B32B17/10L16B B32B17/10L16B2 B32B27/30 B32B27/40 B32B31/00B B32B37/00 F41H5/04B L29C35/08B4 L32B310/08

US: 428/212 428/214 428/220 428/332 428/34 428/411 428/412

428/423.1 428/424.2 428/425.6 428/441 428/500 428/911 52/786.11

52/786.12



Family:

Publication number	Publication date	Application number	Application date
US5506051 A	19960409	US19940186861	19940127

Priority:

US19940186861 19940127

Probable Assignee: NICOLELECTRONIX LTD LABORATORIES

Assignee(s): (std): NICOLELECTRONIX LTD LAB

Assignee(s): NICOLELECTRONIX LTD LABORATORIES ; NICOLELECTRONIX LTD

Inventor(s): (std): FIGOV MURRAY ; LEVY BOROCHOV NICOLE

Title: IMPROVED LIGHTWEIGHT ARMORED VEHICLE AND METHOD OF MAKING SAME

Abstract: An improved lightweight armored vehicle and cost effective method of retrofitting standard automobiles to make them lightweight armored vehicles is disclosed. Metal caps and channels fit about **laminated** windows to protect the **laminated** edges from stress, moisture and atmosphere and fit within the standard automobile's original window **frame**. Alternative **laminated** break-in resistant windows fit within a standard automobile's original window **frames**. Prefabricated, rigidly formed, lightweight opaque armor is molded to closely fit within the standard automobile. In addition, smaller pieces of ballistic steel are utilized to add armoring and structural integrity to various points in the armored vehicle. In general, the armor is designed for cost effective on-site manufacture of components and cost effective installation procedures to produce an affordable lightweight armored vehicle.

Classifications:

International (IPC 8-9): B32B17/10 B32B27/36 F41H5/013

F41H7/04 (Advanced/Invention);

B32B27/36 (Advanced/Non-invention);

B32B17/06 B32B27/36 F41H5/00 F41H7/00 (Core/Invention)

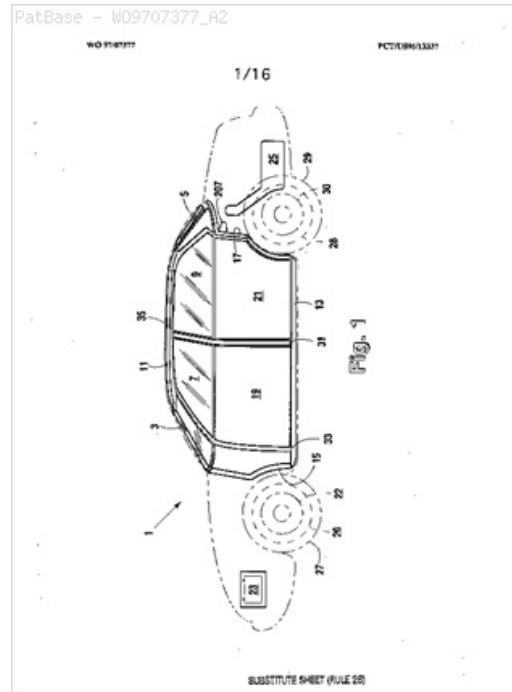
International (IPC 1-7): F41H7/00 F41H7/02

CPC: B32B17/10018 B32B17/10568 B32B17/1077 B32B2369/00

F41H5/013 F41H5/226 F41H5/263

European: B32B17/10C2 B32B17/10G2B B32B17/10G30 B32B27/36

F41H5/013 F41H5/22D F41H5/26B L32B369/00



Family:

Publication number	Publication date	Application number	Application date
AU199670081 A1	19970312	AU19960070081	19960814
CN1172526 A	19980204	CN19961091071	19960814
WO9707377 A2	19970227	WO1996US13337	19960814
WO9707377 A3	19970424	WO1996US13337	19960814

Priority:

US19950002292 19950814 US19950002292P 19950814 WO1996US13337 19960814

Probable Assignee: RICHARD C MEDLIN

Assignee(s): (std): FLOYD MELVIN W ; MEDLIN DANIEL T ; MEDLIN RICHARD C ; MUNN JAMES E ; RICHARD C MEDLIN ; WOLFE JOE I

Inventor(s): (std): FLOYD MELVIN W ; MEDLIN DANIEL T ; MEDLIN RICHARD C ; MUNN JAMES E ; WOLFE JOE I

Inventor(s): RICHARD C MEDLIN ; MELVIN W FLOYD ; JOE I WOLFE ; JAMES E MUNN ; DANIEL T MEDLIN

Designated states: AL AM AT AU AZ BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CZ DE DK EE ES FI FR GA GB GE GN GR HU IE IL IS IT JP KE KG KP KR KZ LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SN SZ TD TG TJ TM TR TT UA UG US UZ VN

Title: Diffused reflector, liquid crystal display device constructed to use the reflector, and manufacture of the same

Abstract: A liquid crystal display device includes two electrode substrates and a liquid crystal **layer** laid between these substrates. One electrode is composed of a **glass** substrate with a **plastics layer** having plural convex portions or convex and concave portions randomly formed thereon and a lamination of a reflector, an insulating and flattening **layer**, a **transparent** electrode, and alignment **layer** formed on the **plastics layer**. The other electrode substrate is composed of a **glass** substrate and a lamination of a **transparent** electrode and alignment **layer** formed on the **glass** substrate. Both of the electrode substrates are located in a manner to allow the alignment **layer** of them to be **opposed** to each other.

Classifications:

International (IPC 8-9): G02B5/02 G02F1/13 G02F1/133 G02F1/1333 G02F1/1335 G02F1/15 G02F1/153 H01M10/36 H01M10/42

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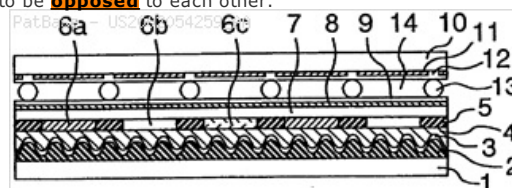
G02F1/153 H01M6/18 H01M6/40 H01M6/50 (Advanced/Non-invention)

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CPC: G02B5/0215 G02B5/0268 G02B5/0284 G02B5/0294 G02F1/133553 H01M10/4235 G02F1/1523 G02F1/1533 H01M6/18 H01M6/181 H01M6/40 H01M6/50 E06B3/6722

European: G02B5/02D2G G02B5/02F G02B5/02U4 G02B5/02U8 G02F1/1335R G02F1/153B H01M10/42M S02F1/15W T01M6/18 T01M6/18B T01M6/40 T01M6/50 Y02E60/12

US: 156/230 156/247 349/113 349/113P 357/268 357/275 359/265 359/265S 359/268 359/270 359/273 359/273P 359/274 359/274S 427/146



Family:

Publication number	Publication date	Application number	Application date
AT454646 E	20100115	AT19990929434T	19990708
CN1126002 C	20031029	CN19991011906	19990730
CN1246634 A	20000308	CN19991011906	19990730
DE69941890 D1	20100225	DE19996041890	19990708
EP1012662 A1	20000628	EP19990929434	19990708
EP1012662 B1	20100106	EP19990929434	19990708
ES2339198 T3	20100517	ES19990929434T	19990708
FR2781084 A1	20000114	FR19980008928	19980710
FR2781084 B1	20070831	FR19980008928	19980710
JP2000047200 A2	20000218	JP19980217574	19980731
JP2002520653 T2	20020709	JP20000559469T	19990708
JP4571308 B2	20101027	JP20000559469T	19990708
KR100632274 B1	20061011	KR20007002243	19990708
KR20010023595 A	20010326	KR20007002243	19990708
PT1012662 T	20100414	PT19990929434T	19990708
TWI225555 B	20041221	TW19990111011	19990629
US2002054259 AA	20020509	US20020042209	20020111
US2002054419 AA	20020509	US20010025575	20011226
US6337758 BA	20020108	US20000486718	20000606
US6529308 BA	20020509	US19960690652	19960729
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US6538711 BA	20020509	US19960690652	19960729
US6538711 BB	20030325	US20020042209	20020111
WO0003289 A1	20000120	WO1999FR01653	19990708

Priority:

FR19980008928 19980710	JP19980217574 19980731	WO1999FR01653 19990708
US19990361965 19990728	US20000486718 20000606	US20010025575 20011226
US20020042209 20020111		

Probable Assignee: SAGE ELECTROCHROMICS INC

Assignee(s): (std): BETEILLE FABIEN ; GIRON JEAN CHRISTOPHE ; HITACHI LTD ; SAINT GOBAIN ; SAINT GOBAIN VITRAGE ; SAINT GOBAIN SA

Assignee(s): SAINT GOBAIN GLASS FRANCE ; IPS ALPHA SUPPORT CO LTD ; PANASONIC LIQUID CRYSTAL DISPLAY CO LTD ; SAGE ELECTROCHROMICS INC ; KONDO KATSUMI ; KUWABARA KAZUHIRO ; ITOU OSAMU ; KOMURA SHINICHI ; HITACHI DISPLAYS LTD ; FUNAHATA KATSUYUKI

Inventor(s): (std): FUNAHATA KAZUYUKI ; ITO OSAMU ; KOMURA SHINICHI ; KONDO KATSUMI ; KUWABARA KAZUHIRO ; KUWABARA KAZUHIRO ; ITOU OSAMU ; FUNAMAN ICHYUKI ; FUNAHATA KATSUYUKI ; SHINICHI KOMURA ; KAZUHIRO KUWABARA ; ICHYUKI FUNAMAN ; GIRON JEAN CHRISTOPHE ; BETEILLE FABIEN

Inventor(s): FABIEN BETEILLE ; JEAN CHRISTOPHE GIRON

Agent(s): LE CAM STEPHANE GEORGES ELIE; NISHIYAMA MASAYA; ISHIDA TAKASHI; TSURUTA JUNICHI; HIGUCHI SOTOJI; FUKUMOTO TSUMORU

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT JP KR LI LU MC NL PT SE US

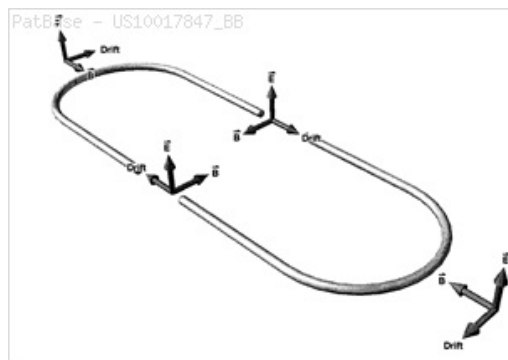
Title: METHOD AND APPARATUS FOR ION MILLING**Abstract:** The present invention relates to methods and apparatus for ion milling, and more particularly relates to methods and apparatus for smoothing a surface using ion milling.**Classifications:****International (ipc 8-9):** B05D5/06 B05D5/12 B23K26/362 B23K26/402 B32B17/06 B32B17/10 B32B7/02 B32B7/14 B60Q1/26 B60R1/02 B60R1/04 B60R1/06 B60R1/07 B60R1/08 B60R1/12 C03C17/36 C09K9/02 C23C14/08 C23C14/18 C23C14/34 C23C14/46 C23C14/58 F16M13/02 G02B1/04 G02B1/10 G02B13/04 G02B27/00 G02B27/14 G02B5/08 G02B5/20 G02B5/26 G02B5/28 G02B7/182 G02F1/00 G02F1/01 G02F1/03 G02F1/061 G02F1/15 G02F1/153 G02F1/155 G02F1/157 G02F1/161 G02F1/163 H05K1/02 H05K3/32 (Advanced/Invention);

B60R1/04 B60R1/06 B60R1/08 C23C14/08 C23C14/34 G02F1/1345 G02F1/15 G02F1/155 G02F1/157 G02F1/161 H05K1/03 (Advanced/Non-invention);

B05D5/06 B32B7/02 B60R1/06 B60R1/08 B60R1/12 C23C14/46 G02B1/04 G02B27/00 G02B5/08 G02B5/20 G02B5/26 G02B5/28 G02F1/00 G02F1/01 H05K1/02 H05K3/32 (Core/Invention);

H05K1/03 (Core/Non-invention);

B60R (Subclass/Invention)

International (ipc 1-7): B60R1/08 G02B27/00 G02F1/15 G02F1/153 G02F1/161**CPC:** C09K9/02 G02F1/1521 G02F2001/1512 B82Y20/00 G02F2202/36 B60R1/1207 B60R2001/123 B60R2001/1284 G02F1/1345 Y10S359/90 F16M13/02 H05K2201/10106 H05K1/0306 H05K1/0274 H05K3/321 H05K2201/0108 H05K2201/10651 H05K2201/2036 H05K2201/2054 G02B27/14 B60R1/084 Y10T29/49826 G02F1/0018 G02B5/0808 B32B17/06 B32B17/10036 B32B17/10174 B32B17/10321 B32B17/10513 B32B2255/205 B32B2605/00 B32B2307/40 B60R1/12 C03C17/36 C03C17/3618 C03C17/3639 C03C17/3663 B60R1/025 B32B2307/202 B32B2307/412 B32B2307/728 B32B2307/73 B32B2605/006 C23C14/34 G02B5/0875 B23K26/362 B23K26/402 B23K2203/50 B23K2203/00 G02F1/1533 Y10T29/49002 Y10T428/24355 Y10T428/2495 G02F2203/09 C03C17/3647 C03C17/3649 B60R1/00 B60R1/04 B60R1/083 B60R1/085 B60R2001/1215 B60R2001/1223 B60R2001/1253 B60R2300/108 E06B3/6722 G02F2201/34 G02F1/136204 E06B9/24 G02F1/13439 G02F1/157 G02F1/163 G02F2201/48 G02F1/153 B60R1/06 G02F1/155 G02F1/161 B60R1/088 C23C14/086 C23C14/185 C23C14/5833 C23C14/5873**European:** B32B17/06 B32B17/10C4 B32B17/10E10 B32B17/10E20 B32B17/10E40D64 B60R1/00 B60R1/04 B60R1/06 B60R1/08 B60R1/08G B60R1/08G2 B60R1/08G3 B60R1/08G5 B60R1/12 B82Y20/00 C03C17/36 C03C17/36B320 C03C17/36B339 C03C17/36B352M C09K9/02 C23C14/08L C23C14/18B C23C14/58D2 C23C14/58J E06B3/67F2 G02F1/15 G02F1/153 G02F1/153B G02F1/155 G02F1/157 G02F1/15V G02F1/161 G02F1/163 H05K1/02G H05K3/32B L60R1/12A L60R1/12B L60R1/12C L60R1/12D L60R1/12G L60R1/12L L60R300/10X P06B9/24 S02F1/1343B S02F1/1345 S02F1/153B S02F1/155 S02F1/157 S02F1/15B S02F1/15M S02F1/161 S02F1/163 S02F201/34 S02F201/48 S02F202/36 S02F203/02 T05K1/03B T05K201/01A1 T05K201/10D1D T05K201/20F**US:** 1/1 204/298.36 204/298.360P 248/205.1 29/428 29/592.1 359/245 359/245P 359/265 359/265P 359/265S 359/266 359/267 359/267P 359/268 359/269 359/270 359/271 359/272 359/273 359/273P 359/273S 359/274 359/275 359/296 359/601 359/602 359/603 359/603S 359/604 359/604P 359/636 359/636S 359/753 359/838 359/838S 359/839 359/839P 359/871 359/871S 359/872 359/872S 359/877 359/883 359/883S 359/900 362/494 362/514 362/516 427/162 427/555 428/141 428/141P 428/213 428/213S**Family:**

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Probable Assignee: GENTEX CORP

Assignee(s): (std): BOSTWICK DANIEL J ; CAMMENGA DAVID J ; CARTER JOHN W ; BUSSCHER BRADLEY L ; BRUMMEL NELSON F ; DOZEMAN GARY J ; EATON DAVID L ; BUGNO MARK D ; FISH JR RICHARD T ; GENTEX CORP ; GUARR THOMAS F ; FOGG JEREMY A ; ANDERSON JOHN S ; ARNOLD JOHN W ; BAUER FREDERICK T ; LUTEN HENRY A ; FORGETTE JEFFREY A ; KLOEPPNER LEROY J ; GENTEX CO LTD ; MINIKEY JR DANNY L ; LOCK NIGEL T ; THEISTE DAVID A ; TONAR WILLIAM L ; POLL DAVID L ; NEUMAN GEORGE A ; STRAY JOEL A ; TURNBULL ROBERT R ; NELSON BARRY K ; RUMSEY WAYNE J ; WATSON ALAN R ; TURNBULL ; POE G BRUCE ; PERRON LANSEN M ; VANDER ZWAAG SCOTT W ; NEUMAN GEORGE ; POE BRUCE G ; ROTH MARK R ; YPMA KENTON J ; SUMAN SANDRA LYNN ; VANDERZWAAG SCOTT W ; WILLIAMS JEFFREY N ; REESE SPENCER D ; OLESEN NIELS ALFRED ; MINIKEY DANNY L JR

Assignee(s): GENTEX CO ; POLL DAVID ; POE G ; GENTEX CORP600 NORTH CENTENNIAL STREETZEELANDMI49464US ; GENTEX CORP ZEELAND ; GENTEX ZEELAND CORP ; LUTEN HENRT A ; GENTEX C ; KAR KEVIN B ; MINIKEY DANNY L ; BAUMANN KELVIN L ; GIRI PUNAM

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Agent(s): MACRAE AND CO; MUELLER BORE AND PARTNER PATENTANWAELTE PARTG MBB; MUELLER BORE AND PARTNER PATENTANWAELTE; BAYLISS GEOFFREY CYRIL; FINNIE PETER JOHN; MUELLER BORE AND PARTNER PATENTANWAELTE PARTG MBB; CUNDY JACK WILLIAM; UESUGI HIROSHI; OHTSUKA FUMIAKI; SUDA HIROYUKI; KUMAKURA YOSHIO; NISHIJIMA TAKAKI; BRADLEY D; REISING ETHINGTON PC; PRICE HENEVELD COOPER DEWITT AND LITTON LLP GENTEX CORP; BRIAN J REES GENTEX CORP; BROMBERG AND SUNSTEIN LLP; GENTEX C O QUARLES AND BRADY LLP CORP; PRICE HENEVELD COOPER DEWITT AND LITTON LLP; SHULTZ JR JAMES E; JAMES E; QUARLES AND BRADY LLP; YAKOV; SCOTT P; PRICE HENEVELD LLP; SUNSTEIN BRUCE D ET AL; SIDORIN YAKOV

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: HERMETIC ENCAPSULATION OF ORGANIC, ELECTRO-OPTICAL ELEMENTS

Abstract: To achieve an increased service life of organic, electro-optical elements, the invention provides a process for producing them which comprises the steps of: providing a substrate (3), applying a first conductive layer (13), applying at least one layer (15) which includes at least one organic, electro-optical material, applying a second conductive layer (17), and the step of depositing at least one layer (7, 71, 72,..., 7 N) with a vitreous structure.

Classifications:

International (IPC 8-9): B05D5/06 B29B7/00 B32B17/06 B32B17/10 B32B3/00 B32B33/00 B32B9/00 B81B7/00 B81C1/00 B81C3/00 C03B19/00 C03B19/02 C03C14/00 C03C15/00 C03C17/02 C03C17/34 C03C27/02 C03C3/089 C03C3/091 C03C4/12 C08J7/04 C23C14/00 C23C14/10 C23C14/24 C23C16/44 C23C8/00 G02B3/00 G02F1/1339 H01J1/62 H01L21/02 H01L21/027 H01L21/283 H01L21/30 H01L21/306 H01L21/3065 H01L21/31 H01L21/3105 H01L21/311 H01L21/312 H01L21/316 H01L21/44 H01L21/4763 H01L21/48 H01L21/50 H01L21/56 H01L21/768 H01L23/00 H01L23/02 H01L23/10 H01L23/12 H01L23/15 H01L23/29 H01L23/31 H01L23/48 H01L23/498 H01L23/532 H01L23/58 H01L23/66 H01L51/00 H01L51/50 H01L51/52 H01P11/00 H05B33/04 H05B33/10 H05B33/24 H05B33/26 H05B33/28 H05H1/24 H05K1/03 H05K3/46 (Advanced/Invention);

H01L21/02 H01L23/498 H05K3/28 (Advanced/Non-invention);

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H01L23/48 H05K3/28 (Core/Non-invention);

B81C (Subclass/Invention)

International (IPC 1-7): B32B15/00 B81B7/00 B81C1/00 B81C3/00 C03B19/02 C03C27/02 C23C14/10 C23C14/24 C23C16/44 C23C8/00 G02B3/00 G02B5/00 H01J1/62 H01L21/02 H01L21/027 H01L21/306 H01L21/3065 H01L21/31 H01L21/3105 H01L21/311 H01L21/312 H01L21/316 H01L21/44 H01L21/48 H01L21/50 H01L21/56 H01L21/60 H01L21/768 H01L23/00 H01L23/02 H01L23/10 H01L23/12 H01L23/28 H01L23/29 H01L23/31 H01L23/498 H01L23/532 H01L23/552 H01L23/58 H01L23/66 H01L31/0216 H01L51/20 H05B33/00 H05B33/04 H05B33/10 H05B33/14 H05B33/24 H05B33/26 H05B33/28 H05K3/46

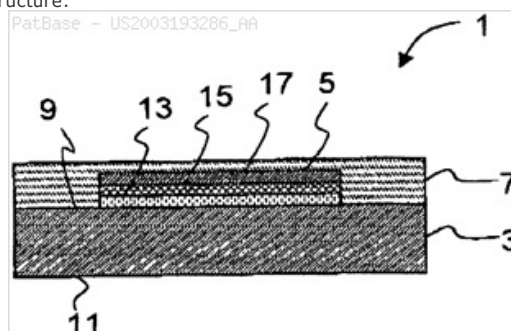
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Family:

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US20070881962	20070730				

Probable Assignee: SCHOTT GLAS

Assignee(s): (std): CARL ZEISS STIFTUNG TRADING SCHOTT GLAS AS ; FRITZ OLIVER ; LEIB JUERGEN ; SCHOTT GLAS ; OTTERMANN CLEMENS ; MUND DIETRICH ; POMMEREHNE JOERN ; SCHOTT AG ; LEIB JURGEN ; MUND DIETRICK ; SCHOTT AG INSULET CORP ; OTTERMAN CLEMENS ; ZEISS STIFTUNG ; SCHOTT INSULET CORP AG ; BIECK FLORIAN

Assignee(s): CARL ZEISS STIFTUNG ; CARL ZEISS STIFTUNG TRADING AS SCHOTT GLAS ; POMMEREHNE JORN ; MUND DIPL PHYS DIETRICH

Inventor(s): (std): POMMEREHNE JORN ; OLIVER FRITZ ; MUND DIPL PHYS DIETRICH ; JUERGEN LEIB ; JOERN POMMEREHNE ; FLORIAN BIECK ; DIETRICH MUND ; DIETRICH BIECK FLORIAN LEIB JU ; CLEMENS OTTERMANN ; POMMEREHNE JOERN ; OTTERMANN CLEMENS ; MUND DIETRICH ; LEIB JUERGEN ; JURGEN LEIB ; JORN POMMEREHNE ; FRITZ OLIVER ; BIECK FLORIAN ; OTTERMAN CLEMENS ; MUND DIETRICK ; LEIB JURGEN

Inventor(s): BIECK FLORIAN LEIB JUERGEN MUND DIETRICH

Agent(s): KIRBY EADES GALE BAKER; BLUMBACH ZINNGREBE PATENT U RECHTSANWAELTE; HERDEN ANDREAS F; BLUMBACH - ZINNGREBE; BLUMBACH ZINNGREBE; MOTOMIYA TERUHISA; FUJINO IKUO; TAKANASHI NORIMICHI; UBUKATA KAZUO; KATO NOBUAKI; OCHI TAKAO; OKABE MASAO; USUI SHINICHI; OKABE YUZURU; ASAHU NOBUMITSU; OHLANDT GREELEY RUGGIERO AND PERLE LLP; CHARLES N J RUGGIERO OHLANDT GREELEY RUGGIERO AND PERLE LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PH PL PT RO RU SC SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: HEAD PROTECTOR

Abstract: A head protection system comprises a helmet shell, a visor mounting for pivotally mounting a visor to the shell to enable the visor to be moved between raised and lowered positions, and a retainer for releasably retaining the visor to the helmet. The system includes a visor adapted for mounting on the shell which comprises a substrate of **transparent** thermoplastic material and a backing substrate comprising a plurality of **layers** of high performance, ballistic resistant material. The system may further include a second visor which can be releasably connected to the shell using the same visor mounting and which may have a different construction and primary function.

Classifications:

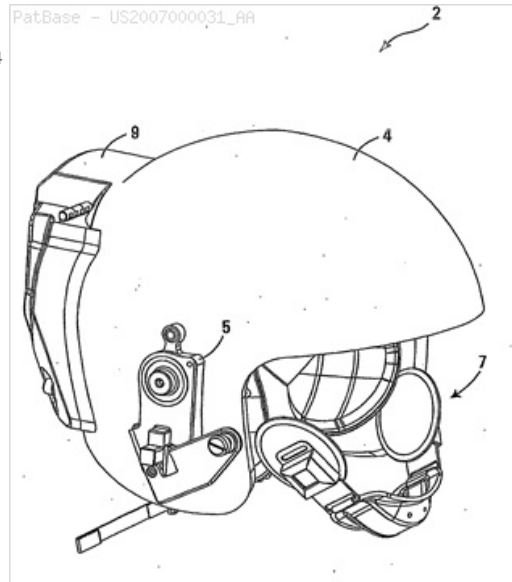
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International (IPC 1-7): F41H1/04 F41H5/04

CPC: B32B27/08 B32B27/308 B32B27/365 B32B2307/412 B32B2369/00 B32B2437/04 B32B2571/02 A42B3/0433 A42B3/044 A42B3/08 A42B3/14 A42B3/221 A42B3/226 A42B3/24 A42B3/28 A42B3/30 A62B18/045 A62B18/082 B32B27/00 B32B27/06 F41H1/04 F41H1/08 F41H5/0407

European: A42B3/04B6 A42B3/04B6B A42B3/08 A42B3/14 A42B3/22B A42B3/22D A42B3/24 A42B3/28 A42B3/30 A62B18/04A A62B18/08A B32B27/00 B32B27/06 F41H1/04 F41H1/08 F41H5/04B

US: 2/410 2/411 2/411P 2/412 2/424

**Family:**

Publication number	Publication date	Application number	Application date
CA2520480 AA	20050927	CA20042520480	20040329
CA2520480 C	20131224	CA20042520480	20040329
CN102748995 A	20121024	CN201210249204	20040329
CN1795362 A	20060628	CN200480014596	20040329
CN1795362 B	20120905	CN200480014596	20040329
EP1611408 A2	20060104	EP20040723943	20040329
US2007000031 AA	20070104	US20040550922	20040329
US7841026 BB	20101130	US20040550922	20040329
WO04084664 A2	20041007	WO2004CA00444	20040329
WO04084664 A3	20041118	WO2004CA00444	20040329
ZA200508730 A	20070425	ZA20050008730	20051027

Priority:

US20030457927P 20030328 US20030520641P 20031118 WO2004CA00444 20040329
US20050550922 20050928

Probable Assignee: MED ENG LLC

Assignee(s): (std): MED ENG SYSTEMS INC ; MAKRIS ARISTIDIS ; GRILLAS ATHANASIOS ; FISHER GEOFFREY ; JAMES RAYMOND ; L ABBE RICHARD ; FARRELL ROD ; KALAAM SHAIK ; HEDGE CLINT ; BORTOT PETER ; LECLERC GILLES ; MITRIC BRATISLAV ; SOBEL JAY ; WHITE JULIA ; MYLES JUSTIN E ; VADEBONCOEUR MAXIME ; PFLANZ SIMON ; PAGE DANIEL ; MYLES JUSTIN ; ALLEN VANGUARD TECHNOLOGIES INC

Assignee(s): BANK OF AMERICA NA AGENT AS ; WILMINGTON TRUST NATIONAL ASSOCIATION ; SAFARILAND LLC ; MUSTANG SURVIVAL ULC ; VIRTUS GROUP LP ; ABLECO FINANCE LLC AS COLLATERAL AGENT ; ABLECO FINANCE LLC COLLATERAL AGENT AS ; ALLEN VANGUARD CORP ; MED ENG SYSTEMS INC VADEBONCOEUR MAXIME ; MED ENG LLC

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Inventor(s): L'ABBE RICHARD ; MAKRIS ARISTIDIS GRILLAS ATHANASIOS MITRIC ; MAKRIS ARISTIDIS GRILLAS ATHANASIOS MITRIC BRATISL

Agent(s): LANG MICHENER LLP; MCMILLAN LLP; WOODCOCK WASHBURN LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: THERMOCHROMIC WINDOW STRUCTURES

Abstract: An energy efficient, thermochromic device that may be used to allow sunlight or solar radiation into a building or structure when sunlight is absent or at high sun angles and substantially blocks solar radiation when sunlight is directly on the window.

Classifications:

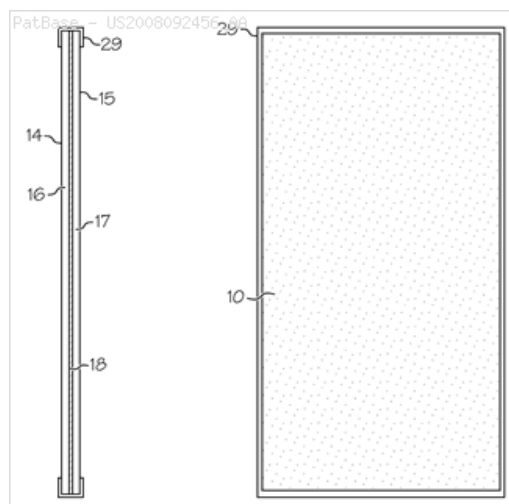
International (IPC 8-9): C07F15/04 C07F15/06 C09K9/00 C09K9/02 E06B9/24 G01K11/16 G01N31/00 G02B21/02 G02B5/23 G02F1/00 G02F1/01 G02F1/15 G02F1/17 G09G3/34 (Advanced/Invention); C07F15/04 G02F1/01 G02F1/15 G09G3/34 (Advanced/Non-invention); C07F15/00 C09K9/02 E06B9/24 G01K11/00 G02B21/02 G02B5/22 G02F1/00 G02F1/01 G09G3/34 (Core/Invention); C07F15/00 (Core/Non-invention)

International (IPC 1-7): C07F15/04 C09K9/02

CPC: C09K9/02 C09K2211/187 G02F1/0147 B32B17/10036 B32B17/10477 B32B17/10651 B32B17/10678 B32B17/10761 B32B17/10174

European: C09K9/02 G02F1/01T M09K211/18P

US: 252/408.1 252/408.100P 252/583 252/583P 252/586 252/586P 345/106 359/265 359/288 359/288P 359/289 359/321 52/1 52/1P 52/204.5 52/204.500S 546/10

**Family:**

Publication number	Publication date	Application number	Application date
CA2662276 AA	20090227	CA20072662276	20070831
CA2662276 C	20151013	CA20072662276	20070831
DE602007024421 D1	20120927	DE200760024421T	20070831
EP2082005 A1	20090729	EP20070841718	20070831
EP2082005 B1	20120801	EP20070841718	20070831
EP2082005 B9	20130522	EP20070841718	20070831
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EP2434000 A3	20120404	EP20110008848	20070831
EP2436750 A2	20120404	EP20110008847	20070831
EP2436750 A3	20140820	EP20110008847	20070831
IN01226KN2009 A	20090522	IN2009KN01226	20090331
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JP2011099120 A2	20110519	JP20110034424	20110221
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US2011075244 AA	20110331	US20100906704	20101018
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Priority:

US20060841827P	20060901	EP20070841718	20070831	JP20090526933	20070831
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Probable Assignee: PLEOTINT LLC

Assignee(s): (std): MILLETT FREDERICK A ; VELDKAMP BRAD S ; PLEOTINT L L C ; WINKLE DERICK D ; VANDER GRIEND DOUGLAS A ; OGBURN PAUL H JR ; MILLETT FREDERICK C ; PLEOTINT LLC ; OGBURN JR PAUL H ; BYKER

HARLAN J ; BROEKHUIS JR MICHAEL D ; BROEKHUIS MICHAEL D

Assignee(s): BYKER HARLAN ; BYKER TERRI ; KEY PORTFOLIO LLC ; OGBURN PAUL H ; PLEOTINT LLC WEST OLIVE

Inventor(s): (std): BROEKHUIS JR MICHAEL D ; BROEKHUIS MICHAEL D ; GRIEND DOUGLAS A V ; BYKER HARLAN J ; MILLETT FREDERICK A ; MILLETT FREDERICK C ; OGBURN PAUL H JR ; VANDER GRIEND DOUGLAS A ; VELDKAMP BRAD S ; WINKLE DERICK D ; OGBURN JR PAUL H

Inventor(s): WINKLE DERICK D HOLLAND ; VELDKAMP BRAD S ZEELAND ; WINKLE DERICK ; VANDER GRIEND DOUGLAS A GRAND RAPIDS ; VELDKAMP BRAD ; OGBURN PAUL H JR HUDSONVILLE ; OGBURN PAUL HJR ; VANDER GRIEND DOUGLAS ; MILLETT FREDERICK C GRAND HAVEN ; OGBURN PAUL ; OGBURN PAUL H ; MILLETT FREDERICK A GRAND HAVEN ; BYKER HARLAN J WEST OLIVE ; GRIEND DOUGLAS ; GRIEND DOUGLAS A VANDER ; GRIEND DOUGLAS AV ; MILLETT FREDERICK ; BYKER HARLAN ; BROEKHUIS MICHAEL

Agent(s): GOWLING LAFLEUR HENDERSON LLP; BOEHMERT AND BOEHMERT ANWALTSPARTNERSCHAFT MBB PATENTANWAELTE RECHTSANWAELTE; BARTON MATTHEW THOMAS; THOMPSON HINE LLP INTELLECTUAL PROPERTY GROUP; THOMPSON HINE LLP; THOMPSON HINE L L P; LEVY MARK P ET AL

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: SECURITY DOCUMENT

Abstract: The invention concerns a security document comprising a translucent carrier substrate, in particular of paper and/or plastic material, and at least one security element which is applied to the carrier substrate or embedded in the carrier substrate and which presents at least one image when viewed in the transillumination mode from at least a first side of the security document and simulates a presence of at least a first watermark in the carrier substrate, wherein the security element has at least region-wise at least one layer which simulates the first watermark, wherein the at least one layer of the security element, that simulates the first watermark, imparts thereto unexpected optical effects in relation to security elements with conventional watermarks.

Classifications:

International (IPC 8-9): B29D7/01 B32B29/00 B41M3/14 B42D15/00 B42D15/10 B42D25/29 B42D25/324 B42D25/328 B42D25/351 B42D25/355 B42D25/364 B42D25/373 B42D25/382 B42D25/387 B44F1/12 D21H21/40 D21H21/44 G02B5/08 G02B5/18 G02B5/32 G03F7/00 G07D7/12 G07D7/20 (Advanced/Invention); G02B5/32 (Advanced/Non-invention); B29D7/00 B32B29/00 B41M3/14 B42D15/00 B42D15/10 B44F1/00 B44F1/12 D21H21/00 D21H21/40 G02B5/08 G02B5/18 G02B5/32 G03F7/00 G07D7/00 (Core/Invention); G02B5/32 (Core/Non-invention)

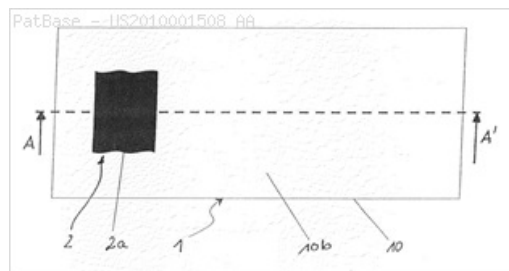
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European: B32B15/08 B32B29/06 B42D15/00C B42D15/10 D21H21/40 D21H21/42 D21H21/44 L42D33/06 L42D35/16 L42D35/20 L42D35/22 L42D35/33 L42D35/36

US: 216/47 264/1.34 264/1.340S 283/109 283/110 283/113 283/72 283/72P 283/74 283/82 283/83 283/85 283/85P 283/85S 283/91 283/91P 283/94 283/98 427/7 427/7S 430/321 430/321S



Family:

Publication number	Publication date	Application number	Application date
AT502773 E	20110415	AT20080707586T	20080207
AT502774 E	20110415	AT20080707598T	20080207
AU2008213095 AA	20080814	AU20080213095	20080207
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CA2677153 AA	20090731	CA20082677153	20080207
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JP2010518432 A2	20100527	JP20090548622	20080207
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LT2117840 T	20170410	LT20080707587T	20080207
PL2117840 T3	20170731	PL20080707587T	20080207
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RU2009133328 A	20110320	RU20090133328	20080207
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RU2448840 C2	20120427	RU20090133326	20080207
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SI2117840 T1	20170531	SI20080031789	20080207
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TH99163 A	20091125	TH20081000570	20080205
TR201703510 T4	20170421	TR20170003510T	20080207
TW200842052 A	20081101	TW20080103902	20080201
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Priority:

DE200710005884	20070207	DE200710039996	20070823	DE200710057658	20071128
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WO2008EP00924	20080207	WO2008EP00941	20080207	US20090449366	20091028
US20160158037	20160518				

Probable Assignee: LEONHARD KURZ STIFTUNG AND CO KG

Assignee(s): (std): LEONHARD KURZ STIFTUNG AND CO KG ; SCHILLING ANDREAS ; STAUB RENE ; LEONHARD KURZ STIFUNG AND CO KG ; TOMPKIN WAYNE ROBERT ; WEBER KLAUS ; LEONKHARD KURTS SHTIFTUNG UND KO KG ; LEONKHARD KURTS SHTIFTUNG U KO KG ; ATTNER JURI ; LEONHARD KURZ STIFTUNG AND CO KG

Assignee(s): LEONHARD KURZ STIFTUNG AND COKG ; LEONHARD KURZ STIFTUNG CO KG

Inventor(s): (std): WEBER KLAUS ; WEBER KLAUS ; TOMPKIN UEHJN ROBERT ; SHTAUB RENE ; ROBERT TOMPKIN WAYNE ; RENE STAUB ; KLAUS WEBER ; JURI ATTNER ; SHILLING ANDREAS ; ANDREAS SCHILLING ; ATTNER JURI ; SCHILLING ANDREAS ; STAUB RENE ; TOMPKIN WAYNE ; TOMPKIN WAYNE ROBERT

Inventor(s): WAYNE ROBERT TOMPKIN

Agent(s): FISHER ADAMS KELLY; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; FISHER ADAMS KELLY PTY LTD; GOWLING LAFLEUR HENDERSON LLP; GOWLING WLG CANADA LLP; ZINSINGER NORBERT; SALVA JOAN; TUGBA GUENDEMIR; HOFFMANN AND BARON LLP; HOFFMAN AND BARON LLP; ZINSINGER NORBERT ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: PRESSURE-SENSITIVE ADHESIVE SHEET, METHOD OF PROCESSING ADHEREND WITH THE PRESSURE-SENSITIVE ADHESIVE SHEET, AND APPARATUS FOR STRIPPING PRESSURE-SENSITIVE ADHESIVE SHEET

Abstract: To provide a pressure-sensitive adhesive sheet which protects a ground, thin, fragile adherend from "warping" and which can be removed from the fragile adherend after the completion of backgrinding without damaging and contaminating the fragile adherend. The pressure-sensitive adhesive sheet 5 includes a base **layer** A, a pressure-sensitive adhesive **layer** A, a base **layer** B, and a pressure-sensitive adhesive **layer** B arranged in this order, in which: the base **layer** A has a product of its Young's modulus at 25 degrees centigrade and its **thickness** of 1.0×10^5 to 4.0×10^5 N/m and a product of its Young's modulus at 80 degrees centigrade and its **thickness** of 2.8×10^5 N/m or less; the pressure-sensitive adhesive **layer** A has a shear modulus at 80 degrees centigrade of 0.2 MPa or less; the base **layer** B has a product of its Young's modulus at 25 degrees centigrade and its **thickness** of smaller than that of the base **layer** A and has, upon 80 degrees centigrade heating, a shrink percentage in MD and a shrink percentage in TD of each 20 percent or more; and the pressure-sensitive adhesive **layer** B has a Young's modulus at 80 degrees centigrade of 10 MPa or more and an adhesive strength to a silicon wafer (180-degree peel at a tensile speed of 300 mm/min) of 0.2 N/10 mm or less.

Classifications:

International (IPC 8-9): B32B27/30 B32B38/10 C09J133/00 C09J4/00 C09J5/00 C09J7/02 H01L21/30 H01L21/301

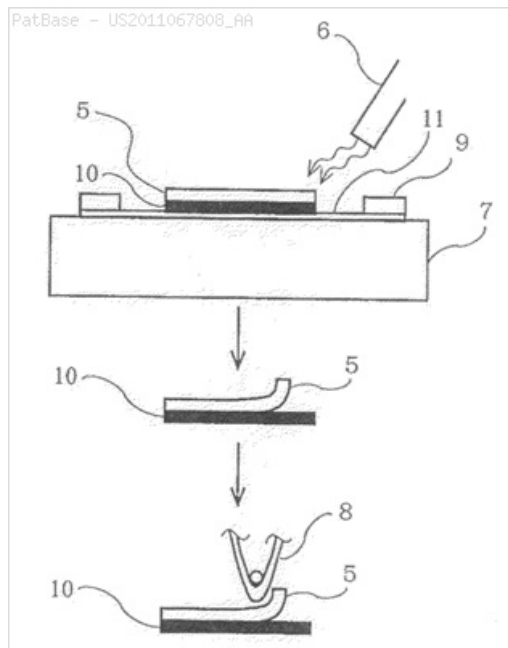
H01L21/304 (Advanced/Invention);

C09J133/00 C09J4/00 C09J5/00 C09J7/02 H01L21/02 (Core/Invention); C09J7/02 (Core/Non-invention)

CPC: Y10T156/1142 Y10T156/1158 Y10T156/1917 Y10T428/2495 C09J133/10 C09J2433/00 H01L21/6835 H01L21/6836 H01L2221/68327 H01L2221/6834 H01L2221/68381 H01L2221/68386 C09J7/29

European: C09J133/10 C09J7/02K9F H01L21/683T H01L21/683T2 M09J433/00 T01L221/683T12 T01L221/683T34 T01L221/683T34B T01L221/683T8

US: 156/247 156/584 156/709 156/709S 156/712 156/712S 156/753 156/753S 156/931 156/931S 156/941 156/941S 428/213 428/213S



Family:

Publication number	Publication date	Application number	Application date
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■ JP2009275060 A2	20091126	JP20080124560	20080512
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■ WO09139126 A1	20091119	WO2009JP01983	20090501

Priority:

JP20080124560 20080512 WO2009JP01983 20090501

Probable Assignee: NITTO DENKO CORP

Assignee(s): (std): KIUCHI KAZUYUKI ; NISHIO AKINORI ; NITTO DENKO CORP

Assignee(s): NITTO DENKO CORPORATIONJP

Inventor(s): (std): AKINORI NISHIO ; KAZUYUKI KIUCHI ; KIUCHI KAZUYUKI ; NISHIO AKINORI

Agent(s): EDWARDS WILDMAN PALMER LLP; GOTO YUKIHISA

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: METHODS AND APPARATUS FOR MEASURING ANALYTES

Abstract: Methods and apparatus relating to FET arrays including large FET arrays for monitoring chemical and/or biological reactions such as nucleic acid sequencing-by-synthesis reactions. Some methods provided herein relate to improving signal (and also signal to noise ratio) from released hydrogen ions during nucleic acid sequencing reactions.

Classifications:

International (IPC 8-9): A01G25/16 A61B5/145 A61M37/00 B01J19/00 B01L3/00 B01L3/02 B32B5/00 C07H21/00 C08F265/10 C12M1/00 C12M1/34 C12M1/40 C12M1/42 C12M3/00 C12N15/10 C12P19/34 C12Q1/68 C12Q1/6874 C40B10/00 C40B20/00 C40B30/00 C40B40/06 C40B40/08 C40B50/00 C40B50/06 C40B50/18 C40B60/10 C40B60/12 F16L41/00 F17D1/00 G01N21/00 G01N27/00 G01N27/26 G01N27/27 G01N27/30 G01N27/333 G01N27/403 G01N27/414 G01N27/416 G01N27/447 G01N30/00 G01N33/48 G01N33/483 G01N35/08 G01N35/10 G01N37/00 G06F19/00 G06F19/22 H01L21/02 H01L21/28 H01L21/336 H01L21/82 H01L27/088 H01L29/66 H01L29/78 H01L29/788 H01M8/04 H01M8/10 H03M7/30 H05K13/00 (Advanced/Invention); B82Y15/00 C12M1/00 C12N15/09 C12Q1/68 G01N27/27 G01N33/53 G01N35/10 (Advanced/Non-invention); C12M1/34 C12P19/00 C12Q1/68 C40B20/00 C40B40/04 C40B60/10 G01N27/416 (Core/Invention)

CPC: H01L21/82 B01J2219/00315 B01J2219/00317 B01J2219/00653 B01L2200/0668 G01N27/301 B01L3/52 B01L3/50273 C12Q2527/119 C12Q2565/629 B01J2219/00389 B01J2219/00394 B01L2300/0636 B01L2300/0645 B01L2300/0861 B01L2300/0864 B01L2300/0874 B01L2300/0877 B01L2400/0487 G01N35/1002 G01N35/1097 G01N27/4165 C12Q2565/607 Y10T29/49002 C12Q1/6806 B01J19/0046 B01J2219/00466 B01J2219/005 B01J2219/00596 B01J2219/00722 C40B40/08 C40B50/06 G01N27/447 Y10T137/0318 Y10T137/0424 Y10T137/85938 B01L3/502761 B01L3/502738 B01L3/502769 B01L3/502776 C12Q1/6869 G01N27/414 Y10T428/2982 G01N27/4148 G06F19/22 B01L3/502746 B01L2300/0867 B01L2200/16 B01L3/502715 B01L3/502 G01N27/27 C12Q1/6834 C12Q1/6853 G01N27/4145 C12Q1/6874 C12N15/1093

European: B01J19/00C B01L3/00C6M10 B01L3/00C6M18B B01L3/5027E B01L3/5027H B01L3/5027J2 C12N15/10C100 C12Q1/68B10A C12Q1/68D C12Q1/68E C12Q1/68E4 C40B40/08 C40B50/06 G01N27/414 G01N27/414C G01N27/447 G06F19/22 L01J219/00C10B2 L01J219/00C2B4D2 L01J219/00C2B4D2B L01J219/00C2D12 L01J219/00C2D12B2 L01J219/00C2H2D L01J219/00C2L2 L01J219/00C4H L01J219/00C4L6 L01L200/06J8 L01L3/5027J L01L300/06B2 L01L300/06B4 L01L300/08E L01L300/08E10 L01L300/08E2 L01L300/08E8 L01L400/04M8 S01N27/27 S01N35/10A S01N35/10V1

US: 1/1 137/1 137/15.05 137/1P 137/561.00AP 137/561A 204/406 204/416 204/435 204/435S 204/450 205/775 205/789 205/793.5 222/1P 257/253 257/253P 257/E21.002 257/E21.002S 257/E21.209 257/E21.409 257/E21.409S 257/E21.422 257/E23.06 257/E23.08 257/E27.06 257/E29.166 257/E29.166S 257/E29.255 257/E29.255S 257/E29.3 29/592.1 29/592.100S 327/509 327/509P 422/407 422/500 422/500S 422/502 422/504 422/510 422/510S 422/69 422/69S 422/82.02 422/82.03 428/402 428/402P 435/283.1 435/287.1 435/6 435/6.1 435/6.100S 435/6.11 435/6.110S 435/6S 435/91.2 435/91.200P 435/91.200S 438/10 438/49 438/49S 506/1 506/16 506/16P 506/16S 506/17 506/17S 506/1P 506/2 506/23 506/23S 506/2P 506/32 506/32S 506/38 506/38S 506/39 506/39P 506/6 506/7 506/7P 525/54.2 525/54.200S 525/54.3 525/54.300S 702/104 73/1.02 977/755 977/755S 977/811 977/811S 977/957 977/957S 977/958 977/958S

Family:

Publication number	Publication date	Application number	Application date
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■ CN103901090 B	20170322	CN201410059756	20091022
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■ EP2342552 A1	20110713	EP20090822323	20091022
■ EP2342552 A4	20150624	EP20090822323	20091022
■ EP2435128 A2	20120404	EP20100780930	20100527
■ EP2435128 A4	20150805	EP20100780930	20100527
■ EP2435461 A1	20120404	EP20100780934	20100527
■ EP2435461 A4	20150722	EP20100780934	20100527
■ EP2435461 B1	20170809	EP20100780934	20100527
■ EP2436075 A1	20120404	EP20100780935	20100527
■ EP2436075 A4	20151111	EP20100780935	20100527
■ EP2437590 A1	20120411	EP20100780933	20100527
■ EP2437590 A4	20150805	EP20100780933	20100527
■ EP2800968 A1	20141112	EP20120818971	20121221
■ EP2800968 B1	20170322	EP20120818971	20121221
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■ IN02067KN2011 A	20110916	IN2011KN02067	20110518
■ IN09804CN2011 A	20130412	IN2011CN09804	20111226

PatBase - US2010137143_AA

Patent Application Publication Jun. 3, 2010 Sheet 1 of 129 US 2010/0137143 A1

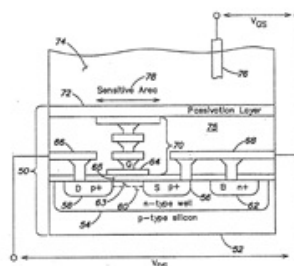


FIG. 1

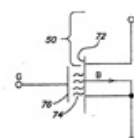


FIG. 2

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Priority:

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Probable Assignee: LIFE TECHNOLOGIES CORP

Assignee(s): (std): JOHNSON KIM ; REARICK TODD M ; MARRAN DAVID ; MILGREM MARK JAMES ; LEAMON JOHN H ; LIGHT DAVID ; ROTH GEORGE THOMAS ; REARICK TODD ; NOBILE JOHN ; MILGREW MARK JAMES ; LIFE TECHNOLOGIES CORP ; LIFE TECHNOLOGIES COPORATION ; MILGREW MARK ; LEAMON JOHN ; MILGREW MARK J ; ROTH THOMAS ; LIFE TECH CORP ; ROTHBERG JONATHAN M ; SCHULTZ JONATHAN C ; SCHULTZ JONATHAN ; VAN OIJEN ANTOINE M ; ROTHBERG JONATHAN ; BEAUCHEMIN MARK ; BUSTILLO JAMES ; BUSTILLO JAMES M ; DAVEY MELVILLE ; JOHNSON KIM L ; ION TORRENT SYSTEMS INC ; HINZ WOLFGANG ; DAVIDSON JOHN F ; HUBER MARTIN

Assignee(s): GM GLOBAL TECHNOLOGY OPERATIONS INC

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Inventor(s): BUSTILOO JAMES ; SCHULK TZ JONATHAN ; ROTH GEORGE

Agent(s): TOMBLING ADRIAN GEORGE; WOEHLEH CHRISTIAN; HOFFMANN EITLE; KAWAMOTO KAZUYA; SHIMIZU HATSUSHI; OSAKABE SUGURU; ION TORRENT SYSTEMS INC C O WOLF GREENFIELD AND SACKS PC; ION TORRENT SYSTEMS INC LEGAL GROUP; TREVISAN MARIA A; PUTNAM JONATHAN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: CRISTAL AUTOMOTRIZ LAMINADO RESISTENTE A LA INTRUSION Automotive **Glass** intrusion-resistant **laminata** (Machine translation)

Classifications:

International (IPC 8-9): B32B17/06 B32B17/10 B32B18/00 (Advanced/Invention)

Family:

Publication number	Publication date	Application number	Application date
■ CO20170007432 A1	20171110	CO20170007432	20170726

Priority:

US20170477399P 20170327

Probable Assignee: AGP AMERICA SA

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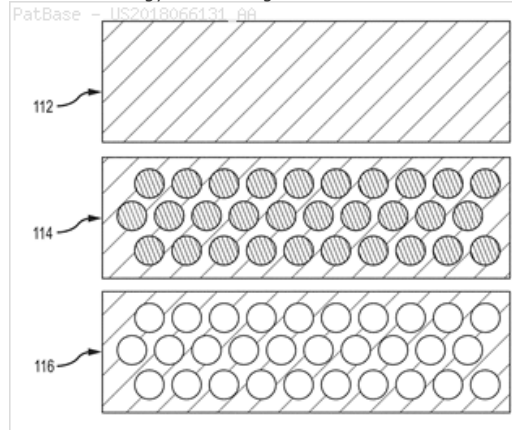
Title: POLYMER NANOPARTICLE THERMAL INSULATORS

Abstract: A thermally insulating article is provided which includes a subdivided, non-periodically arranged, amorphous-array-structured polymer particle assembly, wherein the article has a thermal conductivity of less than about 0.10 watt/m·K. The article can be used for many purposes, including attaching to an exterior window to reduce energy loss through the window.

Classifications:

International (IPC 8-9): B29C45/00 B29C45/14 C08J9/228 C08K3/00 C08K3/04 C08K7/14 C08L25/06 C08L33/12 E04B1/76 E04B1/80 E06B3/677 E06B7/12 H01B3/00 (Advanced/Invention)

CPC: C08L25/06 C08L33/12 C08J9/228 C08L2201/08 C08L2201/06 C08L2201/10 C08J2325/06 C08J2333/12 C08L2205/20 E04B1/806 B29C45/0001 E04B2001/747 C08K7/14 E04B1/7612 B29C45/14655 E04B2103/04 B32B1/00



Family:

Publication number	Publication date	Application number	Application date
US2018066131 AA	20180308	US20170811253	20171113
US2018073245 AA	20180315	US20170812514	20171114
WO18045387 A1	20180308	WO2017US50130	20170905
WO18045388 A1	20180308	WO2017US50131	20170905

Priority:

US20160383564P 20160905	US20160413522P 20161027	US20170470274P 20170312
US20170535866P 20170722	WO2017US50130 20170905	WO2017US50131 20170905
US20170811253 20171113	US20170812514 20171114	

Probable Assignee: NANOSD INC

Assignee(s): (std): NANOSD INC

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Agent(s): MORTON JEFFREY

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW