Feb. 18, 1958 E. A. RANTA 2,823,712

VENEER SIZING AND JOINING MACHINE

Filed June 28, 1955 3 Sheets-Sheet 1

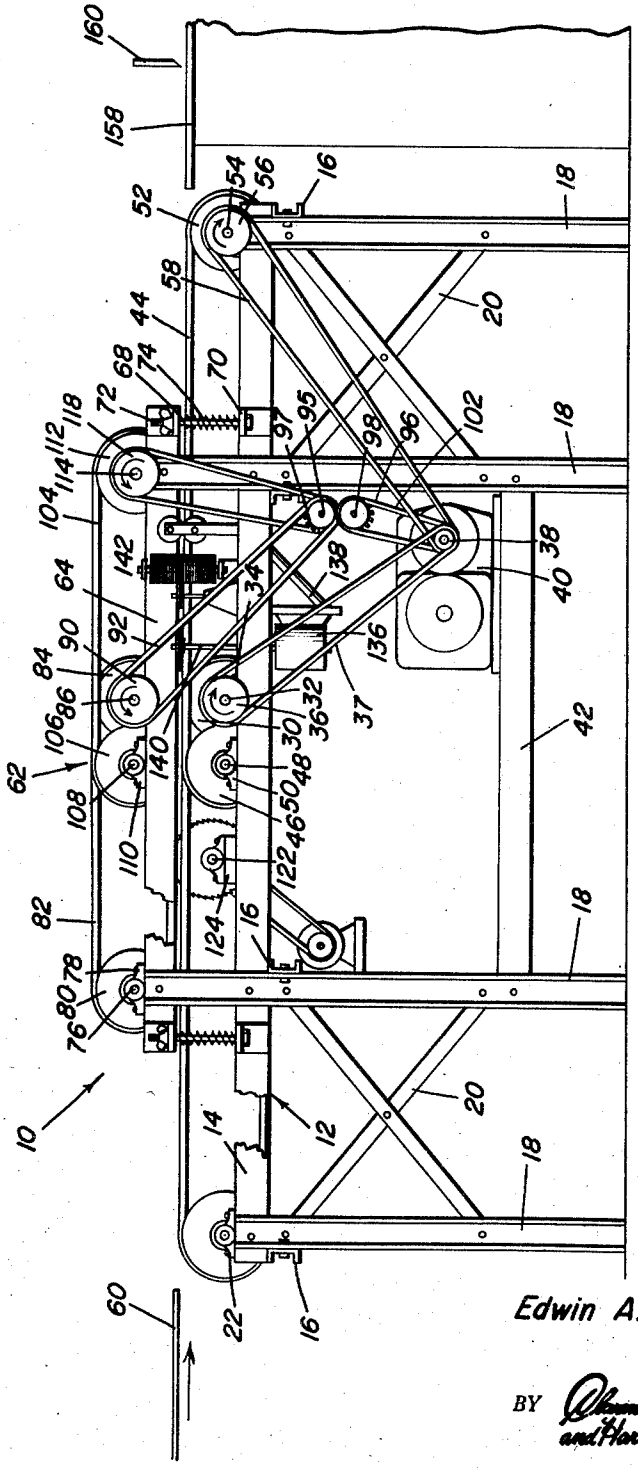


Fig. 1

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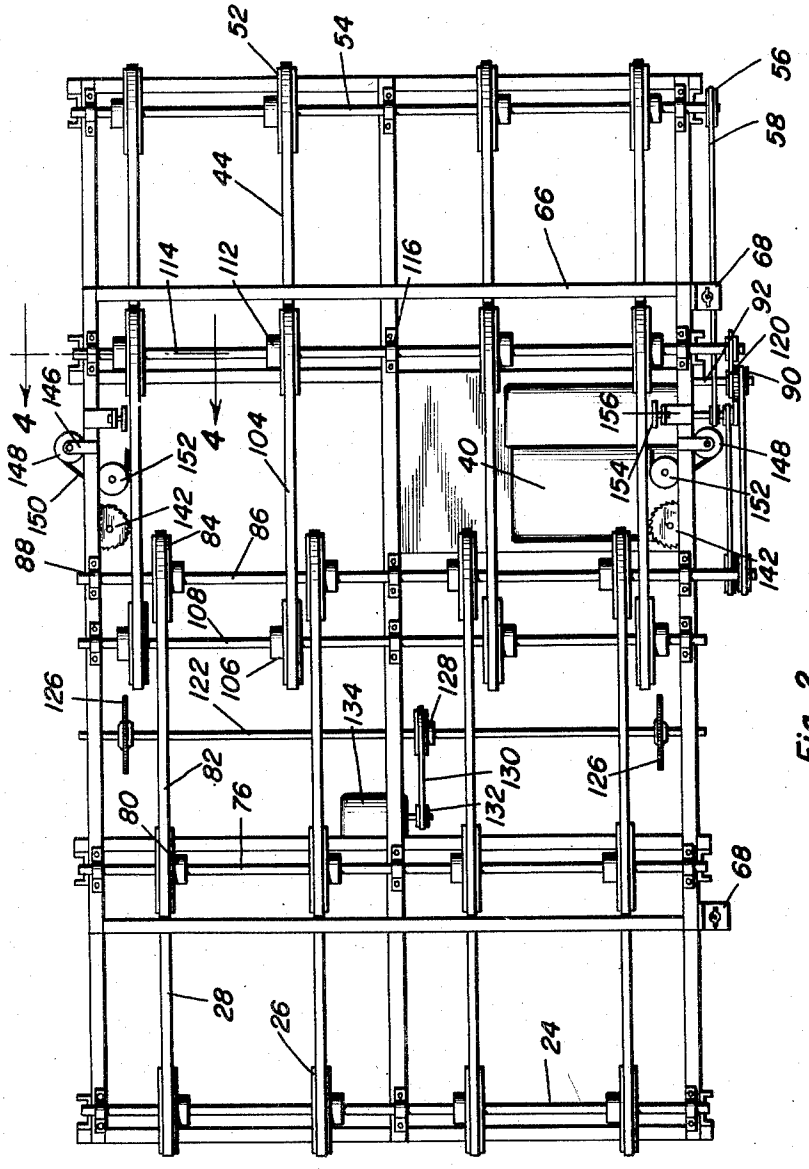


Fig. 2

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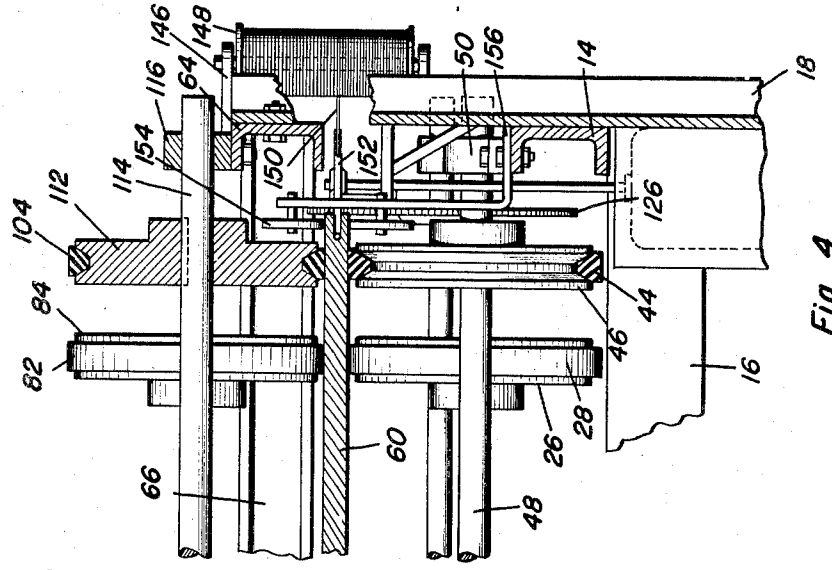


Fig. 4

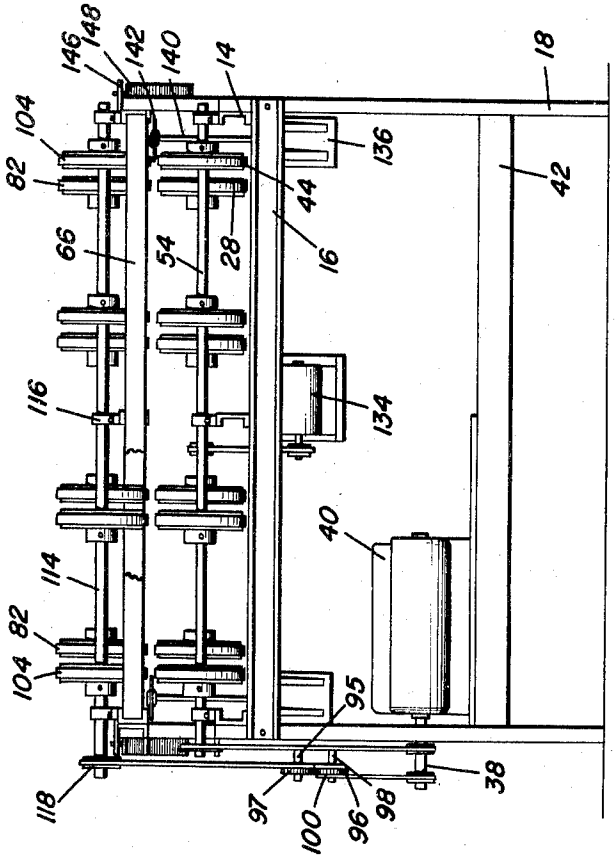


Fig. 3

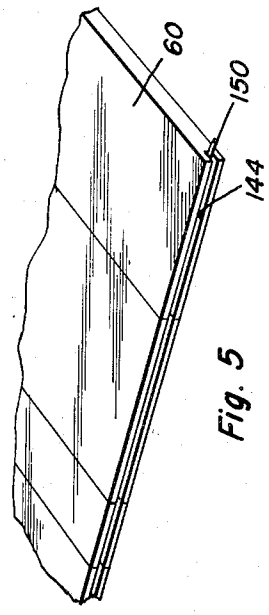


Fig. 5

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2,823,712

VENEER SIZING AND JOINING MACHINE

Edwin A. Ranta, Port Angeles, Wash.

Application June 28, 1955, Serial No. 518,595

3 Claims. (Cl. 144—3)

This invention generally relates to a veneer sizing machine, and more specifically provides a device for forming equal lengths and widths of veneer panels from random lengths and widths of veneer panels.

In the manufacture of plywood, an edge gluer is provided and used to glue the random widths of the face stock by gluing the adjacent inside edges together, thereby making one continuous sheet of plywood as it goes into a cutting device for cutting the continuous or glued sheet into a desired width. This procedure is relatively expensive, since it is necessary to provide a gluing device to position glue on the adjacent side edges of the veneer panels or stock. Accordingly, it is the primary object of the present invention to provide a veneer sizing and joining machine which joins the veneer panels at the ends thereof in side-by-side relation by cutting a groove or notch in the ends of the random widths of veneer panels after the panels have been cut to a single length as the veneer panels go through the machine, and after the groove or notch is cut therein, it can be filled with twine and glue, thereby making a continuous sheet of veneer and after it is joined together by the twine and glue, and the continuous sheet of veneer can be fed into an automatic cutting device for cutting into any desirable lengths.

Another object of the present invention is to provide a machine which will eliminate the operation of gluing the side edges of the veneer stock together.

Still another important object of the present invention is to provide a new method and machine for forming equal lengths and widths of veneer panels from random widths and lengths veneer panels wherein the veneer panels are fed through the machine in abutting edge-to-edge relation wherein saws are provided for cutting the ends of the panels and forming panels of equal length, and means are provided for joining the end edges of the panels in adjacent alignment.

Other important objects of the present invention will reside in its simplicity of construction, ease of operation, economical operation, its adaptation for its particular purpose, and its relatively inexpensive manufacturing and operating costs.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the veneer sizing and joining machine of the present invention;

Figure 2 is a top plan view of the construction of Figure 1;

Figure 3 is an end elevational view of the machine of the present invention;

Figure 4 is a detailed sectional view taken substantially upon a plane passing along section line 4—4 of Figure 2 illustrating certain details of the device; and

Figure 5 is a detail perspective view illustrating the manner in which random widths of plywood panels or veneer panels are secured together in abutting relation with the end edges in alignment.

Referring now specifically to the drawings, it will be seen that the numeral **10** generally designates the veneer sizing and joining machine of the present invention which includes a generally horizontally disposed open framework generally designated by the numeral **12** and including a plurality of longitudinal rails **14** interconnected by transverse rails **16** which are supported by a plurality of vertical supporting legs **18**. A pair of vertical supporting legs as well as a pair of transverse members **16** are disposed adjacent each end of the longitudinal rails **14**, thereby leaving a relatively enlarged center area and crossed braces **20** are provided between adjacent upstanding supporting legs **18** for rigidifying the supporting structure thereby forming a rigid frame **12** for supporting the veneer sizing and joining machine **10** of the present invention.

Disposed on the upper surface of the longitudinal rails **14** adjacent one end thereof are bearing members **22** journaling a transverse shaft **24** that is provided with a plurality of pulleys **26** thereon having elongated and endless V-belts **28** encircled thereover. The other end of the endless V-belts **28** encircles pulleys **30** mounted on a transverse shaft **32** which is supported on suitable bearings **34**. The shaft **32** is provided with a drive pulley **36** on the outer end thereof that is provided with an endless drive belt **37** that encircles a drive pulley **38** powered by a power mechanism **40** which may be in the form of an electric motor or the like. The power mechanism **40** is supported on longitudinal rails **42** adjacent the bottom of the vertical leg members **18** and which extends therebetween.

Disposed in overlapping relationship to the V-belts **28** is a second set of endless V-belts **44** encircling pulleys **46** mounted on a shaft **48** journaled in bearings **50**. The other end of the V-belts **44** encircle pulleys **52** on a transverse shaft **54** that is provided with a drive pulley **56** on the outer end thereof which is in alignment with the drive pulley **38** and the pulleys **38** and **56** are encircled by a V-belt **58** for driving the belts **44**.

The V-belts **28** and **44** form a feed conveyor mechanism for veneer panels **60** and since the weight of the veneer panels is relatively light, the V-belts **28** and **44** will act as an endless belt conveyor and since the inner ends of the V-belts **28** and **44** overlap, the veneer panels **60** will be fed through the machine **10**.

In order to assure that the veneer panels **60** will be retained firmly against the upper surface of the conveying mechanism formed by the endless V-belts **28** and **44**, a hold-down mechanism generally designated by the numeral **62** is provided which includes movable longitudinal rails **64** which are interconnected by transverse rails **66** that are provided with outwardly extending brackets **68** at each end thereof for overlying alignment with brackets **70** on the longitudinal rails **14**. A screw threaded bolt fastener **72** extends through and between the brackets **68** and **70** and is provided with a compression coil spring **74** for supporting the hold-down mechanism **62** in spaced relation to the frame **12** and permitting vertical adjustment in relation thereto.

The hold-down mechanism includes a transverse shaft **76** mounted in bearings **78** wherein the transverse shaft **76** is provided with a plurality of pulleys **80** having V-belts **82** encircling the same at one end and encircling similar pulleys **84** at the other end which pulleys are mounted on a transverse shaft **86** journaled in suitable bearings **88**. The transverse shaft **86** is provided with a drive pulley **90** on the outer end thereof for receiving a V-belt **92** which is in engagement with a drive pulley **94** on an idler shaft **95**. The idler shaft **95** is provided with a gear **97** which is in meshing engagement with a gear **96** mounted on a shaft **98** which is also provided with a V-belt pulley **100** for receiving a drive V-belt **102** from a pulley on the motor **40** wherein the movement of the V-belt **92** is in reverse direction in relation to the V-belt

37 wherein the V-belts 82 will be driven in reverse direction of the V-belts 28 wherein the V-belts 82 will engage the upper surface of the veneer panels 60 for feeding the same through the machine 10.

In overlapping relation to the V-belts 82 is a second set of endless V-belts 104 encircling pulleys 106 at one end thereof which pulleys are mounted on a transverse shaft 108 supported in bearing members 110. The other end of the V-belts 104 is encircled over pulleys 112 mounted on a transverse shaft 114 supported on suitable bearing members 116 wherein the outer end of the transverse shaft 114 is provided with a drive pulley 118 which is connected to a V-belt pulley 120 on the idler shaft 92. The V-belts 104 will also move in the opposite direction in relation to the V-belts 44 thereby feeding the veneer panels 60 through the machine 10 and retaining the side edges of the veneer panels 60 in abutting relationship during movement of the veneer panels 60 through the machine 10.

Disposed below the upper run of the V-belts 28 is a transverse shaft 122 supported in suitable bearings 124 having a pair of saws 126 thereon adjacent each end thereof together with a V-belt pulley 128 adjacent the center thereof provided with a V-belt 130 for engagement over a pulley 132 powered by a suitable electric motor 134 for rotating the saws about the axis of the shaft 122. The saws 126 are generally disposed between the pulleys 26 and 30 and generally between the pulleys 80 and 84, wherein the end edges of the veneer panels 60 will be cut off at a constant length, thereby forming equal lengths of veneer panels 60 as they progress through the machine 10. If desired, the saws 126 may be adjusted on the transverse shaft 122 for varying he length of the veneer panels 60.

Disposed between the pulleys 52 and 46 is an electric motor 136 mounted on a suitable bracket 138 that is provided with a drive shaft 140 extending vertically therefrom for supporting a saw 142 and driving the same. A saw 142 is disposed adjacent each edge of the frame 12 for engaging and sawing the end edges of the veneer panels 60, thereby forming a groove or notch 144 in the end edges of the veneer panels 60, substantially as illustrated in Figure 5.

It will be noted that the saws 142 are disposed for grooving the end edges of the veneer panels 60 after they have been cut off at equal lengths by the saws 126. Disposed on the frame after the saws 142 are a pair of mounting brackets 146 having a spool of string 148 rotatably mounted thereon and having a string 150 extending therefrom. The string 150 may be provided with glue or a suitable glue applier may be provided for applying glue to the groove 144. A roller 152 is journaled with the periphery thereof being disposed within the groove 144 wherein the string 150 will be placed within the groove 144 for joining the end edges of the veneer panels 60 in aligned relation. As the string 150 is positoned in the groove 144, the glue provided on the string 150 will hold the string 150 in the groove 144. In order to assure the retention of the string 150 in the groove 144, a pair of crimping rollers 154 are provided which engage the upper and lower surface of the panels 60 after the string 150 has been positioned therein. The rollers 154 are mounted on a suitable supporting bracket 156. After the veneer panels 60 have been provided with the groove 144 in the end edges thereof and the string 150 positioned and secured therein by the glue and crimping rollers 154, the joined veneer panels 60, as illustrated in Figure 5, are discharged by the V-belts 44 onto a cutting table 158 which is provided with a reciprocable cutter 160 thereon which may be automatically timed for cutting the joined veneer panels 60 into a desired and equal length for use in forming plywood, or for any other purpose.

In practical operation of the present invention, random widths and lengths of veneer panels 60 or core stock is fed into the machine 10 and the conveyor system assures that the veneer panels 60 will be fed continuously and in abutting edge-to-edge relation. The saws 126 cut the panels 60 in equal lengths, and the saws 142 groove the end edges thereof. The roller 152 at each end of the panels 60 position and glue the string 150 in the groove 144, after which the crimping rollers 154 close the outer end of the groove 144 about the string 150, thereby forming a joined and continuous panel of a constant width. In order to sever or cut the continuous panel into the desired lengths, the continuous panel is fed onto the table 158 for cutting by the reciprocable cutter or clipper 160.

If desired, the end edges of the adjacent panels 60 may be secured together by staples or other suitable means wherein only the end edges rather than the side edges are secured together temporarily until such time as the veneer panels are formed into plywood with other veneer panels forming the back and face of the plywood.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A machine for assembling veneer panels of random width and length into a continuous panel having a constant width whereby the continuous panel may be cut into desired lengths, said machine comprising horizontally disposed and aligned pairs of conveyors, the conveyors in each pair being superimposed for receiving random width panels therebetween with the side edges of the panels being disposed in adjacent relation, means for driving the first pair of conveyors at a faster rate of speed than the second pair of conveyors for urging the side edges of the panels into abutting engagement, a vertical saw adjacent each edge of the first pair of conveyors for cutting the random length panels thereby forming panels of equal length and random width, means for driving said vertical saws, a horizontal saw adjacent each edge of the second pair of conveyors for cutting a continuous longitudinal groove in the end edges of the constant length panels having the side edges in abutting engagement, means for driving said horizontal saws, means for positioning a string in each of said grooves, and means crimping the top and bottom walls of the grooves inwardly for retaining the strings in the grooves, thereby forming a continuous panel of random width, and equal length panels having the end edges joined by the strings.

2. The combination of claim 1 wherein each of said string applying means includes bracket means for holding a supply spool of string, guide roller means having a portion of the periphery disposed in said groove, said guide roller means being in the form of a rotatable flat, horizontal circular plate having a peripheral groove for receiving the string and positioning the string in the groove.

3. The combination of claim 1 wherein said crimping means includes a pair of spaced vertical crimping rollers in engagement with the upper and lower surface of the panels at the end edges for collapsing the walls of the grooves inwardly for holding the string in the grooves.

References Cited in the file of this patent

UNITED STATES PATENTS

915,504	Sutter	Mar. 16, 1909
1,471,246	Daniels	Oct. 16, 1923
1,635,149	Madsen	July 5, 1927
2,516,280	Welch	July 25, 1950

FOREIGN PATENTS

478,397	Great Britain	Jan. 18, 1948