**Title**: Coatings and substrates for controlled applications

**International Patent Classification(s)**:
- B44F 001/06
- B44C 001/16
- B05D 005/06
- B44D 005/00

**Application No:** 200036409  
**Application Date:** 2000.05.24

**Priority Data**
- **Number**: PQ0551  
- **Date**: 1999.05.25  
- **Country**: AU

**Publication Date**: 2000.11.30

**Publication Journal Date**: 2000.11.30

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ABSTRACT

The method of producing a material having defined edges with several colours in registration is disclosed. It may be used to perform a one way vision panel or a paper see-through poster. The method includes preparing a paper base of which one side is light reflective and the other side is light absorbing. A plurality of coatings are applied to the light reflective surface of the paper base and thereafter a plurality of holes are formed in the paper base by cutting or perforation. The base is then applied to a see-through surface.

Fig. 30A for publication.
Claims:

1. A method of forming a pattern of colour coatings onto a light permeable panel with exact registration between successive colour coatings along defined edges of the pattern, and wherein the panel with the pattern of colour coatings formed thereon for use as a one-way vision panel, the method comprising the steps of:

   (a) providing a base material having an ink printable release coating on one side thereof;
   (b) applying a first colour coating to the printable release coating side or said base material;
   (c) applying at least one additional colour coating over at least a portion of said first colour coating;
   (d) perforating said base material with said colour coatings to provide a pattern of perforate and non-perforate portions to achieve exact registration of said at least one additional colour coating with said first colour coating for achieving one way vision effects;
   (e) transferring said pattern of colour coatings from said non-perforate portions of said base material onto a surface of a light permeable panel maintaining the exact registration; and
   (f) heating said light permeable panel to use said pattern of colour coatings onto said surface of said light permeable panel.

2. A method of producing a material with a defined edge or edges with one or more colours in exact registration for ceramic frit ink transfer to glass, the method including the steps of:

Prepare the base with the desired pattern, for example, the pattern could be a band for use across a car windshield, a pattern comprising a plurality of intended light passages such as round holes in a staggered pattern, parallel stripes or any other shape or shapes. The base may be produced
Inventor: Gregory Ross
Title of the Invention: Coatings and Substrates for Controlled Applications

FIELD OF THE INVENTION

This invention relates to the application and uses of coatings including metals, inks, toners, and the like applied to an original base, intermediate or final surface for numerous purposes including identification of documents, as a deterrent to counterfeiting, as a means to provide identifiable structures, as copyright protection, as radiation shields, as display means and as a perimeter coating alignment means.

BACKGROUND OF THE INVENTION

It is particularly beneficial when a coating has an end point or a transitional point between two separate coatings. For example, when it is intended to have transparent areas beside partially or fully opaque areas; or when two separate colored or structured coatings are in direct edge contact or with a defined gap between them; or when it is desired not have any overlap between two solid adjoining coatings such that the overlapped portion would present a different appearance of color due to the overlapping coatings; or when it is desired to have large numbers of defined edges when forming a pattern such as patterns where light may be transmitted through the surface of a material, accurate coating or painting is necessary.

The term “coating application" or “print"or “printed" or “printing"or “transfer"or “vapor deposition"or “stamping"or “printing surface" or “high surface" or “sublimation" or “micro saturation", or similar, as used herein, includes, but is not limited to, any method of applying or positioning a coating onto or in close proximity to a base or other surface and include traditional methods such as screen print, lithography, offset, ink jet, digital printing, sublimation, paint jet, electrostatic attraction of repulsion, magnetic attraction of repulsion, or any other method of causing a visible or invisible coating to be applied on or in close proximity to a base or other material or substrate or another coating or
substance and includes new technology print application methods when developed. Application methods also include: toner particles, liquid and particulates, paint jet, powder transfer, vapor deposited metals, hand applications, such as brush, air brush, roller, spray and the like, electrostatic attraction, electrostatic repulsion from one surface to another, conductive deposition, magnetic attraction, magnetic repulsion, charged particles, gravity, liquid flow, blade coating, reverse roll coating, reflective materials or treatments, retro-reflective treatment, including prisms, photochromic, coatings applied and partially removed through a variety of treatments such as laser etching, acid embossing, air abrasion, mechanical abrasion, and other means to affect a previously applied coatings; coatings placed on intermediary materials, combination with coatings placed on primary or secondary materials and any combinations of placing those bases or substrates together to combine coatings. For example, reactive coatings, or other sources which are reactive to light, radiation, frequencies of sound or combinations with any other substance type may be used, including inter-reactive coatings whereby two coatings react when placed in proximity one with the other, or combinations of two or more, such as a chemical reaction. Coatings may also react in the future to stimuli or external input such as light sensitive substances, such as polymers, including; coatings which react to electrical fields or electrical current; flowable solids; coatings which become viscous at one environment, for example, temperature, but remain solid in a different environment; metals including precious metals; holographic images, silver halide plates, photographic plates, or photographic materials; coatings which are called release coatings where the molecular structure weakens upon exposure to outside stimuli or forces such as light sensitive coatings, or heat sensitive coatings, and combinations of any and all of the above. A certain coating may be made up of two or more coatings which have been partially or fully blended together or mixed together such as to cause differential effects under some later process, inter-reaction of the mixed components or any other reason, particularly when not mixed thoroughly, so portions of the certain coating are discrete.

DESCRIPTION OF THE DISCLOSURE
The advantage of perimeter printing is to provide control of the edge perimeters but the same advantages may accrue using combinations of coatings and alignment methods or other methods, as taught herein. The term "perimeter printing", "perimeter surfaces", or similar, as used herein, includes, but is not limited to, all the subject matter of the present invention and includes the definitions of "perimeter" and "printing" and is intended to mean a printing or coating apparatus, process, and methods providing substantially exact registration whereby the limits, or perimeter, of the printing or coating area or areas are defined, repeatable and controllable and this in turn produces a precise result in accordance with the teachings of the present invention, and as a process to produce numerous products for numerous purposes. The term "control", "perimeter control", "boundary control", or similar, as used herein, includes, but is not limited to, the effect whereby the perimeter is a partial or fully limiting factor to the location of a coating or coatings such as to prevent application of coatings in a normal layer from exceeding the perimeter or edge. The perimeter control surface may be either the downward side wall below the positioning of the coating or may be the reverse whereby the coating is limited by a higher side wall such as in a cavity or recess to act as a containment means for the coating. The term "edge", "edges", "cliff", or similar, as used herein, includes, but is not limited to, any one or more perimeters of a material wherein at least one surface or layer is at a different height or position to another surface or layer. The position of the edge is defined by the change of direction from one surface or plane of a material or materials to another surface or plane, whether the plane is flat or curved and may be at right angles to the plane of any surface of the material or at any other angle to the plane of the material and there may be multiple edges in any one material and numerous and varied angles of edges or combinations of angles or positions of an edge or edges on any one or more pieces or sections of material. There may be several edges at different levels on each material such as to cause a different plane for the application or retention of one or more coatings, or combinations of coatings. The term "coat" or "coated" or "coatings", or similar, as used herein, includes, but is not limited to, visible and invisible substances such as inks, paints, powders, toners, flowable solids, solidified liquids, metals, including precious metals, plastics, thin films, electroconductive, thermochromic,
photochromic, phosphorescent, luminescent, reflective, retroreflective, holographic, evaporative, expansive, reactive to such as actinic radiation, inter-reactive coatings, heat conductive, non heat conductive, charged particles, polymers, crystalline substances, foil and any other visible, partially opaque, partially transparent, or other substances which can be detected as disclosed herein, together with compositions and/or combinations of any coatings including components to provide friction or adhesion at one extreme or release from adhesion or friction at the other extreme, precious metals, phase change substances, printed substances, coatings for specific printing or other processes such as electrostatic transfer, laser, etch, acid emboss, lithography, offset, screen printing, ink-jet, water based and pigment based inks, dyes, ceramic inks, ultraviolet & infra red responsive inks, coloring compounds and the like, surface modifying treatments and any combinations of any of these substances.

Screen printing, due to well known factors, such as stretching of the screen, variations of the registration between the screen and the surface to be printed on, differences in temperature, squeegee pressure and the like all make it difficult to produce good registration in large sizes. The term “perimeter”, “side wall”, “boundary” or similar, as used herein, includes, but is not limited to, an edge portion whereby one plane of the base changes direction in one or more places into a second plane and at the point of the angle or angles of change, is considered to be the perimeter of the area intended for primary coating.

The term “decorative” or “image”, or similar, as used herein, includes, but is not limited to, light reflective substances, color or colors, and other visible indicia, applied to the base and to other coatings may also be subsequently transposed to another surface whereby an image is readable either via a natural eye or by artificial intelligence means such as a scanner or other sensory equipment such that it will present a shape or shapes or outline that is different over its surface. In addition, the decorative coating may be a monochromic coating of only one color or one material. The use of perimeter printing allows for multi colored, multi layered coatings which can leave discreet area or areas of the see-through container free of coating to allow visibility to see the contents of the container.
The term “black”, or similar, as used herein, includes, but is not limited to, any substantially dark typically monochromic, light absorbing color or coating or substance which has low level of light reflectance and a high level of light absorbency.

The present invention provides for holes in the base which can produce a complete product or, for decals, allows for efficient and effective removal of the water from under the surface area of the decal and the water forms in the holes in the ceramic ink transposed on the base. The term “transpose”, “transposing”, “transposition”, or similar, as used herein, includes, but is not limited to, the action or result of moving one or more coatings from one or more layer or layers of one or more bases such as to reposition the coating or coatings on one or more alternative materials.

The term “base”, “bases”, “base substrate”, “base material”, “base”, or similar, as used herein, includes, but is not limited to, a structure which comprises one or more edges or perimeters for the purposes of acting as a base of a coating or coatings. A base may be paper, plastic, glass, metal, carbon fibre, fiberglass or composites of any of the above or new materials not yet invented or multiple layered laminate constructions of any one or more of the above materials or any other material capable of temporarily, semi-permanently, or permanently, or partially, retaining a coating. The base can be reusable, or repeatable with a precise pattern, or partially modified for release, or destroyed to prohibit the repeat of a unique pattern, and to identify the source. A base may also be the intermediate or final surface and may be transparent or opaque or partly transparent, according to the installation. The base may be prepared by many methods, including die cut, laser cut, embossing, etching, molding, forming, extrusion, abrasion, hand cutting, laser treating, and any other known or future means of creating certain shapes, patterns, angles, edges and perimeters on any material.

BRIEF DESCRIPTION OF THE FIGURES

Fig. 3A is a perspective view of multiple edge layers.

Fig. 3B is a three level structure where one level has coatings added in sequence.
Fig. 4E is perimeter coating alignment of the letter "A" comprising four different layers in perfect alignment, two layers being thicker than the others.

Fig. 16 is a cross section of coating layers where one coating is electrically conductive, whether metal or conductive coating, which may have been applied via vapor deposition, hot or cold, foil stamping, transfer or other means.

Fig. 17A is a perspective view of a base, ready for coating, including pad or transfer printing.

Fig. 19A is a plan view of the result of placing several bases or transposed coatings formed from different bases designed to have at least some cavities in common.

Fig. 19B is a cross section view of three structures being placed over alignment pins for specific purposes.

Fig. 20A-D is the steps of cavity edge filling followed by coating expansion transpositioned to an immediate or final surface, removal of the base and the final view on the surface.

Fig. 24B is a plan view of the cover over the lighting source providing examples of different methods of lighting control.

Fig. 24G and H are two different messages both separately visible under different light conditions.

Fig. 29A is a see through surface such as an automobile sunroof from the inside looking out.

Fig. 29B is a multi color image on the opposite side of a see through surface with, for example, a automobile manufacturer logo.

Fig. 30A is an exterior view of a see through surface, such as an automobile window comprising glare control on the top surface, multi-color or one color indicia, and perimeter treatment.

Fig. 30B is the visibility through the same surface of Fig. 30A without obstruction despite different colors and densities of coating.

Fig. 31A-B is two sides of an inspection use for see through surfaces, such as a microwave oven or cooking oven door, so that the manufacturers logo is visible in Fig. 31A and 31B demonstrates small light passages to permit inspection of the contents of the oven.
Fig. 33 is a multi-layer structure with a solid liner on the back of the base and a protective over-laminate or transfer medium being added to the right hand surface of the multi-layered coatings.

Fig. 37A is a perspective view of a base comprising round holes placed on a solid liner. Fig. 37B is a cross section through those holes showing five coating with the hole cavity producing one or two way vision light passages.

Fig. 37C is wetting the transfer medium, prior to transfer.

Fig. 37D is a perspective view of the transfer decal waterslide application step showing water in the holes ready to evaporate off without causing bubbling of the coatings during firing.

Fig. 37E is the coating transposed onto a see through surface such as glass and being fired or tempered in a furnace causing evaporation of the water through the holes.

Fig. 37F is a typical hot roller method of heat transferring indicia from a base to an intermediate or final surface.

Fig. 37G is a direct or contact transfer step to show coatings applied to an alternative surface.

Fig. 37H is a plan view of coatings.

Fig. 38A is the removal, after transposition, of a base for one way vision purposes, where the base used round staggered hole patterns to align the perimeter edged coatings.

Fig. 38B has a similar function to Fig. 38A, but using an alternate pattern, in this example, parallel stripes, alternating between image and light passages.

Fig. 42E is a light chamber with inks responsive to light such as florescent inks or partially transparent inks where the color can be absorbed into and transferred through the ink or simply illuminate through partially transparent inks or transparency type coatings to produce a backlit effect.

Fig. 42F is a cross section view showing multiple fiber optic fibers entering a base and reaching the surface at the perimeters of coating areas or between the perimeters of coated areas and with different levels and types of coatings on different portions of the base or final surface.
Fig. 49E is an alternative image application technique of ink jet equipment providing one or more color coatings applied at the same or on sequential passes of an image head, and separating the materials to produce two images.

Fig. 50A-R are examples of patterns for use as bases or as coatings for numerous uses including one way vision. These figures show paired examples of one pattern and a reverse of the same pattern, and are examples of patterns suitable for use on see through surfaces, inspection ports, one way vision and other structures, including plateaus, and other uses.

The present invention can use any known coating process, printing techniques, transposition, or transfer of material techniques and there is numerous prior art on screen printing equipment and accessories, and many other types of machinery, processes, coatings, and the like. It is accepted that these apparatus, processes and methods are known in the art, but are used herein to produce new and unique improvements. It is now possible to provide accurate ink and/or coating restrictions on defined edges, and to incorporate partial coatings which may be manufactured under a process to produce alignment control using both internal and external perimeters and combinations thereof as taught herein. An initial coating can be applied in the appropriate pattern and as long as the coating is thick enough or can be made thick enough it can form an elevated level or plateau, it can become either a base or the first coating layer of the final surface. If the coating is not thick enough then selection of a known coating which may expand under exposure to light, radiation, certain wave frequencies and the like can be used such as to elevate the top surface of the coating far enough above the surface of the base surface so as to add other coatings without those coatings reaching the surface of the base. The term “final surface”, or similar, as used herein, includes, but is not limited to, the surface to which the coatings are applied where it is intended that they remain in place some period of time. They may be removable from the final surface or may have other processes applied such as fusing of ceramic ink on glass, such that the coatings remain permanently part of the structure. It can also include intermediate surface or surfaces used as a media for subsequent
transposition and where intermediate surface is used it may also be understood to mean final surface. The base may also be the intermediate surface or final surface.

Fig. 3A shows four levels demonstrated as an example. There are two base bases 1A and 1B such that the lower structure 1A provides a coating surface 9A and has an external perimeter edge 2A. Within the confines of the lower base 2A, a second base 1B has been added to provide its own edge 2B such that the position of that edge 2B also forms an edge 2E on the lower base 1A as well as its own base 1B, to provide a secondary coating surface 9B. Above the plane of the second base 1B the letter “A” has been added in one or more layers of coatings such as to provide a further and, in this example, highest edge 2C on the top of the coating surface 9C of the letter “A”. Additionally, a recess in the higher base 1B provides for the letter “T” such that the letter “T” may be filled as a recessed coating 9D in the cavity 20, defined by the edge 2.

Using perimeter coating alignment, it is possible to have numerous indicia and other structures at different levels where one layer provides perimeters 3A to another 3B and the addition of other layers provides subsequent perimeters 3B and 3C to control coating positions and the end result. The term “indicia”, or similar, as used herein, includes, but is not limited to, any visible substance, including coatings which has defined shape and one or more colors or tones of colors or combinations of material. Examples include such as one color with one metalized coating; any combinations that are possible within the teachings of the present invention such as to at least partially reflect or transmit light from the surface or to reflect other recognizable signals such as radiated energy and other means as defined by the word “invisible” herein. An indicia may be three dimensional, having different thickness over its surface, may be two or more sided where an indicia occurs in at least a part of the area of one or more sides or surfaces of the structure. It may be formable, expandable, compressible, or changeable such as by differential of heat, radiated energy, addition of other components, such as when wet and when dry, or under different light conditions or any other source or cause which could cause a change to the appearance of the visible surface, or subsurface.
The term "paper", "card", "label", "decal", "document", "certificate", or similar, as used herein, includes, but is not limited to, cellulose and other wood based substances including cardboard, papers, paper coated plastics, plastic coated papers, light board, heavy board and other materials capable of retaining a visible or nonvisible image on the surface or under the surface thereof. The term "visible", or similar, as used herein, includes, but is not limited to, any coating which is able to reflect light within the visible or invisible spectrums or alternatively to reflect beams or waves of any type from a source such as artificial light, electrons, X-rays, microwaves, laser beams, sound waves, and others, and sensory methods of discerning the existence of indicia, images, colors, or a pattern either on the surface or within the coating layers. Visible may also mean a combination of optically visible and electronically or artificially visible coatings within one or more layers within one or more materials or coatings, or finished product created after transposition of one or more coats or substances.

Teachings of the present invention can also provide for access or light control functions, and can be used to create encoded identification passes which may be used by employees entering or leaving buildings. The term "building", "buildings", or similar, as used herein, includes, but is not limited to, fixed, mobile and transportable structures for any use including residences, places of business, manufacture, provision of services, for temporary use and include buildings for government, emergency services, military, medical, public use such as theme parks, libraries, zoos, and also incorporate the infrastructure such as entrances.

The term "transparent", "translucent", or similar, as used herein, includes, but is not limited to, any material from which partial vision through all, part, or parts of the material is possible and include examples such as glass, windows, plastic, films, papers and the like. Transparent may also mean structures through which the subsurface or interior coating can be "seen" by artificial means such as X-ray, electronic, magnetic, ultrasonic, and similar means outside the visible spectrum. Transparent also includes air or gas spaces, or portions where no coatings exist, which permit at least partial passage of beams such as light. The term "opaque", or similar, as used herein, includes, but is not limited to, the visible spectrum wherein a portion or all of the material does not transmit
visible spectrum light waves. It may also restrict invisible light waves such as ultraviolet, infrared and the like, and may also inhibit or shield nonvisible spectrum or frequencies of either light or radiation including magnetic, electromagnetic, ultrasonic, sound and radio waves or any combinations of the above or any new technologies developed in the nonvisible spectrum. Opaque substances may not transmit light, but may transmit one or more specific types of radiation.

The term "one way vision", "two way vision", or similar, as used herein, includes, but is not limited to, means to see through a surface or material from at least one side. Visibility may vary from one side to the other or in a multi-sided structure may vary from any one side more or less than any other one or more sides. It may also incorporate visible indicia on any or all sides or portion of any or all sides and may incorporate indicia all over one side and have a black coating on the other side or all other sides, usually with at least one light passage or pattern of light passages.

Unique base constructions, combinations of bases, and reusable bases, may also have reversible layers or may have certain portions of the base which do not permit release of the area of coating applied to that non-release area, such as the coatings will need to break to be transferred from one surface to the other, leaving behind coatings which will not release.

In certain situations, it may be necessary to take unique base constructions, particularly absorbent papers and to align one or more coatings to a position but then to allow separation of coatings. It is preferable to cut through the applied coatings and a previously applied release coating so as to shear the release coating and the coatings to define a new edge perimeter. This method then facilitates improved waterslide or water transfer techniques.

The term "patterns", "grid", or similar, as used herein, includes, but is not limited to, any one or more configurations of discrete elements, and/or discrete but interlinked elements, one large element or any combination of elements, coating, or pattern.
Examples of patterns would be lines, holes of varying shapes, multi-sided shapes, for example squares, octagons and the like, random curved perimeter shapes, patterns combining straight and curved portions, 2 or 3 dimensional shapes, and could combine flat and shaped or formed portions. Patterns may be regular, repetitive, random, symmetrical, asymmetrical, gradated, variable, and any other design or combination. A pattern may be a singular or a repeating duplicate pattern, or a random pattern or a combination of standard repeating pattern and/or a random pattern when created initially on a base material or when transposed from one or more bases. The pattern would be defined as having one or more edges and combinations of edges and/or different materials which can produce a single or multi layered pattern comprising single or multiple, similar or dissimilar materials to produce a visible result or invisible result detectable by other means.

It is possible to produce patterns on the base with, for example, heat transfer techniques, whereby that part of the coating which is directly in contact with the base will not separate and the base may even be modified to ensure higher bonding strength between the base and the coating in that area, while the other portion of the pattern or portions of the pattern which are applied on top of a heat release coat will transfer under heat and/or pressure to an intermediate or final surface. This makes the production of small, intricate patterns, such as would be useful on see-through surfaces, and more particularly for one way vision applications, to be possible. Such a base could have the release coat applied using known printing, or coating, methods in the selected area or areas of the base surface.

Treatment of the surface with recesses or protrusions permits unique patterns. For example, a logo of the company or business printing a particular document or certificate or image can transpose that logo into every item printed or transposed from that master base. With recesses in the base, it is also possible to fill those recesses with a specific coating and then to apply a subsequent layer or layers of coating on top, such that after transposition from the base, that unique coating within the recess is now protruding from the surface of the transposed coating. Examples could be a precious metal, a
reflective substance, a different color, light absorbent inks, reflectives, and the like to
differentiate and make the resulting protruding coating attractive or obvious to sight or
touch or both.

Alternatively, where there are raised protrusions on the base, it is possible to selectively
print the peaks of these protrusion without printing the lower area around them and thus
create a perimeter effect. Also, it is possible to print around the perimeter of the raised
section and then remove any excess print from the plateau of the raised section. The
raised sections can be of any shape and conformity including cylinders, pointed
structures, such as cones, or multi-faceted pointed structures such as a pyramid and
also to have multiple layers on the top of the protrudence such that there are numerous
recesses and protrusions on the top layers of one protrusion. By printing to an
edge of the available surface, a uniquely identifiable pattern is created.

Fig. 3B shows a cross sectional view of a typical construction shows three coating
surfaces 9A, 9B, 9C, where the lower coating surface 9A has a indicia coating 77
contained within perimeter walls 3. The middle of the three coatings levels is a see
through surface 6 such that visibility or light or energy transmission would be possible
through this section of the structure. On the higher of the three example levels, is a
dark monochromic coating 75 together with a white coating 76 and an indicia coating 77
as an example of three coatings which were applied above the higher perimeter edge 2.

Fig. 4E, shows a structure is shown whereby a base 1 comprises a multitude of
premade edges 2 in the shape of an "A", with coatings 5 applied on the edge 2 to align
with the perimeter 3. A base can be constructed from a disposable material such as
water transfer type paper, or a formed base made from metals, plastics, for other
durable materials or combinations of materials which can be reused.

Repeatable bases which always remain the same produce print examples which can be
used for manufacturing; for example, to check the tolerance of parts in a milling or other
process. The same base can be used to generate a transparent material with marked lines on it which gets placed over the manufactured part milled down to the size of the markings on the transparent material and are damaged in the manufacturing process and are then disposed of while the master is reused to make new templates.

While it is possible to create multi-layered structures and then to cut and weed out certain segments to create vertical edge walls, this procedure does not offer the precision due to well known factors such as inconsistency of the material feed, mechanical variation such as tolerances in equipment worn bearings, and the like and therefore, while producing a result, cannot repeatably produce a result in registration and further, does not allow any control over precise edges to coatings. One of the reasons for this is that as the knife, laser or other cutting tool cuts the surface and the edges of the coatings, it can cause one coating to slightly overflow to the other or to, in the cutting action, be forced down as the knife or dye cuts through the material layers.

A variety of bases may also be used as the final surface. Examples include flexible plastic films, papers, board, composites and the like where an image is applied directly to the surface of the material using painting, ink jets, electrostatic transfer, or any other equipment or method. The term "composite", or similar, as used herein, includes, but is not limited to, an arrangement of more than one material in either the base or in the final material or structure, or of more than one coating or layer, or more than one base with or without coatings, or bases or other surfaces attached together or in close proximity.

A product may be constructed by assembling printable material such as a plastic or paper base so that the material is cut and every alternate section is removed before or after printing. The cuts would be typically parallel and a preferred size for use with Fig. 50M-N would be about 1/37th of an inch separating each cut. If a version is made where it is desirable to not have any overflowed low viscosity ink visible in the sides of the remaining material, such that would cause a halo or ghost image, the material can be left cut but not separated until after printing so that no ink can overflow the side
walls. Alternatively, the product can be cut and the alternating sections removed before printing for reasons of cost. Separation after printing provides two images for the price of one or two images which form a matched pair for other purposes. This removal can occur immediately after the slits are made or at a later time. It is also possible that the alternating sections of material removed after slitting, but before printing, could be repositioned onto a second release liner to provide a duplicate product. Instead of wasting the material this means that even numbered cuts would remain on the backing liner while odd numbered cuts would be transferred to a new backing liner. Any of these steps provide two sheets of base or final surface for slightly more cost than a single product.

The edge cuts or slits could be at right angles to the upper surface of the material or could be deliberately angled in a variety of combinations as follows:

a) with the cuts in parallel so that angle of the cuts would be downwards after placement on a see-through surface, assuming the slits or stripes were placed horizontally on the surface.

b) the cuts were so constructed so that the remaining material had a beveled edge on either side of the gap, when the alternating stripe was removed.

c) the cuts may be constructed so that on one side of each remaining material is a cut at right angles to the material while on the other side the cut is at an angle either inwards or outwards from the upper surface so that a visual alignment could occur.

The cuts may be made before printing, after printing, stamp cut, rough cut, and may vary the ratio of solid area to open area at the same time. At the same time, it is possible to produce an embossed or cut surface or combine with other materials such as one way mirror film and laminate for UV protection, waterproof sealing or other materials. It is possible to combine static cling and pressure sensitive adhesive film regions, and advantages include: high speed production, utilization of existing machinery, reasonably economical tooling costs, known prior art of rotary, existing use of stamping machinery, and other combinations which provide different vision
percentages at different portions across the surface. The use of multi layer laminates can include film, paper, metalizing, and combinations thereof. Other layers of material may be applied across the base to provide a checkerboard appearance if the second web or base is at right angles to the first web or an illusion of diamond patterns is possible when the second material is placed at a suitable angle to the first material. Other combinations may be applied to other substrates including sandwiched between other adhesive backed films which are then subsequently attached to surfaces. It is useful to apply coated surfaces at various angles for reasons of air flow, drainage, fluid flow, cleaning of surfaces and the like. When using a pattern such as shown in Fig. 50M, one advantage is the deterrent to theft because it requires removal of hundreds of strips of coatings, compared to a one piece poster.

Coatings may be applied using any of the well known methods, such as lithography, offset printing, screen printing, inkjet printing, paint jet printing, hand applied with brush, roller or spray, vapor deposition, metalized surfaces, hot foil stamping, electrostatic transfer, digital printing, or transfer and any past or present technique which allows for the placement of visible and invisible coatings onto one or more surfaces, including onto or in proximity to other coatings. The term “invisible”, “not visible”, or similar, as used herein, includes, but is not limited to, substances not visible to the natural eye or which remain substantially transparent or clear where it is substantially invisible to the natural eye of people and animals and yet may be discernable by artificial or other sensory means such as ultrasonic or other devices which can measure the presence of a coating which is not readily visible in the spectrum of visible light. Invisible may also mean wherein the coating is hidden under at least one other surface and which, if on the surface of the material, would be visible. Examples include metalized coatings which are beneath non-metalized coatings such that the metalized coatings are invisible to the natural eye but are detected by means such as X-rays, magnetometers, metal detectors, and other electronic or artificial means of detection. Artificial means of detection can include any present or future measuring means or other means of detecting or reading nonvisible substances. Invisible may also mean indicia, which is visible when viewed from one position, but which is invisible when viewed from another
such as lenticular lenses or prism type constructions, or multi-prism type constructions. There are also multi-faceted lenticular type lenses in use, such that an image visible from one direction and visible from the other can reverse where another image becomes visible from the second direction whilst the image from the first direction becomes invisible, thus creating multi-image capability, well-known in the art. The term "read", "reading", "readable", "reader", or similar, as used herein, includes, but is not limited to, any coating or reflection of coating or partial or full image which can be seen by any method both natural and artificial, including the natural eyeball, scanners, magnetometers, electronic sensors, X-ray devices, microwave receivers, energy reflecting or absorbing measuring equipment, magnetic resonance imaging and any other present and future method of detecting the existence of a coating or coatings on or within one or more layers, whether by reflectance, absorption, transmission, or any other means or combination of means and whether partial or completely.

Coatings produced with precise perimeters may be used to act as reusable or disposable templates to check tolerances of manufactured parts and when formed on a transparent surface, such as a poly type plastic, may be overlaid on large areas of parts to provide a preliminary check of approximate tolerances or may be used as a transparency to project the pattern with or without enlargement or reduction onto a part such as to check approximate size and shape. It is also possible to produce patterns on transparent surfaces which are then formed on a common mold to provide an overlay for checking tolerances on formed parts.

It is envisaged that materials exist or have yet to be invented which will enable changes of visibility or composition or physical properties during the addition of an outside effect or force. Current examples include thermochromic inks which provide an opacity or transparency under different temperature conditions; polymers or liquid crystals which, when aligned in one direction cause a general opaque effect, whilst when aligned in a different direction causes a substantially transparent effect. It is expected that coatings would be developed which would provide short term transparency or opacity or color change or energy in radiation response. A simple example could be a coating which
when wet becomes transparent and when dry becomes opaque. Other examples could be coatings which inhibit transparency under certain radiations, x-ray, microwave, and the like and which are opaque in normal environmental conditions..

Coatings which are easily removable, for example, coatings commonly called "Scratch Off", can be applied to any portion of the material and can conceal identification marks which upon removal become visible and provide some form of indicia for a purpose. Alternatively, the coatings may be along the sidewall of one or more coatings such that, upon removal, they reveal the layers of coatings can then be identified to prove the authenticity of a particular material. Alternatively, materials which are very difficult to remove can be applied to any portion of the coatings, include sidewalls, such that removal will destroy part or all of the underlying coating or coatings, such as to make the material, document and the like unusable and unidentifiable. This could be used when it is desired to not have somebody be able to identify the underlying coating or coatings and they become destroyed upon removal of the surface coating, thereby concealing or destroying the original structure, to make it unrepeatable by another maker. Multi-layer "scratch off" coatings may be combined.

With multiple coatings, it is possible to cover an edge with the last coating, such as a flood coat, to conceal the underlying layers and after removal of this protective coat, to re-expose the coatings for analysis for typically authenticity to avoid counterfeiting.

Coatings which are viscous, flowable or solid at different temperatures and which return from a viscous to a solid state or vice versa upon changing temperatures can be used.

A coating which is susceptible to fading in ultraviolet light, such as sunlight, can be placed on the surface or, more commonly, within the layers of coatings, such that the main area of the coating is protected from ultraviolet light by coatings applied so as to be between that coating and the source of ultraviolet light, such as the sun. However, on the perimeter edge of the coating, an otherwise protected coating will have that portion exposed to sunlight, subsequently fade and provide identification of the
presence of that coating, which would not have been apparent to the naked eye at the moment of printing or coating, but which will have changed gradually over time with exposure to sunlight to become apparent. In the same way, partial cover coats, offering UV protection, may be placed in a unique pattern over the surface of coatings, such that the uncoated areas will fade more rapidly than the UV cover coat protected areas of coating. This will produce unique patterns. Of course, the entire area may be covered with a cover coat or laminate or UV protective, graffiti protective and other uses. In the same way, energy absorbing or reflective coatings can be applied either in full, or over partial areas, to restrict or prohibit energy such as x-rays, scanners, MRI, and the like from penetrating behind those coated areas.

Coatings which will melt under radiation, or at certain temperature points well above ambient temperatures, may also be used for identification purposes. For example, when a document or imaged material is placed in an environment of say, 100 degrees Centigrade or 212 degrees Fahrenheit, that coating may melt and dissipate or may expand or have another selected reaction. If it was a meltable coating concealed within the layers but which reached the edge, then the coating would melt out through the edged layers and become apparent. Alternatively, an expansive coating encapsulated within the layers would expand under heat and become apparent. Such an authentication method is very desirable for valuable documents, for identification of software, such as on the labels of software disks, and other anti-counterfeit or other devices intended to protect legitimate owners against duplication or copyright infringement and the like.

Certain coatings, energized by various forces including contact, heat, light and the like may release smells, such as scent, or may have a surface texture to provide unique feel to the touch or may have a modest surface electrical charge to discourage contact in areas of the surface or structure, may absorb light or reflect light in certain portions or have encapsulated cavities which are responsive to certain radiation. Encapsulation may include air, specific gases, liquids, flowable solids.
Thermochromic inks may be individually applied in a certain pattern so as to have part of the pattern change color at the appropriate temperature.

Illuminatable layers or light responsive layers or combinations thereof, for example, an electro-luminescent layer energized from a portion or from the edge of the material or a UV sensitive coating, which will become visible under ultraviolet light or infrared coatings sensitive to different light or radio frequency spectrums combinations thereof or any new technology for sensing or reading the existence or presence of a particular material.

Coatings may be sealed within laminates of other material, or multi-layer laminates with different materials or coatings between different layers that are transparent or opaque or partially one or the other. Whether it be one coating positioned in a precise position once or one coating repeated on one or more occasion, or one or more combinations of coatings built up on one base or one or more combinations from identical bases or one or more combinations from different bases or whether the coatings are applied or encapsulated in any number of ways, the edge or edges of perimeter coating alignment determine the position and perimeter of one or more coatings.

Coatings may be partially metalized or reflective over some section or sections of the area, such as reflectorized behind the key word of an advertisement or company logo, so as to be reflective under light, under sunlight or artificial light at night.

Some layers may be impervious to certain substances or radiation, may be absorbent to some outside action or may be transmissive to radiation, chemicals, light, and the like, or may be dielectric layers with vias as a conductive method for any purpose.

Edge material may be dipped into liquid layers and withdrawn to carry coatings to a surface.
Structural integral and self supporting structures, examples of which could be speaker cover grills whereby the material is coated onto a base either in one thick coating or in successive coats to build up suitable layers, such that physical holes exist in the structure. This would be an alternative to molding plastic, or mechanically perforating sheets or plastic to create sound passages.

The term "solid liner", "impervious liner", "solid backing", "backing liner", or similar, as used herein, includes, but is not limited to, at least one partially continuous or impervious layer or one or more locations of a structure, or base which provides numerous advantages, including for example the ability to retain a vacuum to lift and or transport a base through various printing techniques, or to catch over-spray from a painting or ink jet type application or to act as an insulator or conductor or restrictor for radiation or electrical current, other beam or exposure methods; to prevent the ingress of dust or other undesirable particles into the print area or coating area, to act as a overflow receiver when using flood coats and also as a separator for multiple layers or for transportation of stacked bases or coatings together with many other uses.

Fig. 16 shows a perspective view of a multi-layer construction attached to a see through surface 6 whereby a black coating 75 has been placed against the see through surface 6, a white coating 76 has been placed against the black coating 75, a conductive coating 70 or conductive layer 85 which may have been either a conductive ink, a diffusion grating pattern, a metal material applied via vapor deposition or foil stamping or other means, and an upper indicia surface 77 which can provide other visible information. The light passages 28 may penetrate through all the coating layers such that the see through surface can be used to view from one side or the other through the light passages 28. It is also possible that the upper surface material 77 may be transparent or use transparent inks, or use inks such as florescent inks or electroluminescent coatings or phase change coatings, any of which can be changed.
by the existence of an electrical current passing between the contact electrodes 61. The current may be AC, DC, or static electricity, or other energizing means, and the coatings may, depending upon the coating applied, become illuminated by the flow of current such as electroluminescent; may become opaque such as liquid crystal or polymer 60, which would rotate in a certain electrical state to prevent visibility through the material; may be partially opaque to reduce light, heat, or radiation through the surface of the material, such as for energy or heat control; may be used to illuminate coatings at night, may be used to produce heat from the resistance to electrical current flow, such as to cause thermochromic type inks to change color during the period of increased or decreased heating or cooling, and many other uses. It is possible to combine coatings such that each light passage 28 may be filled or partially filled with one or more coatings 74. All of the holes or some of the holes may also be filled or partially filled with the same or different substances to create a readable pattern. An example of this would include the use of a electroluminescent substance in some holes to form the shape of visible letters, which only become apparent when the current is flowing through the conductive layer, whilst other holes containing other substances may respond to the same current flow by changing color, and other examples. There are numerous possibilities including use of the light passages 28 as cavities which can have coatings individually applied into each cavity or where all the cavities are used for one coating or combinations for precise purposes, including the creation of patterns which only become apparent when external force such as radiation exists. It is also apparent that the addition of some external lighting source on the opposite side of the see through surface 6 to the coating side could, when illuminated, transmit light either through the light passages 28 or if the black coating 75 were not present, it could provide illumination through the coatings or other substrate materials on the see through surface 6 such as to illuminate all areas so chosen. In that situation, a coating may become opaque when the current was applied, or transparent when the current was applied, as applicable. It is possible to create areas whereby the rear illumination would not transmit through those sections, and that would also create a unique pattern. The choice of photochromic inks or other coatings susceptible to that light source could also be used together with florescent inks or other materials which absorbed and
created an apparent brilliance from the coatings whether they be in the main surface or as a coating, or encapsulated within layers of transparent or partially transparent materials such as inks or plastic films, or are deposited selectively in one or more holes or light passages.

For example, an electroluminescent layer can be energized from a portion or from the edge of the material or a UV sensitive coating, which will become visible under ultraviolet light or infrared coatings or other coatings sensitive to different light, or radio, frequency spectrums including combinations thereof or any new technology for sensing or reading the existence or presence of a particular material.

Polymer materials, similar to liquid crystal, which can be electrically charged in different layers using via’s to take the current to the appropriate levels, and therefore create changing patterns. A dual construction whereby one layer is energizable and another layer is separately energizable such that you can have the combinations of both layers off, which means you would see through the entire surface. Both layers on would mean the surface was opaque, one layer on the other off would mean that you would see through the percentage according to the layer turned on or off - if, for example, they were 50% each, then you would have 50% visibility when either one was on or off and if the percentages were adjusted, you would be able to have, for example, two thirds on, one third off and the reverse.

If metal or conductive ink coatings form part of the coating on a see-through surface, such as glass, and if the glass is broken, either by accident or in a burglary, then a current which was passing through the conductive layer, will cause an alarm signal to sound but the burglar may not be aware of the existence of the metallic or conductive layer and will be unaware that the alarm has been triggered.

Fig. 17A shows the construction of a material comprising a series of edges 2, in this example round holes in a repeating pattern, built as part of a base 1 which has been attached to a solid liner 44. The holes 20 to create the edges 2 may have been
produced in the material by well known art including perforating, punching, die cutting, laser cutting and the like. The use of a solid liner 44 could facilitate handling of the base 1, containing holes 20. The purpose of the liner 44 could include holding a vacuum on equipment handling the base for coating, or to add strength to an otherwise flexible or fragile base which would have lost rigidity because of the presence of the holes 20, or to catch excess coatings from and stop excess coatings transiting the cavities 20 during spraying or application means, or to act as a separating device such that the sidewalls of the holes could be coated deliberately with, for example, metal from vapor deposition, sprayed coatings of liquids, or if the base 1 were of a metal construction, magnetically or electrostatically applied or responsive coatings. The sidewalls of the holes 20 could be deliberately coated in this manner, and then the upper surface of the material could use a portion of the teachings of the present invention to apply coatings to a coating surface 9. As any sprayed or other applied coatings would also touch the solid liner 44 within the area of the holes 20, separation of the two structures would mean that the solid liner 44 could carry away any residual coating which was on its surface, and leave the base 1 with coatings on the sidewalls of the holes 20 in addition to precisely aligned coatings on the upper surface 9. The structure as shown in Fig. 17A can also be used as a temporary base for repetitive reproduction and transposition of coatings from its surface to an alternative surface, by including release points, coatings, or similar in any location.

Fig. 19A shows a plan view comprising the use of two locator pins 56 as one example of a method to align coating layers prepared on one or more bases where the bases would have had a common reference point, such as locator pins. There are obviously numerous ways of aligning, including a corner registration method, and many others. The example shows an indicia A, a series of holes 31, a large cavity 20, a series of light passages 28, and opaque and transparent sections are possible. Numerous possibilities where one or more of the coatings of any type or combination of types may be used to produce unique results. For example, it would be possible that the upper surface has the cavity 20 but that surfaces below the upper surface do not have the same cavity, and indicia would be visible on the lower level visible through the cavity 20.
Also, light passages 28 may permit light through the entire structure, or through one or more layers of the structure until obstructed by another layer in the multi-layer structure envisaged.

Fig. 19B shows a side elevation showing an intermediate or final surface 17, although this may be an intermediate base with the locator pins 56 which are either subsequently removed, or which is used to build up the construction, and then the entire construction is transferred to an intermediate or final surface. In this example view, three individual layers of coatings are being applied, with the lowest coating already attached to the surface 17 and the second and third layers are being transposed downwards in direction 66 so as to bring all layers into contact. Transmitted radiation 256 is shown transiting the multiple layers being applied. Reflected or absorbent surfaces, for example indicia 8, are apparent in different positions. It is also possible for part of a layer to be transparent 26 such as to permit visibility through the transparent layer 26 to the indicia 8A of a layer beneath the transparent layer, at least in one portion of the construction.

Fig. 22A shows a base 1 prepared with a surface treatment, such as a release coat, ready for the reception or application of coatings on the edges 2 to define the perimeter 3 for a coating surface 9.

Fig. 22B shows an example where three coatings have been sequentially applied to the coating surface 9. For example, these coatings may be a black coating 75, a white coating 76 and a colored indicia 77. Alternatively, the colored indicia 77 may be a mono color, reflective coating, reactive coating and any of the three coatings may be of any type, combination of types, or may even be multiple levels of the same coating, in any embodiment, or example, herein.

Fig. 22C shows the now coated base 1 brought into contact with a see through surface 6, such as glass, for transposition of the three example coatings to the surface of the see through surface 6.
Fig. 22D shows the transposition step 24 whereby the base 1 has been removed at the separation point 14 from the coatings which are now applied to surface 6. There are numerous well-known methods in the art for causing separation of layers at different points under different situations and, by way of example, it is possible that release point 14 may have been an adhesive of a lower adhesion peel strength than the adhesion between the coating 75 and the see through surface 6. If no adhesion is used, it is possible that coating 75 may incorporate a material which melts or otherwise responds to heat and/or pressure to cause adhesion to the see through surface 6 or any other example whereby there is a release occurring. It is also possible that separation point 14 may be a substance which dissolves in water or other substances or separates in exposure to light, or other well-known methods in the art.

Fig. 24B is a plan view of the lower surface of a cover over such a light fixture and demonstrates examples of some possible patterns to provide control of lighting direction. The holes 31A may be large as shown on the left, or of a different size 31B as shown on the right, such as to permit partial light transmission, from the fluorescent tubes, through those holes. The large light passages 28 can allow complete light transmittance from the light source. The different shaped light passages 28A and 28B permit controlled light in a particular shape. The strip light passages 28 permits strips of light to transmit the material 26. A black coating 75 stops transmission of light through certain sections between light passages 28C. A partially light transmissive section 251 allows a controlled percentage or quantity of light to transmit that area. Using the present invention, it is now possible to produce a mono or multi colored image on the printing surface of material 26 and yet to have in perfect alignment a reflective surface on the opposite side, facing the illumination source. An upper reflective surface can be used to reflect light from opaque or partially opaque sections of the material, which is illustrated in this plan view, so as to maximize the reflected light in the lighting compartment above.
The term "light transmissive", "light transmission", "transmissive", or similar, as used herein, includes, but is not limited to, the capacity for visible light or invisible light spectrum radiation, for example, infrared light, to be at least partially transmissive from one side of a material to the other or from the exterior to the interior of a structure and the reverse. A coating or layer of coatings may have variations of light transmissiveness from one portion to another portion, or portions, of the material to produce a different light transmissive pattern on the second side. Light transmissive may also refer to invisible spectrum radiation, such as ultrasonic radio frequency, electromagnetic and other forms of invisible radiation which may be transmitted from one side of a coating or coatings to another, or reflect off of a portion of at least one coating, or reflect or refract within or through one or more coatings.

Fig. 24G shows a front view of an example indicia 8A "CAKE". Fig. 24H shows the example indicia 8B "OPEN" which would be printed together with any one or more colors as required, as a graphic image on the material closest to the light source and may be a typical transparency, well known in the art. It is possible, by processing a structure as shown in the present invention, to produce a transparent indicia on the upper surface such that indicia 8A shown in Fig. 24G will transmit light from the light box when illuminated, as well as reflect light from the front surface. Such products are commonly known as transparencies. When using a common base to produce the front panel, it is then possible to produce opaque coatings 8B on the inner surface but only behind the light passages 28 as shown in Fig. 24F, and as shown by way of example in Fig. 49A - E, such as to produce dual imagery from a common base and to let light transmit through between the indicia 8B when the light source is illuminated. Alternatively, the inclusion of part or all of the teachings as shown in Fig. 16 may be incorporated, such that electroluminecent or other coatings may be controlled via electrical current flowing through a coating, such as a conductive coating 70 shown in Fig. 16, to provide other unique effects in conjunction with the teachings of this embodiment, together with any other example or embodiment of the present invention.
Fig. 29A is an example of a see through surface 6 such as glass 244 as may be used in a building or vehicle, such as the sun roof of a vehicle, whereby the occupants could look out through the sunroof and in daytime observe a scene outside, such as the sun 253. The term “vehicle”, “vehicles”, or similar, as used herein, includes, but is not limited to, automobiles such as cars; transportation vehicles such as buses, trams and trains, airliners, helicopters, motorcycles, boats and ships, space travel vehicles; underwater vehicles such as submarines; recreational vehicles such as motor homes, caravans and trailers; emergency vehicles such as police, fire, and ambulance; military vehicles such as trucks and jeeps; security vehicles such as armored cars; goods transportation vehicles such as vans, delivery vehicles, light and heavy trucks and the like.

Fig. 29B shows an example of four different indicia applied to the example sunroof of Fig. 29A such that indicia 8A, 8B, 8C, 8D may be different coatings, colors, indicia, logos, background colors, multi colored artwork, logo of the automobile manufacturer, or any other image or identity for any purpose, including color coordination to the color of the car or to graphic treatments of the vehicle, in this example. The term “identity”, or similar, as used herein, includes, but is not limited to, logos, mono or multi colored signage effects to convey recognizable shapes which are the recognized name or symbol of a company, hotel, retail, restaurant, family name at a residence and the like and in commercial use may include a corporate logo or color treatment of any size, and in residential use may include a message, or to identify the resident. In a commercial environment, identity could indicate the name and other information of the business occupying the building or the business or others who own or use vehicles, buildings, documents, or other readable structures, upon which the identity is located. From the outside of the vehicle, a viewer would see a multi colored artwork, as exampled in Fig. 29B, on top of the see through surface 6. Occupants inside would see through the light passages printed in the material, and have the view shown in Fig. 29A. In addition to sunroofs, it is possible that part of the front, rear or side windows of vehicles may be treated with the present invention to produce a variety of indicia in one or more portions of a see through surface such as a window, and yet to retain visibility through that window from the other side.
By creating a pattern on the back windows or other windows of motor vehicles and incorporating a coating of metalized material, such as by vapor deposition, it would be possible to have a substantial area of a window evenly heated from a layer embedded in the coatings. From the inside of the vehicle, you would see between the black coatings through the light passage and from the outside there could be one or more colors including a decorative image. Between the coating layers and in the layer in close proximity to the window would be a metal conductive surface or a series of partial surfaces on one or more electrical circuits, connected to an electrical source to generate heat, which is conducted to the glass for the heating of the glass to remove ice, snow, condensation, water vapor and the like.

Automotive vehicles, including rear windows, side windows, sunroofs, striping or sections across windshields, and for camouflage for glass on military vehicles, can incorporate inks that can change color with heat or electrical current. On any application such as offices, homes and any other surface, either see through or not see through, an image or wall mural can be printed in sections to change color with perfect alignment of the colors underneath the top layer.

Fig. 30A shows indicia 8A which is a perimeter treatment of one or more colors, a gradiated indicia 8B whereby the degree of sun protection across the top of, for example, a windscreen or windshield of a vehicle, or other see through surface 6 uses, such as buildings, would permit reduction of the glare from the sun while still permitting visibility out from the inside. The term "gradiated", "graduated", "screened" or similar, as used herein, includes, but is not limited to, any variation or variations in the density or area of coverage of coatings, light passages, structures, or effects from one part of a base or material or surface when compared to one or more other parts of the material or adjoining material. Examples would include windows or other see through surfaces whereby it is desired to have a greater coating coverage in a bright sun area and a reduced coverage of coating in areas requiring greater light transmission, heat transmission or visibility. Indicia 8C can be the identity of the automobile manufacturer, or any other visual indicia including color treatments, logos, or any other visible form of
coating. The remainder of the window glass 244 may be uncoated, and therefore the perimeter 3 of and between indicia 8A, 8B, and 8C are in alignment with no misregistration faults, even when indicia is multi color within the areas of indicia 8A, 8B, and 8C.

Fig. 30B shows the view through the see through surface 6 of Fig. 30A such that an observer inside the vehicle may see view 87 of the outside world, in this example a tree. The dotted lines in Fig. 30B are there to indicate a location of the indicia shown in Fig. 30A although a viewer on the inside would see through that indicia, using light passages, the constructions of which are taught herein and the uses for which are well known in the art. To provide a multi colored image on glass, such as vehicle windows, it is possible to print multiple layers of ceramic ink in any order, such as for one way vision or other uses, or as substantially opaque coatings whereby each of the coatings are applied in turn. This means that from the inside of the vehicle, you would see the coating intended to face in that direction, whilst from the outside of the vehicle you would see an entirely different coating, and the perimeter of these multiple coatings would be in perfect alignment if the transfer paper technique, as taught herein, were used and where the shape of the edge of the coating was cut after the coatings were applied so as to create a precise edge. Alternatively, if the edge of the transfer material had a release coat as shows in Fig. 38C, then the coatings could be applied on the coating surface, and subsequently release to be applied to the glass using any technique. Usually, ceramic frit type inks are used in this application to provide durability on tempered glass - however, other coatings are usable. The same technique could be used to print a band of at least partially opaque coatings on see through surfaces to restrict angles of sunlight.

Fig. 31A shows a view of one side of a see through surface 6 such as might be used for an oven door, microwave door, and the like, where the manufacturers logo 8A "SHARR" may be visible against a background indicia 8B whilst still permitting visibility through the layers through one or more light passages into the interior of the oven. Fig. 31A symbolizes a view from a distance in front of the oven, such as to not make the light
passages apparent until the viewer comes close enough to identify the shape and location of the light passages. When the oven is illuminated, such as when operating, the food inside will become visible through the light passages.

Fig. 31B shows the opposite side of the surface of Fig. 31A whereby the see through surface 6 has been coated with a coating 47 such as to leave more than one light passage 28 to facilitate visibility from the other side. A reflective coating may be used to be reflective to radiation, such as microwave, or may be heat reflective such as to return radiant energy back into the oven, while still permitting visibility through the light passages 28.

Fig. 33 shows an example of a multi layer or multi coating structure which could have been manufactured in numerous ways, such as where the coatings were applied on a base, were then transpositioned to the solid liner 44 for handling and relocation. Fig. 33 also shows a transparent laminate 45 being moved into contact with the surface of the multi layer coatings in the direction of movement 66. The coating construction comprises at least one light passage 28. An example of coating orientation, for a specific purpose, is where coating 40 may be an adhesive coating which will separate from the releasable solid liner 44 for subsequent transposition to another surface, such as a see through surface. Mono or multi colored indicia 77 has been applied on top of the adhesive liner followed by a white coating 76 and a monochromatic or black coating 75. It is equally possible that the black coating may be placed against the base, and the coatings build up in reverse order with the adhesive 40 and solid liner 44 being a combined structure which has been prepared from the same base. Other coatings such as a coating 65 may be applied for any purpose and, for example, may be an opaque white coating, a transparent coating, or a reactive coating, and other coatings may be further applied such as a reflective coating 83, a vapor deposited coating of any thickness including partially transmissive and partially opaque coatings. It is possible to have numerous combinations of coatings placed in any order on any one or more levels
of a structure of a base, such that the possible combinations are too numerous to teach individually in this present application.

To produce a material with a defined edge or edges with one or more colors in exact registration for ceramic frit ink transfer to glass, the steps are: Prepare the base with the desired pattern, for example, the pattern could be a band for use across a car windshield, a pattern comprising a plurality of intended light passages such as round holes in a staggered pattern, parallel stripes or any other shape or shapes. The base may be produced by cutting, perforating, removal of a portion of an original coating, and the like. The preferred embodiment is to have a precoated paper with a release coat. The coatings are then applied to the base. For water transfer, the paper, together with its coatings, would be soaked in water and then the coatings could either use the waterslide technique to be transferred to the see through surface, in this case, glass, or using the water transfer technique, may be applied against the surface of the glass, and the base, in this case, paper, would be removed by peeling back or sliding it from the surface of the coatings. When the water transfer inks with their cover coats have been reasonably dried, the glass, together with cover coatings now attached would be placed in a tempering furnace, also known as a toughening or tempering oven, and processed in the normal way, to fuse the ceramic ink coatings into the glass. Upon removal from the tempering furnace, the image has now become fused into the glass and is permanent. It is possible to fuse the ceramic inks into the glass and is permanent. It is possible to fuse the ceramic inks into the glass without tempering the glass, but it is assumed in many applications it would be normal to do both functions at once.

To produce a material with a defined edge or edges with one or more colors in exact registration for see through posters, the steps are: Prepare the base, such as paper, with the desired pattern comprising a plurality of intended light passages such as round holes in a staggered pattern, or any other shape or shapes. The base may be produced by cutting, perforating, removal of a portion of an original coating, and the like. The coatings are then applied to the base. The base is then applied on or in close proximity to or transferred to the see through surface.
To produce a material with a defined edge or edges with one or more colors in exact registration for paper see through posters, the steps are:

Prepare the base, such as paper, in a suitable size, such that one side is light reflective and the other side is light absorbing. The coatings or image are then applied to the light reflective side. Create the desired pattern comprising a plurality of intended light passages such as round holes in a staggered pattern, or any other shape or shapes. The holes may be produced by cutting, perforating, removal of a portion of an original base, and the like. The base is then applied on or in close proximity to or transferred to the see through surface. As an alternative embodiment, an image may also be applied on at least a portion of the light absorbing side, in a contrasting colour.

Fig. 37A shows a perspective view of a construction whereby a solid liner 44 has been located behind a base 1. As an example, base 1 may be a paper of a water strength type used for production of and transfer of ceramic inks and other inks to glass, coatings, plastic, or ceramic surfaces. Papers known as water slide or water transfer have been used in the ceramics industry for many years. By processing the paper in the teachings of the present invention, so as to create a series of perimeter edges, it is possible to produce a construction, as an example of configuration, as shown in Fig. 37A. Holes 31, being round and in a staggered pattern, provide approximately 50% of the surface area as coating surface 9 and the remaining 50% of the surface as light passages 28. The liner 44 may remain with the base 1, or be easily removed or separated before or after coating or imaging.

Fig. 37B shows a base 1 a cross section through the joined materials of the liner 44 and the base 1 or may alternatively be a prepared base 1 with some form of release coating suitable for this type of process. As examples of the numerous coating combinations which are available, there could be a black coating 75 applied to release coatings on the paper base 1, followed by a white coating 76 and one or more indicia or colored coating 77. For water slide transfer, a cover coat, such as an organic coat 80, may be applied on top of the material. If the coatings 5 were of ceramic frit or ceramic ink type
constructions, then it is normal in this well known process to have the ceramic ink in intimate contact with the glass surface prior to firing, tempering, or fusing. The coatings may be oriented in any particular order, according to the visual results required on the glass or for water transfer or other direct transfer methods. The image and indicia may be printed in reverse or mirror image, and additional coatings applied as required such that after transfer, the orientation of the image on a particular side of a piece of glass reads correctly. It is also possible to print the coatings on a suitable base, and to transposition the coatings from a non porous base, as an example, to a coated paper known as waterslide or simplex paper whereby the coatings made on the base do not penetrate the coatings previously applied to the waterslide papers and thus do not bind to the paper fibers, and thereby are not restrained in their transposition via waterslide or water transfer to a glass or other material. When transposition is being used, the coatings would be selected and images orientated according to the steps to produce the correct orientation of image on the finished product. As an alternative example, it is possible to produce paper bases with perimeter edges which may then be oversprayed or separately coated with release coatings to seal the paper fibers, to prevent the paper from coming into direct contact with one or more of the coatings.

Fig. 37C shows the example construction 1 of Fig. 37B being soaked in water 41 as a well known step, to prepare for release of the coatings from the base paper.

Fig. 37D shows the known technique of water slide, whereby the paper base 1 is being removed from under the multi layer coatings 5 in the direction 66, and any residual water 41 is being left in the holes 31 and may be squeegeed out or evaporated out prior to firing or tempering. The ceramic ink structure has then been transferred to the surface 17 of a sheet or pane of glass 6 to form a see through surface such that when the water 41 evaporates out of the holes 31, the holes 31 will become light passages 28 in the coatings 5 on the surface 17 of the glass 6. This technique is known in the industry as “water slide transfer”, and the teachings of the present invention offer enormous advantages over the current art. The holes in the material provide numerous print edges in this series of figures, but the perimeter of the coating area may be any
shape and for any purpose. Areas of the coatings where print is not required can become open areas in the coatings, whether or not the purpose of the process is to create a one way vision or two way vision effect, or not, such that water evaporates readily from large areas of material via the holes, and does not get trapped under the surface of the coatings. Water, air, and other substances trapped under coating layers can expand as rapidly when the glass is being fired, fused, or tempered, and cause damage to the coatings and/or reduce their fusion and adhesion qualities into or onto the surface of the glass. If hole patterns are not the desired choice, but a pattern comprises a large solid area, then perimeter printing can still be used to orient the coatings to the edge and the perimeter may be made by having an existing perimeter on the base, or alternatively creating a base via other means such as cutting or using more than one level to only permit the required portion of the coatings to come into direct contact with the glass as part of the steps prior to tempering, fusing, or firing, such that the ink or other coatings may form a defined edge.

Fig. 37E shows a processing step well known in the art called tempering or furnace firing which is commonly used to fuse ceramic ink into glass, with the improvement of the ink which had previously been transposed in the teachings of the step in Fig. 37D or as shown in Fig. 37F and 37G such that water which would have been present in the water slide technique shown in Fig. 37D will evaporate through the holes 31 in the coatings, and thereby solve a problem inherent in the prior art. The heating sources 91 produce heat which causes fusion and in tempering ovens, also acts as a tempering or toughening procedure, well known in the art, for tempering glass. The holes 31 or other cavities in the inks provide a release area for water to be removed from the surface, or from within the perimeter edge of the coatings to evaporate off as steam 41. This evaporation aids in providing large expansive areas of coatings and permits improved adhesion between the coatings and the glass surface, which generally require to be in intimate contact with each other to aid this process. This is an improved embodiment of the techniques of the known prior art, and provides for a one way or two way vision result, if needed. Large areas of glass may require the use of multiple adjoining transfers because glass can be made in sizes larger than popular printing press sizes.
Fig. 37F shows a heat and/or pressure transfer method for coatings whereby a base 1 which may have holes 20, indicia 8 on a coating surface 9 is being fed through rollers 57 such that an intermediate or final surface 17 will receive the indicia via transfer techniques, where such techniques are themselves well known in the art, but the use of a unique base 1 provides for the creation of a unique image or indicia 8 on intermediate or final surface 17. It is common in such methods that the transfer or transposition of coatings from the base to the other surface is conducted via either heat, pressure, contact, or combinations of these, but also may be accomplished by other methods such as magnetic attraction and repulsion from one surface to the other, or electrostatic attraction or repulsion, or with coatings which are reactive from the base to the intermediate or final surface such that upon close proximity or contact they have chemical reactions that cause transposition of the coatings, and many other methods. After transposition, the indicia 8 is now visible on the intermediate surface 17 and it is possible in this example that the reverse image visible on the intermediate surface 17 could then be transposed to another surface be it a base or final surface, such that the print orientation becomes correct. The use of holes 20 causes the creation of light passages in the printing and in the indicia 8 on the surface of the material 17. The direction of movement 66 is to allow the rollers 57 to perform the transfer function of this example.

Fig. 37G shows a prepared base 1 comprising indicia 8 coated so as to leave light passages 28, formed by the edges 2, ready for transposition to the surface 17 of a see through surface 6, such as glass. The coatings and indicia 8 may be prepared with some form of adhesive or other means to temporarily or permanently attach the indicia 8 to the surface 17 after bringing the base 1 in the direction of movement 66 so as to place the two materials in intimate contact. After transposition, the base 1 would normally be removed and either reused or discarded. Alternatively, base 1 may be itself an intermediate or final surface, such as a film of transparent or other structure, and may be adhesively or otherwise fixed to the see through surface 6 so as to remain temporarily, semi permanently, or permanently in place. The term "semi-permanent", or similar, as used herein, includes, but is not limited to, coatings which remain fixed in
normal use but which can be relocated by transposition, or removed with special cleaners, scraping action, mechanical removal, removal by the application of heat or cold to cause dissolving or release of the coating, radiation, heat, or other means of causing the removal of the coating whether done by liquid, powders, air abrasion, water jet, chemical, light beams (such as laser) or radiated sound waves, such as ultrasonic and the like, and includes adhesives so described. Base 1, after transposition to the window, may become a surface to which overcoatings may subsequently be applied or to which other substrates or materials may be applied, assuming base 1 was made from a master or whereby base 1 was reused to reprint additional coatings of the same configuration and the same light passages to provide multi coating capability on the surface of the see through surface.

Fig. 37H shows a base 1 prepared with light passages comprising edges 2 to all the light passages, and an indicia over the remaining surface of the material. It is possible that an identical repeating pattern is placed over the entire base area or over a portion of the area, or to have different patterns on different portions of the base according to the required design. Assuming the base and its indicia included a coating such as adhesive to permit attachment to the surface, then the step of transposition would make that occur. Alternatively heat, pressure, or other means may be used to ensure attachment of the indicia coatings, and other coatings which may be beneath the indicia or not easily visible. It is possible for a second indicia to be in direct contact with the base 1, and this indicia, which is currently not visible in Fig. 37H, would become visible on the upper surface after the transposition step to the surface of the glass. Other uses include retail stores, both for food and other consumer items, where it has become common merchandising practice for manufacturers of goods to negotiate with the store owner for certain positions on the shelving in the stores which, it is believed, gives the manufacturer an advantageous position relative to the consumer. In supermarkets this would be the end caps at the end of each aisle, and positions along the central height of the shelf which are most visible from the average height of adult shoppers. As a further means of reinforcing the manufacturers rights to this shelf positioning, it would be possible to use glass shelving of the present invention.
whereby it is possible to have the brand identity of the product on a shelf, particularly when the shelf angles downwards toward the consumer and yet retain visibility through that shelf to the shelf below. A simple example would be the sale of athletic shoes whereby the typically white shoes would be placed on the black side of the material and allow the consumer to see down through the shelf to the shelf below. Printing can be superimposed against the black background to portray the corporate logo and brand identity of the product that should normally be displayed on that particular shelf.

Fig. 38A shows an alternative method of transfer which can either be a direct transfer using adhesive, or other methods known in the art or disclosed in the present application, or may be a continuation of the steps shown in Figs. 37A, 37B, and 37C, whereby the base 1 has, together with its coatings, and holes 31, been brought into contact with a surface 17, such as glass, such that the coatings are in intimate contact with the glass surface and the base 1 is being removed in the direction 66 to leave the indicia 8 on the surface 17.

Fig. 38B shows a similar process to Fig. 38A but the base 1 is being removed in direction 66 after transposition of indicia "A" and other visual images 8 onto the surface 17 of a material. The images were formed on paralleled striped ridges 67, in this example so as to provide a partial coverage of image on the surface 17. There are many uses for this technique including one way vision, combinations with previously or subsequently applied coatings, for energy or light control or to form air or gas cavities between the coating areas when the coatings are brought into intimate contact with a solid surface.

Other materials for one-way vision have existed whereby perforated plastic films, with adhesive backing, were produced using round holes. Perforated black vinlys, with colored images have been used for advertising and other purposes.

Perforated film, such as vinyl, offers advantages over transparent films covered with discrete dots, in that the view through the see-through surface is substantially
unobstructed and the viewer sees a quality of optical clarity identical to that of looking through the plain glass except in the areas where the material is not perforated.

The present invention provides for the ability to manufacture a varying relationship between the area of printed image on the front surface of the invention and the area of light passages available for viewing through the material from the opposite side. Also, the coatings adhere well to a see-through surface because the preferred process has a continuous material surface and yet enjoys superior optics and far reduces processing compared to the etch-based printing methods.

For interior mount construction, or for transposition, the base would be first printed with a black or substantially dark monochromic coating, and for print reasons this would normally be covered with a white coating to provide a suitable background for the multicolor coatings, then one or more colors of image are applied to the surface. This means that when attached to a see-through surface the viewer would see through the light passages between the areas which appear black to the viewer. From the opposite side, typically the outside of the see-through surface, the viewer would see the colored image on the front and enjoy the phenomenon of having very minimal view through the material, particularly when the exterior light is brighter than the light behind the image.

For exterior mount construction, or for transposition, the construction would be a reverse printed one or more colored image, next would be applied a white color to provide a background for the colored image, next would be applied an opaque black coating. The material would be attached to the inside of the see-through surface and the viewer would look from the black side and see through the light passages to see the view outside the see-through surface. From outside the see-through surface, the viewers optics would be through the glass, through the adhesive, if present, to see the colored inks which were printed onto the surface in reverse image at the time of printing.
It is also possible that a liquid ink could be allowed to flow in the lower area of the base assuming the material were held in a horizontal position and coatings could then be applied in that manner. Additionally it would be possible to create a mask which would cover the upper surface areas so that a spraying or other method of applying the material such as inkjet printing, airbrush, or similar could then only reach one or more levels in the substrate. The preferred embodiment is to print via traditional methods onto the upper level of the material. It would be possible to create unusual effects by having several levels in the material and appropriately coloring or imaging different levels with different treatments. An example of this would be where the deepest level may have a gold or similar metallic type reflective material, the middle level as an example may be transparent, and the upper level with printed images. When the viewer was directly in front of the material, they could see into the cavities of the lower levels and see light reflected such as by a mirror. When at an acute angle to the plane of the material, the image in the lower cavities would be invisible and they would only see the upper surface colored images. This would create unique visual effects in an affordable way. In another embodiment, it would be possible to selectively print part or parts of the image on the rear surface as well as, or as an alternative to, one or more levels on the front surface. This can create controlled visual conditions. Controlled angles of view could be achieved by printing, for example, a black coating in a different position on the rear surface as a discrete or contiguous pattern so as to provide a different alignment of the light passages so that it was only possible to see out in certain directions. This would be achieved by offsetting the gap in the black printing so that it wasn't directly behind the uncoated area on one of the front levels. For example, by offsetting it 50 percent of a hole diameter to the right it would be possible in an material of a certain thickness to create an angle of view that was 45 degrees to the plane of the material. This could also be used to provide downward visibility whilst offering some screening effects from the overhead sun.

It is possible to reverse the orientation of the material against the see-through surface such that one of the levels is attached or in close proximity to the see-through surface and this would leave air gaps between the see-through surface and the lower level or levels of material whilst the external surface exposed to the air would be substantially
flat. The other variations of the material could include protrudences on the front to create another level and recesses on the rear positioned in structured alignment so that light passages were created in either the upper level on the front or the lower level by selectively printing on the rear surface.

The present invention could also be composed of multiple materials whereby additional laminates could be applied over the front surface for graffiti protection or weathering reasons to provide vandal protection, ultraviolet protection from fading and the like. Also this product would be ideal for electrostatic transfer imaging and other direct transfer methods because of the relative smoothness of the upper surface level which would be receptive to toner without the problems of positioning the toner to leave light passages.

Further, perforated material using closely spaced holes, when mounted on the exterior of an automobile rear window, can cause visibility to be reduced in rainy conditions, where the rain drops settle into the holes on the angled window and do not always clear quickly when driving. The present invention solves that problem when the orientation of the interleave material is installed in a vertical manner, aligned from the top of the window to the bottom, so that water exits the sections without undo buildup.

Printing on both sides of the material prior to installation or printing images back to back provides the capability for people on one side of the material to see one image and people on the other side of the material to see the same or a different image according to requirements.

Combinations of partially transparent and substantially opaque areas where the transparent area can be activated with an electrochromic coating or other method to make the transparent areas substantially opaque for privacy reasons at night. Structures which can be successfully backlit or which can be totally backlit, where only portions of the image are visible through partially transparent, or not totally opaque, areas and an image is visible when one side when it is illuminated and the other side
isn't. Fig. 42E shows a cross section of a light chamber 30 which is provided with an illumination from a light source 33, in this example exteriorly of the light chamber 30. Surrounding one or more perimeters of the light chamber is a reflective surface or material 46 which may be comprised of a vapor deposited metalized surface, a silvering treatment such as a mirror, a reflective film attached in a variety of ways, a dipping process to coat the light chamber 30 material, and other means. A coating aligned in one or more cavities can incorporate a fluorescent coating 68 or any other type of material which may respond to, transmit, or react to the light entering the light chamber 30 from a light source. Alternatively, the reflective coating 47 may be printed using the techniques of the present invention, and the coating indicated 68 may in fact be a cavity that allows light transmission through a transparent upper surface, which can be a transparent coating or material 81 or may be a protective coating 78, transparent or translucent laminate, or any other material. It is envisaged that if a liquid or flowable coating 68 were used then the upper protective material would be of a solid and generally non porous construction such as a laminate 45. Using two or more light responsive coatings 68 or reactive, reflective, refractive on top of the coating 68 or as a complete upper coating to fill the holes presently occupied by coating 68, it is possible for light to transmit from small openings and yet to diffuse, refract and the like through one of more coatings to provide unique pattern. If the upper surface of the example material 45 had been coated with a pattern comprising any feature to restrict or prohibit transmission of light in portion of it, patterns and other visual indicia can be created without the light source being readily apparent. Also, structures comprising one or more layers or coatings can produce multi-layer reflectivity. The term "multi-layer reflectivity", or similar, as used herein, includes, but is not limited to, any two or more layers or portions of layers in or as coatings where one or more of the layers may have different amounts or directions of reflectivity, may have different rates of reflectivity and may retain some light transmissiveness, may provide for a total barrier to all energy, thereby reflecting any and all energy sources, may selectively allow transmission of one form of energy, radiation and the like, while restricting in whole or in part other types of selected energy radiation and the like. Also, multi-layer reflectivity includes layers which are bounded by reflective surfaces, such that radiated energy, such as light, is retained
within that particular coating layer and is not transmitted out except in desired positions, methods, frequencies or quantities. Numerous uses may be made of constructions combining features of the present invention and, by way of example, the use of photochromic coatings as part of the structure. Alternatively, uses of any of the examples or embodiments of the present invention may be enhanced by the use of laser film which typically is a polyester, metalized film and treated by laser type radiation so as to create unique visual reflective and refractive multi colored patterns.

Fig. 42F shows a cross section view of a structure comprising directional and controllable light, as compared to the light chamber 30 of Fig. 42E such that a fiber optic structure 29 may be used to transmit light from the light source 33 into a hole 20 or light passage 28 or other situation, such as to be behind or in close proximity to transparent, semi transparent or translucent coatings or materials. The term "semi-transparent", or similar, as used herein, includes, but is not limited to, materials which are either partially transparent over all of the area, or partially transparent over portion of the area, or other combinations whereby portions of the material may be at least partially transparent, portion of the material may be opaque to the visible spectrum and a portion of the material may be transparent or translucent, or any combination of one or more of these effects, whether with visible light or non-visible radiation, or a combination. In this construction, coatings 5 may incorporate any one or more coatings on a perimeter such as to provide alignment control, and the fiberoptic material, typically of a round cylindrical shape, may also be used to create perimeters in a variety of construction techniques. These perimeters may be used to align coatings 5. By recessing the ends of the fiber optics 29, in the hole 20 it is possible that the illumination source is only visible when an observer is directly in front of the material and is able to see into the hole 20. Using the end of the fibers as a coating surface and the edges of the end of the fibers as an edge or perimeter as defined herein, it is possible to print coatings, typically partially transparent, at the peripheral or end of the fiberoptic structure. With control of the light through the fibers, well known in the art, it is possible to generate indicia and other visual information in a decorative and interesting manner.
Fig. 49E shows a representation of the separation after imaging such that the substrate 1B is being separated from substrate 1A and that the indicia or other readable, visible, light reflective, or absorbent, image 77A shows, in this example, round, circular, regularly spaced dots. The image 77B on substrate 1B has contained within at least part of it or image, one or more holes which become in one embodiment, light passages. Thus, the perimeter coating alignment has made possible two images from one process. Of course, the holes need not be round, and there may be only one hole, one irregular shape, or portion, on any material, and it is possible to have any shape overlapped upon a usually solid shape or to have a combination of holes in some materials, some of which line up with other substrates and some of which do not, to be able to reproduce more than two images in one series of coating applications or even with one single coating being applied.

It is also possible to apply one or more initial coatings to the construction as shown in Fig. 49E, but to separate the two or more substrates at some stage in a multi coating process such that certain substrates receive additional coatings of similar or different types, whilst another one of the substrates remains unchanged after that step, or separately it may have different coatings applied for different purposes such that a portion of the image is identical on both substrates. After separation and subsequent coatings as taught herein, the final result may comprise the addition of different coatings as well as the common coatings. Should the different coatings be such as to seal the original matched coatings, then the result is an identifiable pair of substrates, for example documents, which may when brought back together to provide positive identification, or other uses. Other examples of these constructions include one way vision purposes whereby each substrate 1A and 1B, when separated, include light passages. In the case of substrate 1B, the light passages are formed through the holes 31. If the substrate 1A were transparent, and the indicia was in the shape of the example round dots with images 77B, then the light passages could be through the transparent substrate 1A between the areas of coating.
Claims:

1. A method of forming a pattern of colour coatings onto a light permeable panel with exact registration between successive colour coatings along defined edges of the pattern, and wherein the panel with the pattern of colour coatings formed thereon for use as a one-way vision panel, the method comprising the steps of:

   (a) providing a base material having an ink printable release coating on one side thereof;
   (b) applying a first colour coating to the printable release coating side or said base material;
   (c) applying at least one additional colour coating over at least a portion of said first colour coating;
   (d) perforating said base material with said colour coatings to provide a pattern of perforate and non-perforate portions to achieve exact registration of said at least one additional colour coating with said first colour coating for achieving one way vision effects;
   (e) transferring said pattern of colour coatings from said non-perforate portions of said base material onto a surface of a light permeable panel maintaining the exact registration; and
   (f) heating said light permeable panel to use said pattern of colour coatings onto said surface of said light permeable panel.

2. A method of producing a material with a defined edge or edges with one or more colours in exact registration for ceramic frit ink transfer to glass, the method including the steps of:

   Prepare the base with the desired pattern, for example, the pattern could be a band for use across a car windshield, a pattern comprising a plurality of intended light passages such as round holes in a staggered pattern, parallel stripes or any other shape or shapes. The base may be produced
by cutting, perforating, removal of a portion of an original coating, and the
like. The preferred embodiment is to have a precoated paper with a
release coat. The coatings are then applied to the base. For water
transfer, the paper, together with its coatings, would be soaked in water
and then the coatings could either use the waterslide technique to be
transferred to the see through surface, in this case, glass, or using the
water transfer technique, may be applied against the surface of the glass,
and the base, in this case, paper, would be removed by peeling back or
sliding it from the surface of the coatings. When the water transfer inks
with their cover coats have been reasonably dried, the glass, together with
cover coatings now attached would be placed in a tempering furnace, also
known as a toughening or tempering oven, and processed in the normal
way, to fuse the ceramic ink coatings into the glass. Upon removal from
the tempering furnace, the image has now become fused into the glass
and is permanent. It is possible to fuse the ceramic inks into the glass and
is permanent. It is possible to fuse the ceramic inks into the glass without
tempering the glass, but it is assumed in many applications it would be
normal to do both functions at once.

3. A method of producing a material with a defined edge or edges with one or
more colours in exact registration for see through posters, the method
including the steps of:

Prepare the base, such as paper, with the desired pattern comprising a
plurality of intended light passages such as round holes in a staggered
pattern, or any other shape or shapes. The base may be produced by
cutting, perforating, removal of a portion of an original coating, and the
like. The coatings are then applied to the base. The base is then applied
on or in close proximity to or transferred to the see through surface.
4. A method of producing a material with a defined edge or edges with one or more colours in exact registration for paper see through posters, the method including the steps of:

Prepare the base, such as paper, in a suitable size, such that one side is light reflective and the other side is light absorbing. The coatings or image are then applied to the light reflective side. Create the desired pattern comprising a plurality of intended light passages such as round holes in a staggered pattern, or any other shape or shapes. The holes may be produced by cutting, perforating, removal of a portion of an original base, and the like. The base is then applied on or in close proximity to or transferred to the see through surface. As an alternative embodiment, an image may also be applied on at least a portion of the light absorbing side, in a contrasting colour.

5. A method of producing a material substantially as herein described.

Dated this Twenty-fourth day of May 2000

Clear Focus International Pty Ltd

by

Pizzeys Patent and Trade Mark Attorneys
FIG. 22A

FIG. 22B

FIG. 22C

FIG. 22D

FIG. 22E

FIG. 24G

FIG. 24H

FIG. 29A

FIG. 29B