May 13, 1941. G. M. GUSTIN 2,242,179

VENEER JOINTING AND GLUING MACHINE

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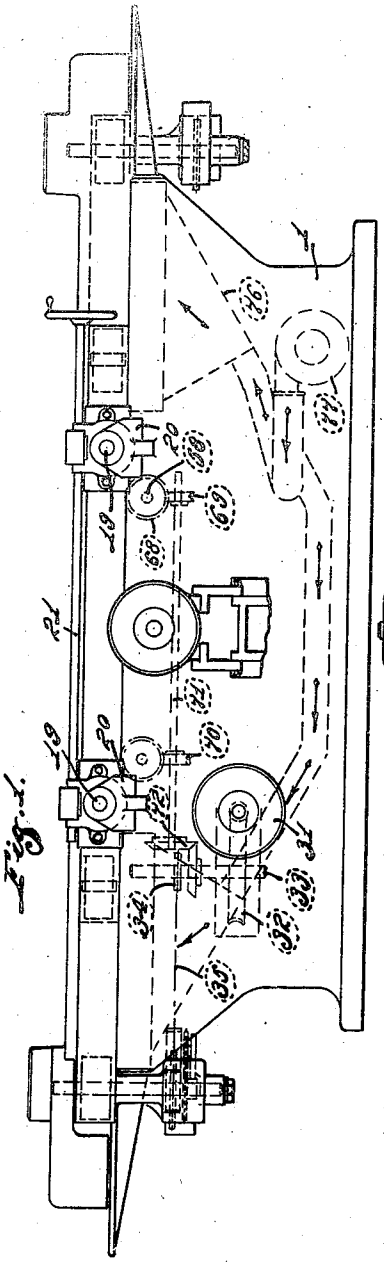


Fig. 1.

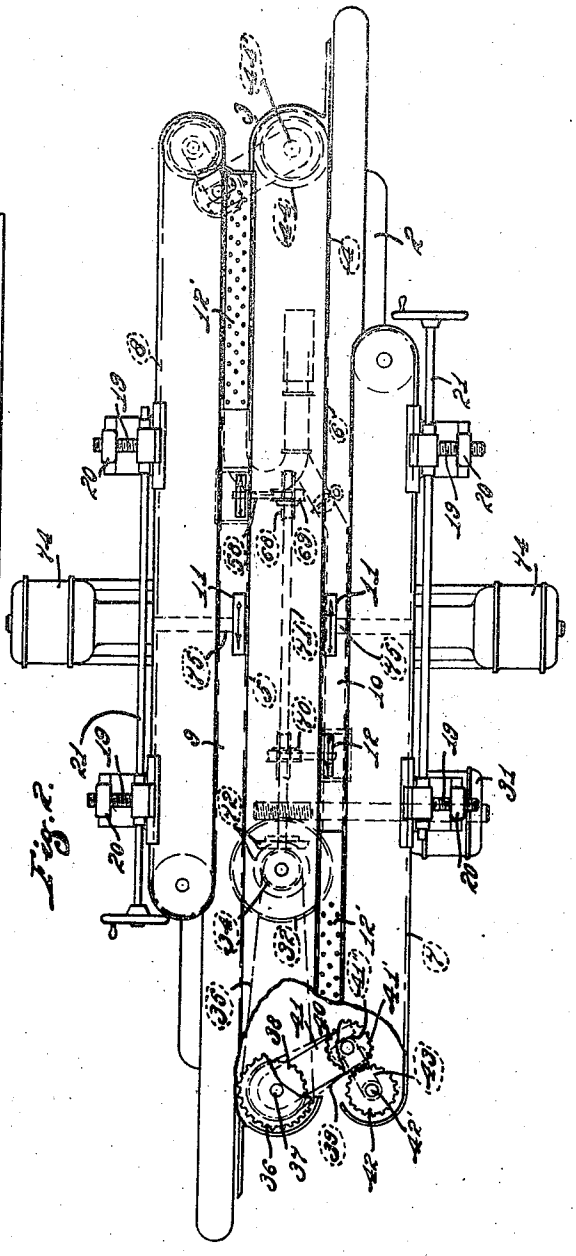


Fig. 2.

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VENEER JOINTING AND GLUING MACHINE

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Fig. 4.

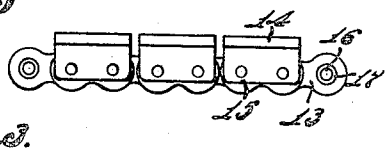
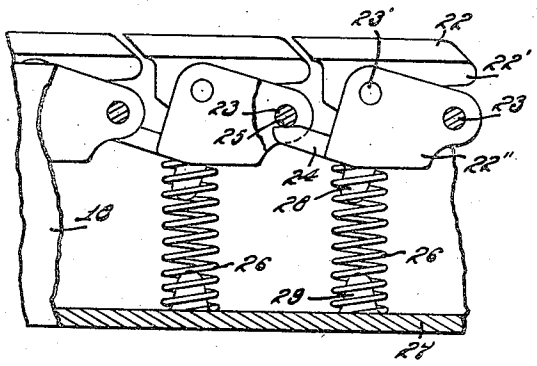


Fig. 5.

Fig. 3.



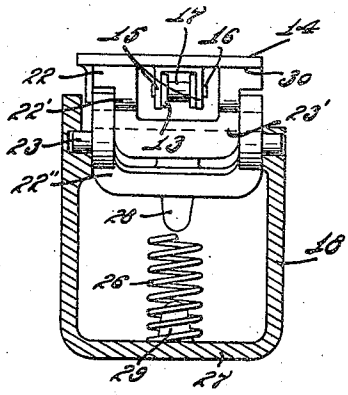


Fig. 6.

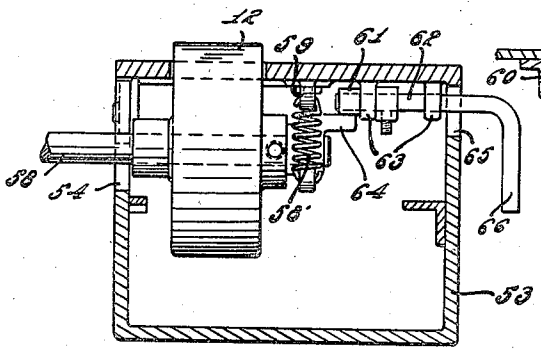


Fig. 7.

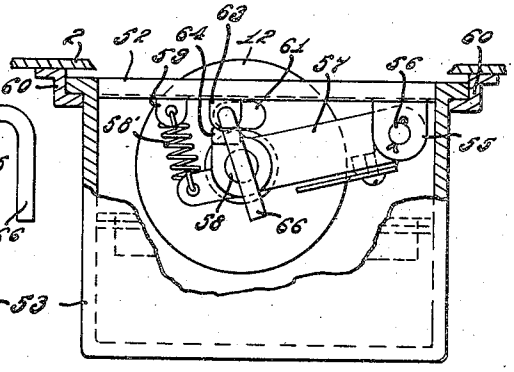


Fig. 8.

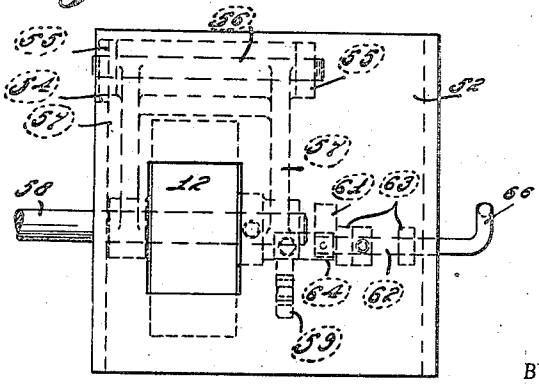
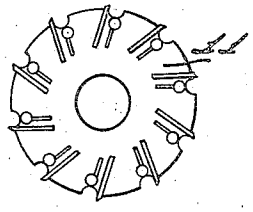


Fig. 9.



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Fig. 10.

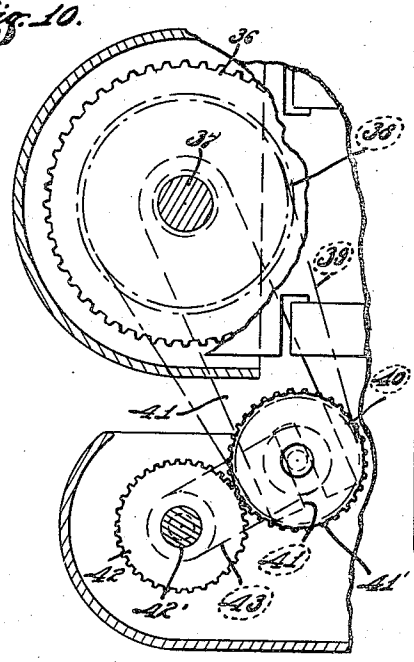


Fig. 11.

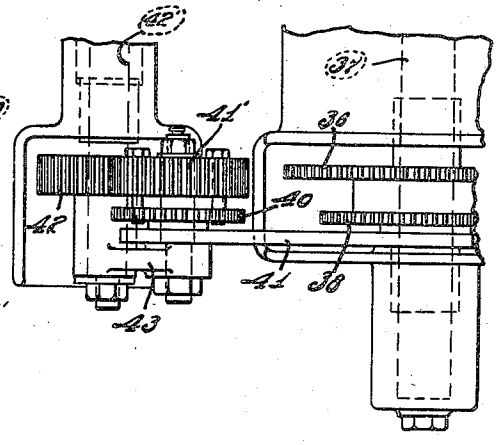


Fig. 12.

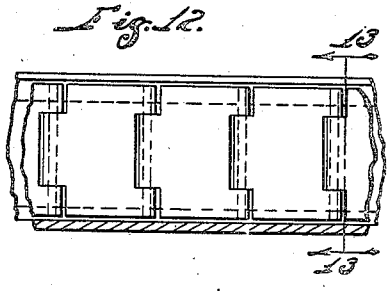
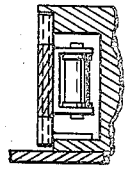


Fig. 13.



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Patented May 13, 1941 2,242,179

UNITED STATES PATENT OFFICE

2,242,179

VENEER JOINTING AND GLUING MACHINE

George Milton Gustin, Wabash, Ind., assignor to The G. M. Diehl Machine Works, Wabash, Ind., a corporation of Indiana

Application August 1, 1938, Serial No. 222,310

10 Claims. (Cl. 144—1)

The present invention relates to improvements in veneer handling machines and has for one of its objects that of providing a machine which will, in one and the same operation, joint and glue the edges of the veneer sheets, whereby when the sheets are laid edge to edge, the edges thereof will accurately fit and the glue secure the edges together.

A further object of my invention is to provide a machine which will joint and glue a bundle of veneer sheets at one and the same time.

A still further object of my invention is to provide a machine whereby the bundle of veneer sheets may be fed therethrough for jointing and gluing with an even and uniform pressure on the stack of sheets so that the edges will be jointed to produce straight and true edges thereon and also spread a uniform amount of glue on the edge of veneers without permitting glue to get on the sides of veneer sheets.

For the purpose of disclosing the invention, I have illustrated the same in the accompanying drawings, in which:

Fig. 1 is a side elevation of a machine embodying my invention;

Fig. 2 is a plan view thereof;

Fig. 3 is a detail section of the compression track for the pressure chain of the apparatus;

Fig. 4 is a detail side elevation of the pressure chain operating on the compression track illustrated in Fig. 3;

Fig. 5 is a transverse section of the compression track showing the pressure chain in position thereon;

Fig. 6 is a transverse section of the glue pot and associated glue wheel;

Fig. 7 is a longitudinal sectional view thereof;

Fig. 8 is a plan view of the glue pot;

Fig. 9 is a side elevation of a jointer head;

Fig. 10 is a detail plan of the pressure chain drive;

Fig. 11 is a detail elevation of the pressure chain drive;

Fig. 12 is a detail elevation of the feed chain; and

Fig. 13 is a detail section of the feed chain.

In the embodiment of the invention illustrated, a base 1 is provided on which the various parts are adapted to be mounted and the top of this base provides a bed surface 2. Arranged in the center of the bed 2 is a housing 3 on either side of which is arranged to travel a continuously driven chain indicated at 4 providing driving surfaces 5 and 6 adapted to cooperate with conveyor chains. There are two sets of these conveyor chains, one set indicated at 7 being arranged on one side of the center chain and the other sets indicated at 8 being arranged on the opposite side thereof to thereby form between the conveyor chain and the pressure chains a pair of grooves or channels 9 and 10. Arranged in each of these grooves or channels and adapted to project above the surface of the bed 2 is a jointer head 11 and a glue wheel 12, each adapted to rotate in the direction of the arrows, as indicated. Also, arranged in the bottom of the bed 2 within the grooves or channels are foraminous cover plates 12' through either of which air is delivered to the edges of the veneer stacks after they have received a glue application.

Each of the traveling chains and pressure plates 7 and 8 is of the same construction and it is, therefore, only necessary to describe specifically one of the same. Each of the traveling chains comprises preferably a linked chain 13 of the character illustrated in Figs. 4 and 5. Plate members 14 having downwardly extending spaced-apart lugs 15 are carried by the chain, provision being made for the spaced apart lugs to embrace the side links of the chain and receive the extended ends 16 of the pivot members 17 of the chain.

For providing a pressure track for this continuous pressure chain, I provide a preferably U-shaped member 18 which is supported on the bed 2 and which is adjustable to and from the chain 4 by means of suitable adjusting screws 19 carried in brackets 20 extending from the side of the bed 1. These screws are manipulated by suitable mechanism and the mechanism of each screw is simultaneously operated by a common shaft 21 so that both ends of the U-shaped backing member 18 may be adjusted at the same time. The U-shaped member 18 is adapted to support on its front face a series of pressure bars 22, each of which is supported in a bracket 22'' pivotally mounted between the side walls of the member 18. To this end, the bracket at one end is provided with a pivot pin 23 which, as illustrated in Fig. 5, is pivoted in the side walls 18. These brackets 22'' are substantially U-shaped in cross section, as shown in Fig. 5 and each of the pressure plates 22 has a downwardly extending portion 22' fitting between the legs of the bracket and adapted to receive a pivot pin 23' which extends through the bracket and through the extension 22'. The "forward end" of the bracket is provided with a forwardly extending projecting finger 24 flattened as at 25 on its upper surface and adapted to bear against the pivot pin 23 of the next adjacent bracket. Pressure springs 26 are interposed between the forward end of the bracket 22'' and the back 27 of the housing 18, these springs being centered on lugs 28 on the bracket and 29 on the housing.

The track sections or pressure bars 22, as shown, are substantially U-shaped, having a flattened outer surface 30 on which the inner face of the pressure plate 14 is adapted to rest,

the conveyor chain 13 being adapted to be received between the legs of the track section. These track sections, as above described, are provided along the entire length of each of the pressure members 7 and 8 to bias the pressure members toward the backing chain 4 so that as the veneer stack is drawn through the throats 9 and 10, they will be pressed against the backing chain 4 with an even and uniform pressure and firmly held in stacked relation.

The pressure chains and the backing chains are all driven substantially at the same speed from a single driving motor 31 suitably supported on the side of the bed 1. The shaft of this motor has a worm gear driving connection with a worm gear 32 mounted on a vertically extending shaft 33. This shaft is provided with a driving sprocket 34 adapted to drive the driving chain indicated at 35 which, in turn, drives the driving sprocket 36 carried on a vertically disposed shaft 37 which shaft, in turn, carries a driving sprocket for the backing chain 4. This shaft 37 also is provided with a second driving sprocket 38 adapted to receive a driving chain 39 in turn driving a sprocket 40 on a swinging arm 41. The free end of this arm carries a gear 41' adapted to mesh with and drive the gear 42 on shaft 42' which carries a driving sprocket for the pressure chain 7. A swinging arm 43 is mounted on this shaft and has its opposite end pivotally and adjustably mounted in a slot 41'' in the end of the arm 41.

At the opposite end of the machine, backing chain 4 passes over a sprocket 44 mounted on the shaft 44' which drives the pressure chain 8 by a gear and chain drive similar to that for driving chain 7 from shaft 37.

It is thus seen that all of the conveyor and pressure chains are simultaneously and coincidently driven from the single driving means.

As illustrated in Figs. 6 and 7 and 8, each of the glue wheels 12 is mounted in and receives glue from a glue pot 53. As each of the glue wheels is of the same construction, a description of one only is necessary. One wall of the glue pot is provided with an opening 54 extending downwardly from the top thereof to accommodate the driving shaft of the glue wheel. Each glue pot is provided with a cover member 52 adapted to be supported on the side walls and between the end walls of the pot, the side walls of the glue pot being somewhat shorter in height than the end walls to permit the cover 52 to be countersunk below the top of the end walls so that the top surface of the cover will be flush with the top surface of the end walls. This cover is provided with a pair of spaced apart downwardly extending lugs 55 between which is pivotally mounted on the pivot pin 56 a supporting yoke 57 at the forward end of which, the glue wheel is adapted to be supported on the shaft 58 mounted between the fingers of the yoke. The yoke is biased, and with it the glue wheel, in a raised position, by a coiled spring 58' having one end connected to the yoke, and the other connected to a lug 59 on the under side of the cover 52, whereby the glue wheel is normally maintained in its raised and operative position for contact with the edge of the veneer stack as it passes through the machine. The glue pot is adapted to be supported in the position beneath the bed 2 on suitable supporting rails 60 so that the same can be slid in and out of position and in order that the glue wheel may be depressed below the surface of the cover 52 to permit the removal of the glue pot when desired, I provide a depressing cam 61 on the end of a shaft 62 rotatably mounted in downwardly extending lugs 63 and adapted to engage a projection 64 on the end of the yoke 57. The outer end of this shaft 62 projects through a slot 65 in the wall of the glue pot and the outer end of this shaft is provided with a crank arm 66 whereby by the rotation of a crank arm, the cam 61 may be rotated to depress the yoke 57 and with it the glue wheel so that the glue wheel may be lowered to or below the top surface of the cover 52 permitting the glue pot as a unit to be slid out from under the bed 2. Obviously, when the glue pot is slid into position, the glue wheel may be raised to its gluing position by the reverse movement of the crank 66 to permit this glue wheel to project through a slot in the bed 2 whereby it will be in the path of the stack of veneers as they pass through the machine. The shaft 58 of each of the glue wheels is provided at its inner end with a spiral worm gear 68 adapted in turn to mesh with spiral wheels 69 and 70 on the longitudinally extending shaft 71. This shaft is driven by a bevel gear train 72 from the shaft 33 which, as heretofore explained, is driven from the main drive motor 31.

In addition to the glue wheels, there is provided in each of the throats 9 and 10 a jointer head 11 which extends above the surface of the bed and each jointer head is driven from its separate motor 74, the jointer head being mounted on the shaft 75 of the motor.

For the purpose of delivering heated air to the glued edges of the stack of veneer sheets after they have passed beyond the glue wheel, as has heretofore been explained, the bottom of the bed is provided with a foraminous portion 12' which forms the top of a conduit 76 adapted to receive heated air from a suitable blower 77.

In operation, the stack of veneer sheets is fed into the throat 10 from the righthand side as it is picked up by the backing chain 5 and the pressure chain forming the throat. It is fed forward, to the left, looking at Fig. 2, over the jointer head 11 whereby the edges of the sheets forming the stack are properly trimmed and smoothed. After passing over the jointer head, the stack passes over the glue wheel 12 which, rotating in the glue pot, applies a smooth layer of glue to the edges of the sheets forming the stack and by continued passage, this glue is dried through the delivery of hot air thereto. After the stack has been passed through one throat, the stack is turned upside down to present a new face or edge and it is fed back to the right through the other throat 9 having its opposite edge jointed and glued in the same manner.

I claim as my invention:

1. In a device of the character described, a pressure track for a conveyor belt comprising a plurality of pressure track brackets, each pivotally supported at one end, each bracket having pivotally mounted thereon a pressure track member, biasing springs for biasing said pressure track brackets in a pressure direction, each of the track members comprising a U-shaped segment, a continuously moving chain adapted to travel between the legs of said U-shaped members and pressure plates carried by said chain adapted to bear on said pressure tracks.

2. In a device of the character described, the combination with a substantially horizontally disposed bed, of a pair of continuously moving belts arranged above said bed, spaced apart from

one another and disposed in facing relation, a glue wheel adapted to project above said bed, a glue pot supported beneath said bed and including a removable top, a yoke pivoted beneath said top and adapted to support at its free end said glue wheel, means for biasing said yoke to project said glue wheel above said bed, and means accessible from the exterior of the glue pot for moving the free end of said yoke downwardly to move the glue wheel below the top of said bed.

3. The combination with a bed, of a pair of laterally spaced conveyors disposed above and traveling across the top of said bed and having their material-engaging faces disposed at right angles to the top of the bed to provide traveling clamping means for supporting a plurality of veneer sheets in edged relation to said bed, a laterally stationary runway for one of said conveyors and a resilient backing for said other conveyor comprising a plurality of presser plates, each pivotally supported on a pivotally mounted spring pressed supporting arm, and means projecting above said bed between said conveyors for operating on the edges of said veneers as they are progressively moved by said conveyors.

4. The combination with a bed, of a laterally stationary track above said bed extending across said bed and having a face extending at right angles to the bed, a continuous conveyor adapted to travel on said track, a supporting unit disposed above said bed facing said conveyor and laterally adjustable relatively thereto, a track carried by said supporting unit and formed of a plurality of units, each unit comprising an arm pivoted on said supporting unit, a presser plate pivoted on said arm and a spring bearing on said arm, a continuous conveyor adapted to travel on said second-mentioned track whereby an assembled bundle of veneer sheets may be clamped between said conveyors and fed forwardly, and means projecting above said bed between said conveyors for operating upon the edges of said veneer sheets.

5. In a device of the character described, in combination, a conveyor belt, a pressure flat-faced track for said conveyor belt comprising a plurality of track sections, a plurality of pivoted lever arms, each pivotally connected at one end to a track section and pivotally connected at the other end to a support, and biasing means for biasing said lever arms in pressure direction, and a continuous conveyor adapted to travel over said sections.

6. In a device of the character described, in combination, a conveyor belt, a pressure flat-faced track comprising a plurality of track associated with said belt sections, a lever for each of said sections having one end pivotally connected to the section and the other end pivotally connected to a support, means for biasing one end of said lever in a pressure direction, and means for limiting the movement of said lever in pressure direction, and a continuous conveyor adapted to travel on said track sections.

7. In a device of the character described, in combination, a rotary wood finishing tool of sufficient width to engage and trim the edge of a bundle of veneer sheets, an adhesive applying roll of sufficient width to apply adhesive to the finished edge of said bundle and arranged in series with said tool and clamping and feeding means constructed to clamp a plurality of veneer sheets in face to face relation to form a compact bundle and present the edge of said bundle to said tool and roll and movable relatively to said tool and roll to progressively move the edge of said compacted bundle in contact with and across the periphery of said tool while said tool is rotating to form on said edge a completely smooth uniformly flat surface and then while maintaining the bundle undisturbed and in the condition it leaves the finishing tool across and in contact with said adhesive applying roll to spread on said finished edge surface a film of adhesive.

8. In a device of the character described, the combination with a rotary wood finishing tool of sufficient width to engage and trim the edge of a bundle of veneer sheets, an adhesive applying roll of sufficient width to apply adhesive to the finished edge of said bundle and arranged in series with said tool, and clamping and feeding means constructed to clamp a plurality of veneer sheets in face to face relation to form a compact bundle and present the edge of said bundle to said tool and roll and movable relatively to said tool and roll to progressively move the edge of said compacted bundle in contact with and across the periphery of the tool while said tool is rotating to form on said edge a completely smooth uniformly flat surface and then while maintaining the bundle undisturbed and in the condition it leaves the tool across and in contact with said roll to spread on said finished edge surface a film of adhesive, and means for directing a drying current of air across said glued edge after it leaves the gluing roll.

9. In a device of the character described, in combination, a flat substantially horizontally disposed bed, a jointer planer head rotatably mounted in said bed and adapted to extend above said bed, an adhesive applying roll disposed in said bed in line with said jointer head and adapted to extend above said bed, a pair of horizontally traveling laterally spaced conveyors above said bed, traveling in paths flanking said jointer and glue roll and with their faces disposed at right angles to the plane of the bed, at least one of said conveyors being resiliently backed to securely clamp between the same and the opposite conveyor a plurality of veneer sheets in face to face relation and feed the clamped bundle edgewise across the jointer head to smooth the edge of the bundle and while in clamped relation edgewise across the glue roll to apply glue to said smoothed surface.

10. In a device of the character described, in combination, a flat substantially horizontally disposed bed, a jointer planer head rotatably mounted in said bed and adapted to extend above said bed, a glue roll disposed in said bed in line with said head and adapted to project above its surface of said bed, a pair of horizontally traveling laterally spaced conveyors above said table, traveling in paths flanking said jointer and glue roll and with their faces disposed at right angles to the path of the table, at least one of said conveyors being resiliently backed to securely clamp between the same a plurality of veneer sheets in face to face relation and feed the clamped bundle edgewise across the jointer to smooth the edge of the bundle and while in clamped relation edgewise across the roll to apply glue to said smoothed surface, and means for coincidently driving said conveyors at the same speed.

GEORGE MILTON GUSTIN.

CERTIFICATE OF CORRECTION.

Patent No. 2,242,179. May 13, 1941.

GEORGE MILTON GUSTIN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 45-46, claim 5, strike out "flat-faced" and insert the same before "track" in line 47, same claim; lines 55, 56 and 57, claim 6, for "pressure flat-faced track comprising a plurality of track associated with said belt sections" read --pressure track associated with said belt comprising a plurality of flat-faced track sections--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of June, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.