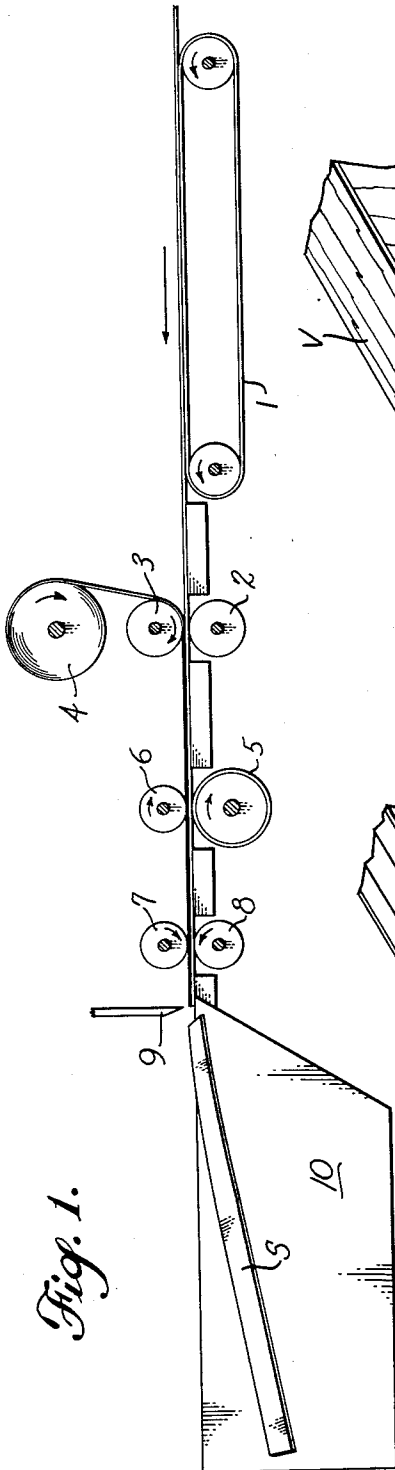
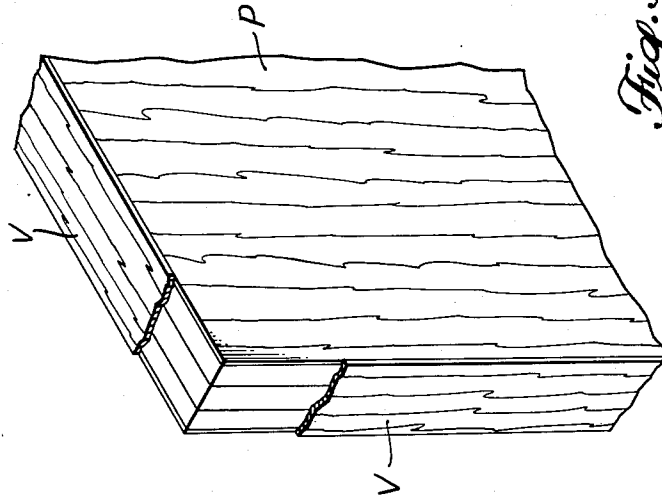
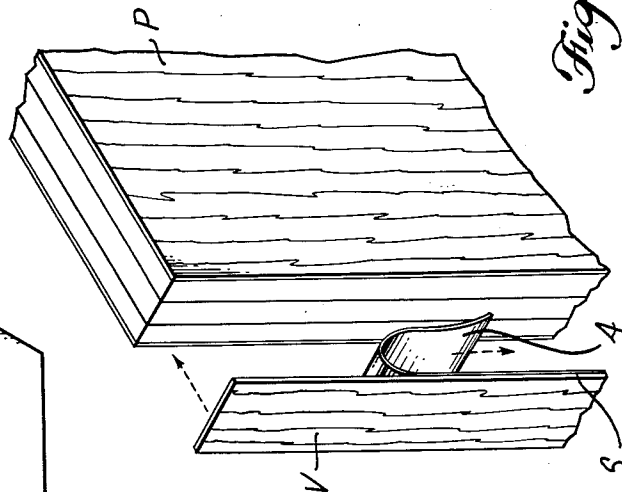


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ADHESIVE-BEARING VENEER STRIP MATERIAL, PROCESS
OF MAKING SAME AND PROCESS OF APPLYING SAME
TO PLYWOOD PANEL EDGES
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**ADHESIVE-BEARING VENEER STRIP MATERIAL,
PROCESS OF MAKING SAME AND PROCESS OF
APPLYING SAME TO PLYWOOD PANEL EDGES**
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The present invention relates to prefabricated veneer strip material for surfacing the edges of panels of woody material, to the process of making such veneer strip material, and to the process of applying the veneer strip material to the edges of such panels.

As is well known, heavy plywood sheets, such as five-eighths of an inch and thicker, customarily are cut into panels for use as doors, such as for cabinets, and for other purposes where the edges of such panels are visible. In cabinet doors, for example, plywood panels are usually mounted so that their swinging edges move outward from the doorway, so that when open such edges are very prominent. Frequently the hinged edge, and the top and bottom edges of such a door panel always are rather difficult to see, but the finishing of the swinging edge of such a door panel has presented a very troublesome problem.

The problem mentioned above often has been accentuated because the plywood panels used for cabinet doors and analogous purposes have incorporated face plies of an expensive variety of wood different in appearance from the inner or core veneers of the plywood, the latter frequently being made of Douglas fir, cottonwood, etc. The edge of such a plywood panel is doubly unsightly, both because of the exposure of the end grain in some of the core plies and the difference in color and appearance between the other core plies and the face plies of the plywood.

Attempts frequently have been made to stain or paint the edges of plywood panels to match the faces of such panels, but this technique does not produce similarity of appearance because of the difference in absorptive quality of the end grain and the longitudinal grain of the plywood core plies on the panel edge, and the probable difference in absorptive characteristics between the wood of the plywood core material and of the face plies.

Various other expedients to solve the problem of finishing plywood panel edges have been tried, but none of them has been very practical because of the time involved, skill necessary or equipment required for the operation, or some combination of these factors.

The principal object of the present invention is to provide a material and process for surfacing the edges of plywood panels to produce a plywood panel having one or more edges matching the face veneers of the panel. In producing such an end product it is an object to utilize veneer surfacing strip material of a variety matching the wood of the face plies and to utilize a process for applying such strip material which does not require special equipment or great skill.

An additional object is to employ a process for applying the veneer surfacing strip material to a plywood panel edge which can be performed on the job quickly and with minimum preparation both of the panel edge and of the surfacing strip material.

A further object is to enable the veneer strip material used for such surfacing operation to be manufactured economically, to be protected against damage and deterioration during manufacturing and handling between the time of its fabrication and its use, and to enable such

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strip material to be stored for a substantial period of time before being used.

It is an object not only to provide veneer surfacing strip material which can be applied quickly and easily to the edges of plywood panels, but also such strip material which will require the least amount of finishing and finishing of a type least apt to cause damage to the surfacing strip material itself and to the adjacent faces of the plywood panel.

The resulting edge surfaced panel, while retaining all the structural advantages and economy of a plywood panel, will present the appearance of a sawn lumber panel.

The objects discussed above can be obtained by applying to the edge of a plywood panel a veneer surfacing strip of a width equal to the thickness of the plywood panel and which is intimately bonded to the plywood panel edge by an adhesive carried by the surfacing strip material. During completion of the manufacture of such strip material and handling between completion of its manufacture and the time when it is ready for application to the plywood panel edge, the adhesive on the veneer strip will be protected by a paper backing strip. The adhesive used may be of a thermosetting type so that the strip can be bonded to the panel edge by a hot ironing transitory manual pressure operation, but preferably the adhesive is of a type such that the strip can be intimately bonded to the plywood panel edge solely by application of localized transitory manual pressure upon the strip as would be exerted automatically in a finish sanding operation.

Additional characteristics and advantages of the material and process used in producing the finished panel product are discussed in the following detailed description of the representative illustrations shown in the accompanying drawings.

FIGURE 1 is a diagrammatic view illustrating the final stages in the manufacture of the veneer surfacing strip material used in the process of this invention.

FIGURE 2 is a top perspective view of a piece of veneer surfacing strip material and a fragmentary portion of a plywood panel illustrating the method of applying the strip material to the panel edge.

FIGURE 3 is a top perspective view of a fragmentary portion of a plywood panel having edges surfaced with veneer surfacing strip material in accordance with the present invention, having parts of such strip material broken away to disclose the plywood panel edge beneath it.

An important feature of the present invention is that plywood sheet material can be cut to form panels in the usual way with little regard to changes in dimensions, because the veneer surfacing strip material used in the process of the present invention is very thin, and little allowance need be made for it in cutting the plywood panels to size. Frequently some allowance is made in sawing the panels for planing the panel edges, and in such case no other allowance will be required because the exact dimensions can be established by planing the panel edges before applying the surfacing strip material, or if such material is to be applied to only one edge of the panel, the final sizing can be accomplished by planing the edge of the panel opposite that to which the surfacing strip material is applied. As a matter of fact, if the panel is sawn carefully with a fine tooth saw and to exact dimensions with allowance being made for the thickness of the surfacing veneer strip, it is entirely possible to eliminate all finish planing of the plywood panel edges.

In finishing a plywood panel in accordance with the present invention it is not necessary to shape or otherwise process the edges of the plywood panel. The sur-

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facing strip material utilized for surfacing the panel edge or edges will be of a width selected to equal exactly the thickness of the plywood panel which itself is finished to an exact thickness within a very small tolerance in the plywood manufacturing operation. The fact that the edge of the veneer surfacing strip material will be exposed adjacent to each face of the plywood panel is not objectionable because the thickness of the surfacing strip material will be small, that is, between one-sixteenth of an inch and one-sixty-fourth of an inch, a thickness of approximately one-thirty-second of an inch being preferred because the edge of such strip material is not as noticeable as the edge of thicker material would be, and yet veneer of such thickness when properly protected for handling by a reinforcing backing strip cannot easily be damaged.

While, as mentioned above, a reasonable range of choice may be exercised in selecting the thickness of the veneer surfacing strip material to be used, such material one-thirty-second of an inch in thickness is entirely practical if manufactured and handled in the manner described below. After the thickness of the veneer surfacing strip material has been selected, it will also, of course, be necessary to determine the width or widths in which the strip material is to be supplied, but the procedure for manufacturing, handling and applying the surfacing strip material will be precisely the same irrespective of its width, provided that, as mentioned above, the width of the surfacing strip material used for a particular plywood panel is the same as the thickness of such panel within a small tolerance.

In the prefabrication of the veneer surfacing strip material wood stock of the desired variety like that of the face plies of the plywood panel the edges of which are to be finished must be selected. The wood stock selected may be in the shape of a block of a thickness equal to the width of the veneer surfacing strip material to be manufactured, and strips of proper thickness to make the surfacing strip material may be sliced or sawn from the edge of such stock. Alternatively, the surfacing strip material can be cut from a sheet of veneer of the thickness desired for the surfacing strip material, which sheet can be either sliced or peeled veneer.

In whatever manner the strips of veneer surfacing material are made, they may be fed endwise in end-abutting relationship along a final processing path in the direction of the arrow indicated in FIGURE 1, such as by an endless belt 1 or other suitable conveying mechanism. From such mechanism the strips are fed endwise between pinch rolls 2 and 3.

The veneer surfacing strips as mentioned above are then supplied with adhesive carried by them. Such adhesive will be applied to one face of the strip material between the conveying mechanism 1 and the pinch rolls 2 and 3. The adhesive applied to the veneer strip during its manufacturing process will be covered and protected by a backing strip 4 of paper removably bonded to the veneer surfacing strip material. The adhesive can be applied to the veneer face prior to the application of the protective backing strip 4, or may be supplied as adhesive on the backing strip material which will be transferred to the veneer strip material. The backing strip material may be supplied in the form of a large roll and fed alongside the veneer strip material between the pinch rolls 2 and 3 in contact with the side of the veneer strip material which is to be applied to a plywood panel edge.

As an alternative expedient if the strips are to be cut from a veneer sheet, a paper backing sheet may be applied to the entire veneer sheet before it is cut into strips. Such a backing sheet may carry adhesive which will be transferred to the veneer for use in bonding it to plywood panel edges. The veneer sheet with the paper backing sheet applied would subsequently be cut into plywood panel edge surfacing strips of the proper width

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and could be fed between the pinch rolls 2 and 3. From these pinch rolls the composite stock may then be passed through a sanding and backing roll assembly, including the sanding roll 5 and the backing roll 6, from which the composite material is fed again between pinch rolls 7 and 8. During this operation the face of the veneer surfacing strip material to be exposed when applied to a plywood panel edge is dressed to the desired degree.

The composite backing strip material and veneer surfacing strip material may emerge from the pinch rolls 7 and 8 as a continuous strip, and the clipper 9 will sever the backing strip material 4 to separate the composite strips again into individual lengths S which may be discharged by gravity down a chute 10 for packaging or delivery. It will be observed that the continuous backing strip material 4 serves as a carrier strip for insuring proper controlled movement of typical veneer surfacing strip material one-thirty-second of an inch thick and three-quarters of an inch wide through the sanding and backing roll mechanism. Moreover, after the composite strip material has been cut into the strips S of selected length, such backing strip material serves as a reinforcement to deter cracking of the veneer strip material if the strip S is bent excessively.

The backing strip will cover the adhesive and prevent it from deterioration during shipment and storage prior to use, will prevent loss of any of such adhesive by contact with foreign objects and will prevent contamination of other objects by contact with the adhesive. The backing strip material 4 should be left in place on the veneer surfacing strip material until just prior to application of such material to the edge of a plywood panel.

An important advantage of the veneer surfacing strip material and the process of applying it to the edge of a plywood panel to be finished is that no special equipment is required for such application, nor is any special preparation of the panel edge necessary except that it be reasonably smooth and flat. Moreover, it is important that the application of the veneer surfacing strip material to the plywood panel edge be accomplished very quickly, such as in a matter of a few seconds. It is contemplated that no special clamps, holding devices or applicators will be required to accomplish the process of applying the veneer surfacing strip material to a plywood panel edge. It will be evident, therefore, that the type of adhesive employed for binding the veneer strip material to the plywood panel edge must have characteristics which will meet the requirements of such a process.

After removal of the backing strip 4 the veneer strip V is applied to the edge of a plywood panel P, as illustrated in FIGURE 2. It is desired that the adhesive carried by the veneer strip V be of the type which will intimately bond the veneer surfacing strip to the plywood panel edge by application of transitory manual pressure to the exposed face of the veneer strip V. For such purpose either a thermosetting adhesive such as of the acrylic type or a rubber base adhesive such as manufactured by the Minnesota Mining & Manufacturing Company is suitable. Particular types of such adhesives suitable for this purpose are known to the art and such adhesives themselves are not part of the present invention. Such suitable adhesive is disclosed, for example, in United States Patent No. 2,537,982 of the phenolic thermosetting type which is designed "Scotch Weld Bonding Tape No. 582" manufactured by Minnesota Mining and Manufacturing Company under such patent. If a thermosetting adhesive is used, a heated iron is pressed against and moved along the exposed surface of the veneer strip material for a few seconds to press the veneer strip material in localized areas into intimate contact with the panel edge and set the adhesive.

A rubber base type of adhesive is preferred, which does not require the application of heat. To affix the veneer surfacing strip material to the plywood panel edge when

such adhesive is used, it is merely necessary to press the veneer strip material in localized areas firmly against the panel edge by manually rubbing the exposed surface of the strip material either with the hand, such as with the fingers, or with a small block of wood or equivalent article held in the hand, for a few seconds. Time can be saved, even in such an operation, while insuring that adequate pressure is applied for a sufficient duration if the surface of the veneer strip material to be exposed is left slightly rough. The manual rubbing operation mentioned above can then be accomplished by rubbing fine sandpaper on the exposed surface of the veneer strip material, either held directly in the hand or backed by such a small block of wood as recited above, which will accomplish the dual purpose of intimately pressing such strip material in localized areas against the plywood panel edge and of completing the finishing and cleaning of the exposed face of the veneer strip material.

Whichever type of adhesive is used, it should not have the characteristic of permanently bonding immediately upon application of the strip material to the plywood panel edge. The strip material might not be placed exactly in registry with the thickness of the panel upon first application and may need to be adjusted slightly in one direction or the other transversely of its length until the strip material is in precise registry with the thickness of the panel. The adhesive should be of a character the bonding of which will be delayed sufficiently to permit such slight adjustment, at least for an instant or so, prior to bonding the adhesive by the application of rubbing pressure, either heated or unheated, to the exposed face of the veneer strip material. Moreover, as shown in FIGURE 3, when the veneer strip material V has been applied to an edge of the plywood panel P, the adhesive line between the veneer surfacing strip material and the face of the plywood panel will be along the edge of the plywood panel face. The adhesive used, therefore, should be effective for the purpose discussed when used in quantities small enough so that the glue line will be substantially invisible after the panel edges are finished.

Furthermore, an excess of adhesive such that it would ooze out from between the veneer strip and the face ply of the panel should not be permitted. There would then be no occasion to remove any adhesive from the glue line, and consequently no danger of a careless workman leaving an unsightly joint. In applying the surfacing strip material to a plywood panel edge, therefore, it is only necessary to strip the backing strip material 4 from the veneer strip material as shown in FIGURE 2, apply the veneer strip carrying adhesive against the plywood panel edge, and then rub the outer face of the veneer strip to press the strip intimately against the plywood panel edge for a few seconds until the bond of the adhesive has been accomplished. It will, of course, be necessary to use a heated implement if the adhesive is of the thermosetting type.

As has been mentioned, for some plywood panels it may be necessary to surface only one edge, but all edges can be finished in the same manner if desired. For purposes of uniformity and strength it is preferred that the length of the grain of the veneer extend lengthwise of the veneer strip in every case, but, to finish the ends of a panel, veneer in which the grain extends transversely of the strip can be used, if desired.

I claim as my invention:

1. Wood veneer strip material for surfacing an edge of

a panel of woody material, comprising a prefabricated strip of wood veneer of a width substantially equal to the thickness of such a panel, said strip having on one face adhesive strongly and substantially permanently bondable directly with the woody material of such a panel edge by application to the veneer strip of transitory manual pressure as distinguished from sustained mechanical clamping pressure, and a protective strip removably bonded to said veneer strip and covering said adhesive until said wood veneer strip is to be secured to a panel edge.

2. The process of prefabricating wood veneer strip material for surfacing an edge of a panel of woody material, which comprises preparing a strip of wood veneer of a width substantially equal to the thickness of such a panel, applying to one face of the wood veneer strip adhesive strongly and substantially permanently bondable directly with the woody material of such a panel edge by application to the veneer strip of transitory manual pressure as distinguished from sustained mechanical clamping pressure, and covering such adhesive by a removable protective strip until the wood veneer strip is to be secured to a panel edge.

3. The process of prefabricating wood veneer strip material for surfacing an edge of a panel of woody material, which comprises preparing a strip of wood veneer of a width substantially equal to the thickness of such a panel, applying to one face of the wood veneer strip the adhesive side of a removable protective backing strip carrying adhesive strongly and substantially permanently bondable directly with the woody material of such a panel edge by application to the veneer strip of transitory manual pressure as distinguished from sustained mechanical clamping pressure, and such adhesive having an affinity for the veneer strip greater than its affinity for the backing strip so that the backing strip can be removed from the veneer strip and leave the adhesive on the veneer strip when the veneer strip is to be secured to a panel edge.

4. The process of finishing an edge of a panel of woody material with prefabricated adhesive-bearing wood veneer strip material, which comprises preparing a strip of wood veneer of a width substantially equal to the thickness of such a panel, applying to one face of the wood veneer strip adhesive strongly and substantially permanently bondable directly with the woody material of such a panel edge by application to the veneer strip of transitory manual pressure as distinguished from sustained mechanical clamping pressure, covering such adhesive by a removable protective strip until the wood veneer strip is to be secured to a panel edge, removing the protective strip from the wood veneer strip, applying the adhesive-bearing face of the wood veneer strip to such a panel edge, and applying localized transitory manual pressure along the exposed face of the wood veneer strip and thereby bonding such strip to the panel edge.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,011,932

December 5, 1961

Verlan L. Downing

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the grant, lines 2 and 13, and in the heading to the printed specification, line 6, for "Russell A. Neuman", each occurrence, read -- Russell A. Neumann --.

Signed and sealed this 24th day of April 1962.

(SEAL)

Attest:

ESTON G. JOHNSON

Attesting Officer

DAVID L. LADD

Commissioner of Patents