Nov. 11, 1952 M. G. FAUSSNER 2,617,321

MACHINE FOR FORMING CORES FOR VENEERED DOORS

Filed June 16, 1947 3 Sheets-Sheet 1

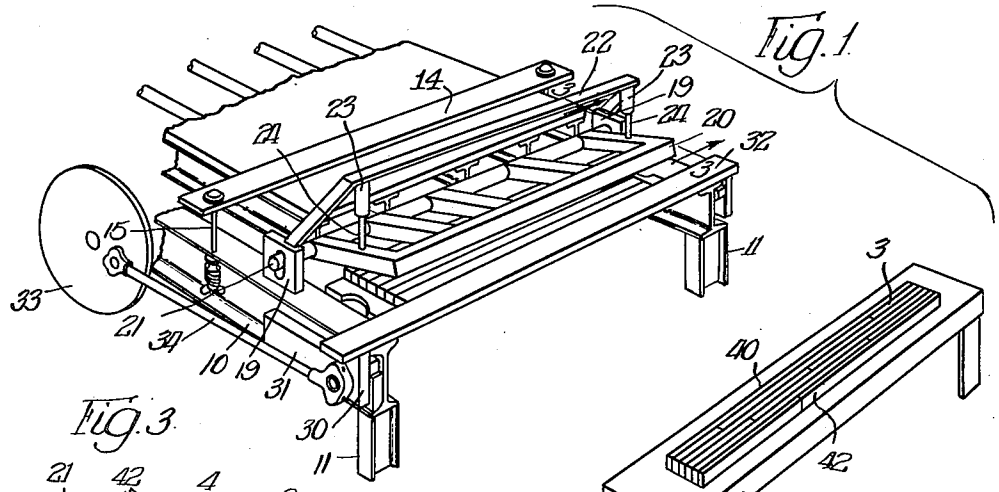

Fig. 1

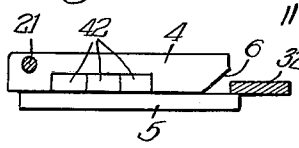

Fig. 3

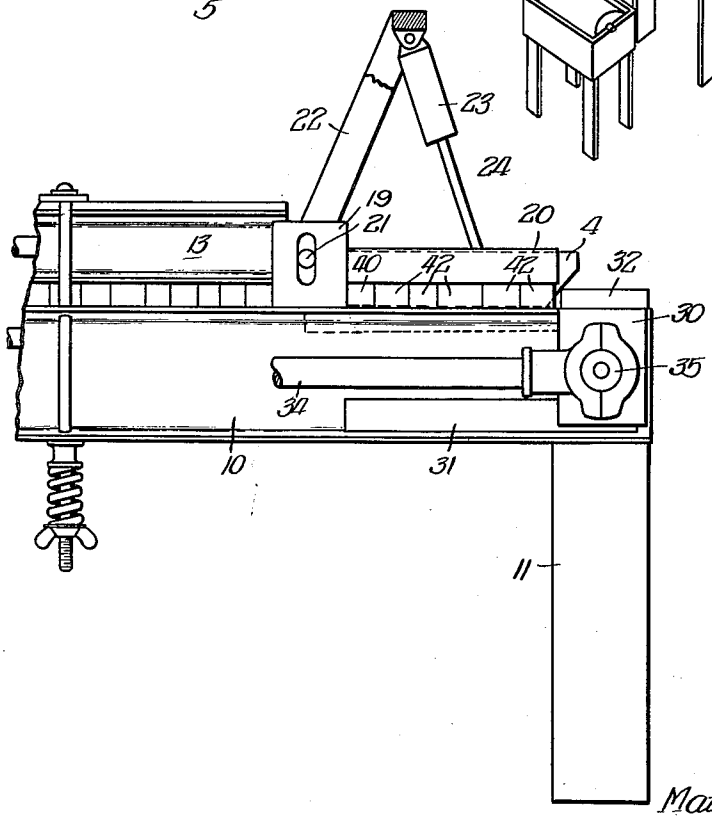

Fig. 2

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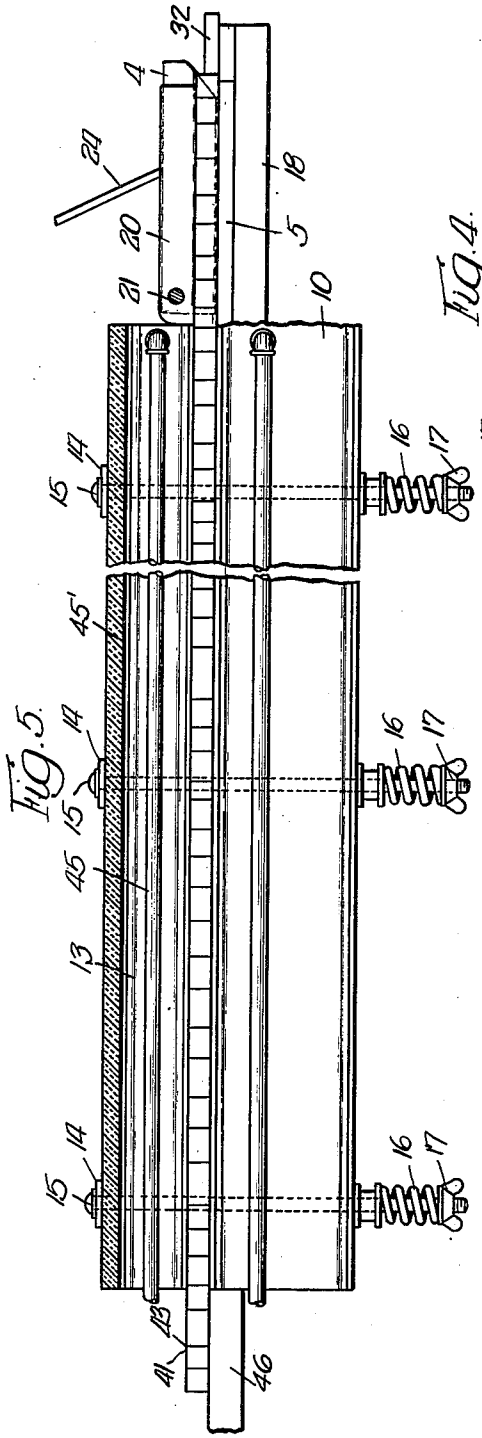

Fig. 5.

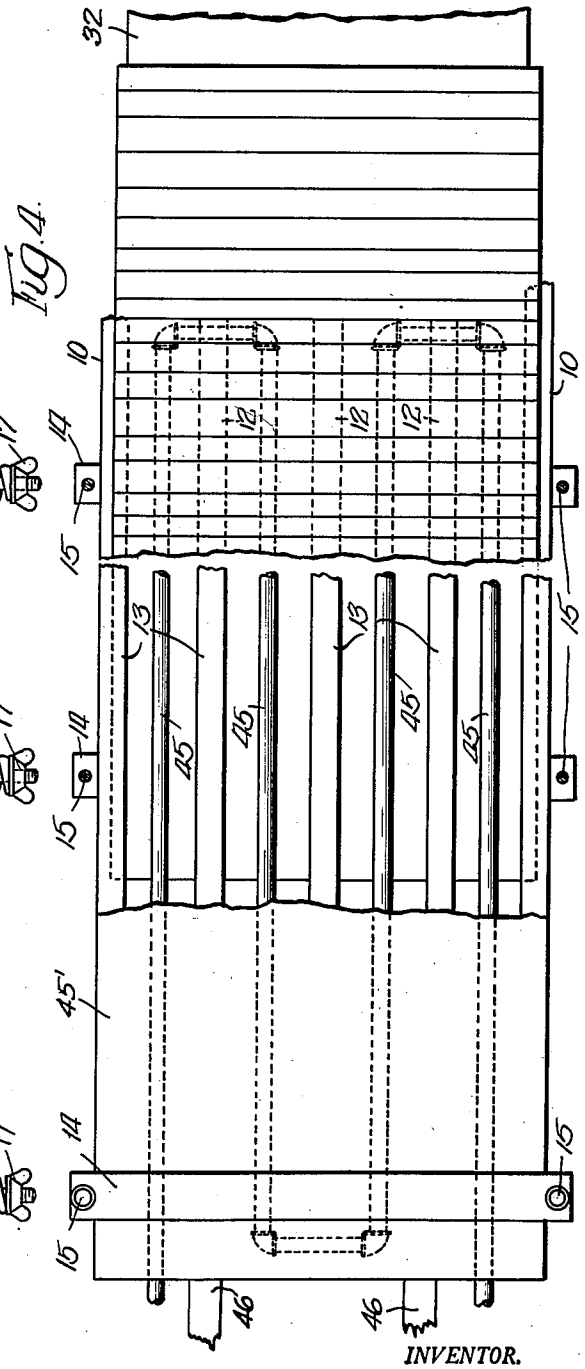

Fig. 4.

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MACHINE FOR FORMING CORES FOR VENEERED DOORS

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Fig. 6.

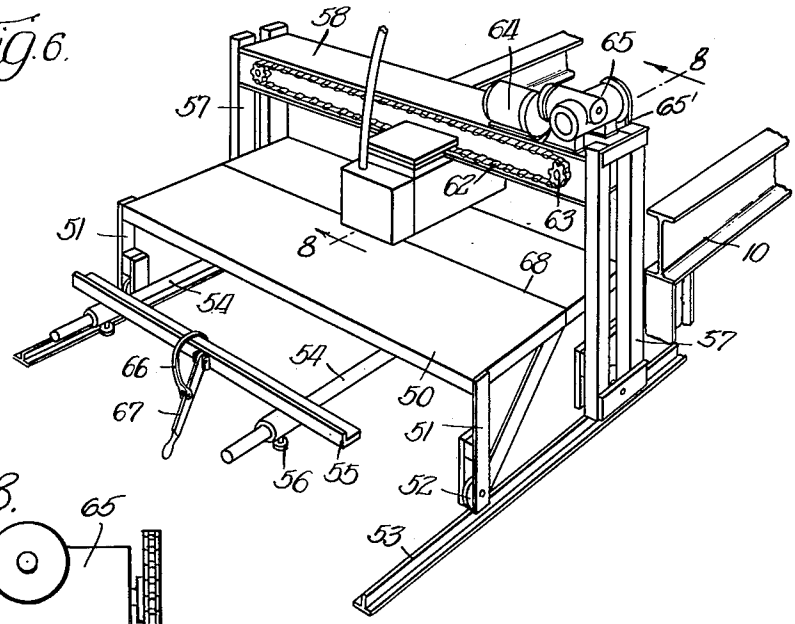


Fig. 8.

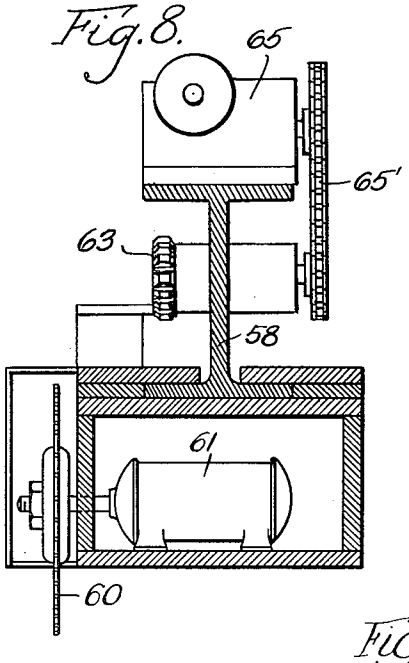


Fig. 7.

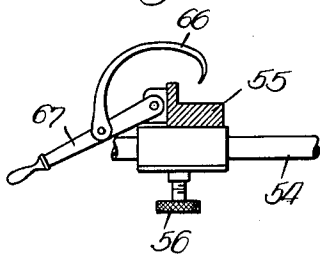
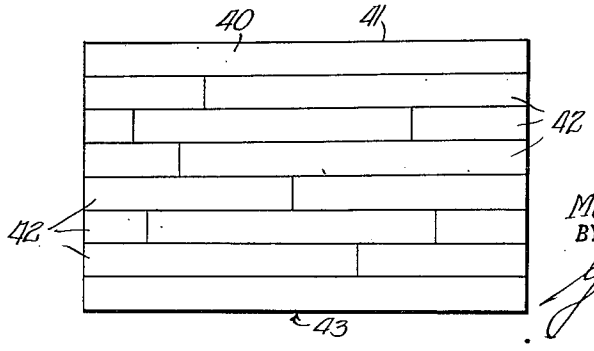


Fig. 9.



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UNITED STATES PATENT OFFICE

2,617,321

MACHINE FOR FORMING CORES FOR VENEERED DOORS

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Application June 16, 1947, Serial No. 754,829

1 Claim. (Cl. 81—281)

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This invention relates to an improved method of a machine for making cores for veneered panels, especially door panels.

It is a main object of the invention to provide a method of making cores of better quality than has been possible heretofore.

Another object of the invention is to provide a method of making cores that will increase the number of square feet of core that can be produced per man hour.

Still another object of the invention is to provide a batch method for feeding stock into a core-clamping machine thereby to minimize the number of cycles of operation of the machine.

Still another object of the invention is to provide an improved clamping machine in which cores are clamped edgewise and surfacewise simultaneously during the setting of the glue and are therefore truly planar and require less finishing.

Still another object of the invention is to provide a core-gluing machine that can be constructed economically as a rugged unit capable of being operated and maintained at nominal cost.

Further objects of the invention not specifically mentioned here will be apparent from the detailed description and claims which follow, reference being had to the accompanying drawings in which a preferred embodiment of the invention is shown by way of example and in which

Fig. 1 is a fragmentary perspective view of the machine of the present invention;

Fig. 2 is a side elevational view of a portion of the machine;

Fig. 3 is a fragmentary sectional view taken substantially along the line 3—3 of Figure 1 looking in the direction of the arrows;

Fig. 4 is a plan view of the clamping unit of the machine with parts broken away;

Fig. 5 is a side elevational view of the clamping unit shown in Fig. 4 with the front face omitted and with the insulation shown in section;

Fig. 6 is a perspective view of the cut-off table at the discharge end of the clamping unit;

Fig. 7 is an elevational view of the core-holding clamp;

Fig. 8 is a cross sectional view taken substantially along the line 7—7 of Fig. 6 looking in the direction of the arrows; and

Fig. 9 is a plan view of a core.

In the manufacture of veneered panels, such as door panels, wall panels, showcase panels, and the like, thin sheets of veneer are attached to the opposite faces of relatively thick cores of wood, usually by gluing. It is to the manufacture of cores of this type that this invention particularly relates.

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Heretofore in the manufacture of cores for doors in which the edges of the core have been exposed in the finished product, full length pieces of core stock have been placed at the opposite sides of the core and the intervening space filled in with random length pieces of stock end-butted together, the stock in both the side pieces and intermediate pieces being of uniform width and thickness. The assembly has been secured together by edge-gluing, and after gluing has been clamped in hand clamps during the setting time of the glue.

The maximum width to which a panel can be made by such a process is limited by the size of the hand clamps and further by the fact that all of the pressure put on the stock by the clamps is edgewise of the stock and this pressure is necessarily limited by the tendency of the individual pieces to bow out of a plane if the pressure is increased too much.

The present invention provides an improved method of making cores of this type, a method in which the individual pieces in a particular core are pre-cut and pre-assembled as before, and then edge-glued and laid up in sections for insertion into a clamping device wherein they are subjected not only to pressure edgewise on the members, but also to pressure simultaneously bearing on the upper and lower flat faces thereof. As additional sections of core are added to those already in the machine, all the core elements in the machine are moved edgewise, eventually emerging from the machine as flat planar members in which the glue is fully set and hardened.

The preferred form of machine employed in the practice of the present invention is equipped with a clamping device that is sufficiently long to hold a plurality of individual cores and to maintain them under clamping pressure for a length of time sufficient to insure that the glue will be thoroughly set. The clamping device may be equipped with heating pipes through which steam or hot water is circulated to facilitate setting the glue.

Although the machine of the present invention is particularly adapted to the making of cores for doors wherein the opposite edges of the door are made of a single full length piece of core stock, the machine may also be used to advantage in the manufacture of cores wherein the edge layers may be composed of random lengths of materials. In the former case, the juncture line between the

trailing edge of one core and the leading edge of a succeeding core in the machine is unglued, so that as the core emerges from the machine it can be lifted off of a receiving rack without difficulty. In the latter case, every junction line between adjacent core elements is glued and as the cores in the machine emerge therefrom they will be in the form of a continuous ribbon, the leading edge of which is received upon a cut-off table. This table is mounted upon a suitable trackway enabling it to travel with the core ribbon, and contains a suitable stop and a cut-off saw by which cores of desired width can be cut from the ribbon.

Referring now to the drawings in more detail, in Fig. 1 there is shown the input end of the machine, preferably employed in the present invention together with glue applicator 1 shown as a conventional rotatable drum partially immersed in a bath of glue. Adjacent this applicator is a storage rack or table 2 upon which individual core elements 3 which have glue applied to one of their edges are stored until needed.

As will be seen best in Figs. 1 to 5, inclusive, the machine consists of main side rails 10, preferably I-beams, supported upon suitable legs 11 to position the machine at a convenient working height. Supported in between the side rails 10 are intermediate rails 12, of which three are shown best in Fig. 4 although a greater or lesser number may be used. Mounted above these bottom rails 10 and 12 are a series of top rails 13 which are fixed to cross bars 14 that are pierced to receive bolts 15 which project through the cross bars and through suitable openings in the flange of the side rails 10. These bolts are encircled by compression springs 16 against which wing nuts 17 bear to tension the spring and thereby draw the upper and lower sets of rails together.

Adjacent the input end of the machine is an extension 18, Figure 5, of the rails 12 positioned with its upper surface below the upper surfaces of the rails 12 and carrying a bed 5 whose upper surface registers with the upper surfaces of the rails 12.

Mounted upon the side rails 10 in suitable hinge blocks 19 is a gate 20 capable of limited rotation around a pivot rod 21 that extends through elongated openings in the block 19. Supported upon a suitable bracket 22, extending upwardly from the blocks 19, are fluid pressure cylinders 23 having pistons 24 that are fixed to the gate so that when fluid pressure is admitted into the cylinders the gate will be forced downwardly, as will presently appear.

Carried upon a suitable pair of blocks 30, capable of sliding along guides 31 mounted upon the side rails 10 of the machine, is a pusher bar 32 that extends from side to side of the machine and is located so that its lower surface will pass over the bed 5, as will presently appear.

A guide block 4 is mounted upon and rotatable around pivot rod 21 and to the right of gate 20, and rests on the bed 5. The free end of the block 4 is chamfered as shown at 6, Figure 3, so that the block will be raised as the pusher bar 32 moves to the left, as will presently appear. A second and identically mounted guide block may be located to the left of gate 20, if desired, for a purpose which will presently appear.

Mounted upon the machine in suitable journals is a shaft carrying fly wheels 33, located outside the side rails 10 and on opposite sides of the machine. Pitman rods 34, are eccentrically connected to the wheels 33, these rods having

their other ends connected to the blocks 30 by suitable means 35. It will be obvious that as the fly wheel is rotated through one revolution, bar 32 will be removed first to the left (Figs. 1, 2 and 3) and then to the right into the position in which it is shown.

In the operation of the machine when cores having full length side pieces 40 are being made, the pre-cut and pre-assembled core elements 40 and 42 are run over the glue roll 1 and stored on table 2. The lay-up crew, one or two men, remove the elements from the table 2 and assemble them in the same order on bed 5 of the machine, butting the right hand ends of the elements against the guide 4 to insure that the elements are properly aligned in the machine. Bed 5 is narrower than most door panels so all of the elements of a core cannot ordinarily be placed in the machine at one time. Sufficient elements to fill the bed 5 are placed in the machine as a batch or section.

The width of the machine between side rails 10 is sufficient to accommodate standard height door cores. When shorter cores are to be made the machine may be equipped with a second guide block similar to 4 but located at the left hand end of gate 20, Fig. 1. Two ribbons of core stock can then be run through the machine simultaneously, the stock in one ribbon being guided by the block at the right end of the gate and the stock in the other ribbon being guided by the block at the left end of the gate. This second block has been omitted from the drawings to avoid an unnecessary complication thereof.

After the core pieces have been placed in the machine the operator then manipulates the controls, not shown, to admit fluid pressure to the cylinders 23, thereby to rotate gate 20 around its pivot 21 down onto the core elements on the bed. The operator then initiates an actuation of the fly wheels 33 by suitable controls, not shown, to cause them to make one revolution, thereby moving bar 32 to the left (Figs. 1, 2 and 3) into engagement with the trailing edge of the last core element 42 on the bed. Continued movement of the bar to the left forces the core elements edgewise off of the bed and onto the bottom guides 12 in the clamping device, and between these rails and the upper rails 13 therein. The gate 20 being forced down upon the upper surfaces of the elements prevents buckling of the elements under the influence of this edgewise pressure. Guide 4 rides up over bar 32 during this movement of the bar.

Continued movement of the bar 32 to the left pushes all of the core elements clamped between rails 12 and 13 to the left and through the clamping machine. At the end of the movement of bar 32 to the left, the last one of the elements on bed 5 will have been pushed completely off of that bed and into engagement with rails 12 and 13. The bar then moves to the right over the bed and back into the position in which it is shown in Figs. 1 and 2 in readiness for the next cycle of operation.

Clamping pressure placed upon the upper and lower rails 13 and 12, respectively, by the springs 16 is maintained high enough to insure that the elements will be aligned in planar relation and that there will be no tendency for these elements to back away from each other as the pressure of the bar 32 is withdrawn. The length of the rails 12 and 13 will depend upon the curing time of the glue and the linear speed of travel of the elements through the clamping device. Preferably suitable heating means, such as pipes

45, are positioned between the rails 12 and 13 and connected to a suitable source of heat, not shown, which may be either steam or hot water. Pipes 45 may be replaced by conductors and heat applied by high frequency electricity, if desired. Preferably a cover of insulation 45' overlays the source of heat thereby to reduce the power required to maintain the desired temperature in the device. The heat thus applied to the core elements speeds up the setting of the glue. If the glue used requires five minutes to set at the temperature employed, and if the machine is capable of advancing the elements at a speed of five feet per minute through the clamp, rails 12 and 13 must necessarily be at least twenty-five feet long to insure that the glue will have time to completely set before the elements emerge from the output end of the clamp.

In the case of doors, as shown in Fig. 9, in which the leading unglued edge 41 of one core is joined to the trailing unglued edge 43 of another core, the output end of the machine need consist only of a rack 46 over which the core elements are pushed by the pusher bar. When the unglued junction 41–43 clears the clamping rails 12 and 13, the core section is manually lifted off of this rack 46 and started on its way to be planed accurately to the desired thickness preparatory to receiving the face veneers by which the door is finished.

In instances where it is immaterial whether or not the edge members of the core are composed of one or more pieces, there will be no unglued juncture lines between core elements and the output end of the machine will be equipped with a cut-off table such as is shown in Fig. 6. This table is located adjacent the output end of the machine with its upper flat face 50 in substantial alignment with the upper faces of the bottom clamping rails 12, so that core members will slide from the rails onto the table. The table is supported by suitable legs 51 that are equipped with rollers 52 that engage tracks 53 so as to permit movement of the table toward and away from the clamping elements.

Projecting from the table are guide rods 54 (Figure 6) upon which stops 55 are adjustably mounted and secured by suitable means, such as set screws 56. Also mounted upon the table are uprights 57 located at opposite ends of the table and supporting between them a cross member 58 which is preferably an I-beam. Mounted upon this cross member 58, preferably in the manner best seen in Fig. 8, is a boxlike structure enclosing a cut-off saw 60 and a motor 61, preferably an electric motor, for driving this saw. Also mounted upon this cross bar and movable with respect thereto is a driving chain 62 encircling spaced apart sprockets 63 one of which sprockets is rotated by a suitable source of power, such as an electric motor 64, operating through a speed-reducing gear train 65 and a V belt 65' that encircles a pulley (not shown) fixed on the shaft carrying sprocket 63.

Mounted upon the stop 55 is a clamp consisting of a core-engaging hooklike portion 66 pivoted to a lever 67 that in turn is pivoted to the stop 55.

When the stop 55 is positioned at a distance from the saw line 68 equal to the width of the core to be made, and the ribbon of core emerging from the clamping device has traveled across the table and into engagement with the stop 55, clamp lever 67 is pushed downwardly to secure the core with respect to the stop block and cut-off saw 60 is started, traveling from one end of the table to the other, thereby to saw a core from the ribbon.

In the event that the bar 32 is operated during the interval that the saw is traveling across the table 50, the forward movement of the core elements will cause table 50 to travel along the tracks 53 and the operation of the saw will not be interfered with. As soon as the saw has completed its cut, clamp lever 67 is released and the finished core removed from the table which is then pushed backwardly on the rails 53 into the position shown in 55.

The method and machine of the present invention are possessed of many advantages. The number of square feet of core made per man hour is increased and the cores are of a higher quality than has been possible heretofore. Since the cores are subjected to pressures exerted edgewise and flatwise on them, and are maintained subject to these pressures during the entire period of setting of the glue, the finished cores are truly planar and require less planing than have the cores of the prior art. The guide used in laying up individual sections of the core assures accurate endwise alignment, and less trimming of the ends of the core is necessary. Cores of any desired width may be made in the device, and the width of cores can be changed from one value to another quickly and inexpensively. The machine is rugged, capable of being manufactured at low cost, and maintained in perfect operation economically. Since the sections of cores injected into the machine upon each cycle of operation of the machine are composed of several widths of core stock material, fewer cycles of operation of the machine are necessary to produce a given width of core, and maintenance of the machine is thereby further reduced.

While I have chosen to illustrate my invention by showing and describing a preferred embodiment of it, I have done so by way of example only, as there are many modifications and adaptations which can be made by one skilled in the art within the teachings of the invention.

Having thus complied with the statutes and shown and described a preferred embodiment of my invention, what I consider new and desire to have patented by letters patent is pointed out in the appended claim.

What is claimed is:

In a machine for gluing cores for veneered panels, a plurality of spaced apart rails extending longitudinally of the machine with their upper edges disposed in a common plane; heating media disposed between said rails and beneath said plane; a second plurality of rails extending longitudinally of the machine with their bottom edges disposed in a common plane that is parallel to and spaced from said first plane a distance equal to the thickness of the cores; heating media disposed between said second rails and above said second plane; means urging said first and second plurality of rails together under tension to clamp core elements disposed therebetween; a rectangular bed for supporting a plurality of core elements laid edge to edge thereon and extending longitudinally thereof; means supporting said bed in the machine with its upper face in said first plane and with its longer edges at right angles to said rails; a guide mounted on a rail of said first plurality of rails and disposed over said bed for aligning said elements longitudinally thereon; a gate pivotally supported on the outer ones of said first plurality of rails and disposed over said bed; fluid pressure means on said machine for

moving said gate on its pivots into clamping engagement with the plurality of core elements on said bed; and a ram in said machine movable over said bed and under said gate in said clamping position for moving said core elements off of said bed and into the space between said first and second plurality of rails.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
915,504	Sutter	Mar. 16, 1909
921,618	Murdoch	May 11, 1909
990,829	Bell	May 2, 1911
1,543,419	Burns	June 23, 1925
1,554,497	Goff	Sept. 22, 1925
1,620,570	Reynolds	Mar. 8, 1927
1,700,391	Williams et al.	Jan. 29, 1929
1,702,185	Weber	Feb. 12, 1929
2,191,070	Cone	Feb. 20, 1940
2,320,715	Bowling	June 1, 1943
2,407,070	Frame	Sept. 3, 1946
2,453,185	Bilhuber	Nov. 9, 1948
2,488,759	Bolling	Nov. 22, 1949

FOREIGN PATENTS

Number	Country	Date
656,812	Germany	Feb. 15, 1938