

July 5, 1927.

S. MADSEN

1,635,149

VENEER CORE MACHINE

Filed Sept. 16, 1925

8 Sheets-Sheet 1

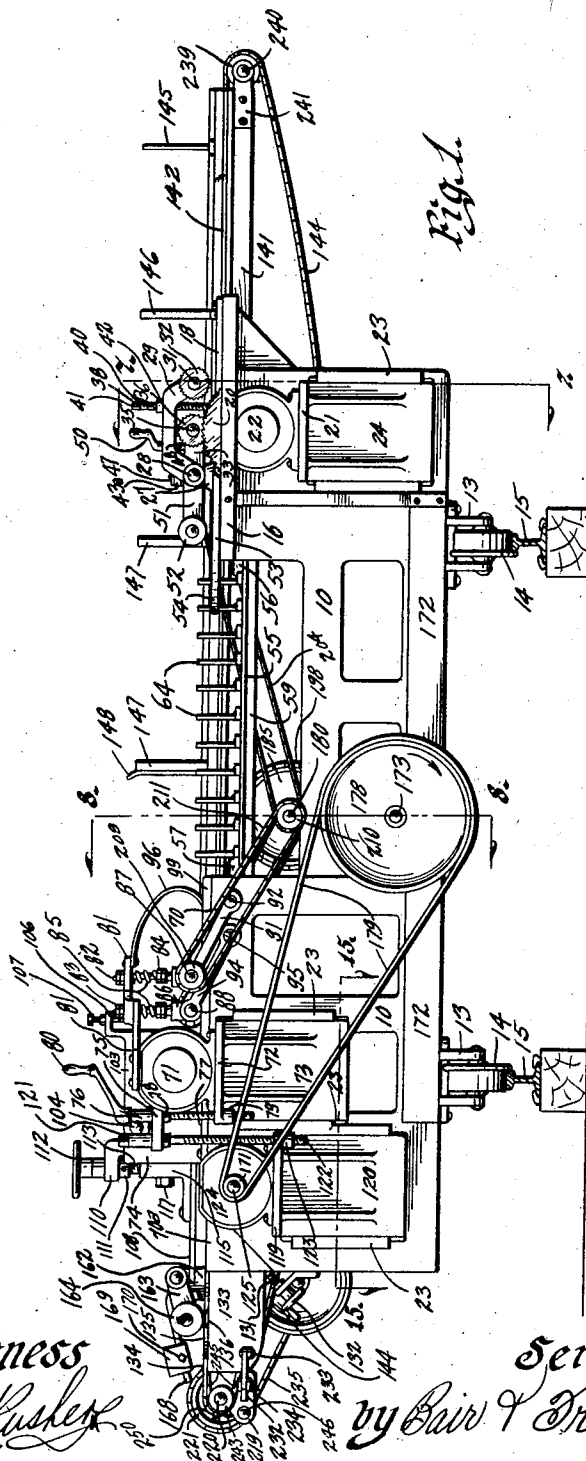


Fig. 1.

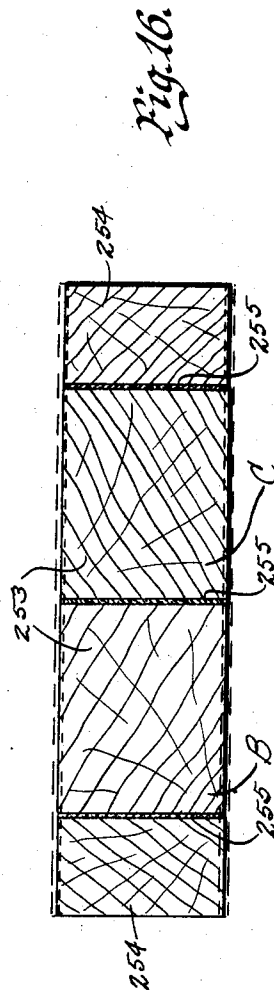


Fig. 16.

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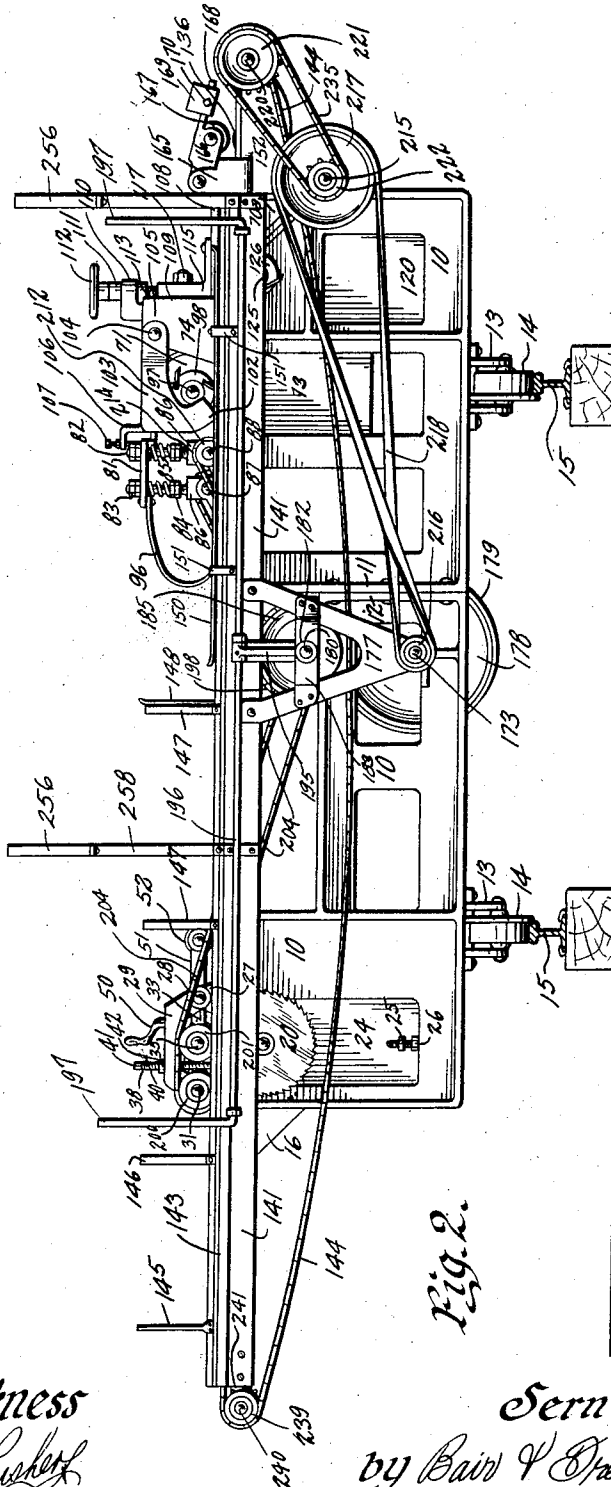
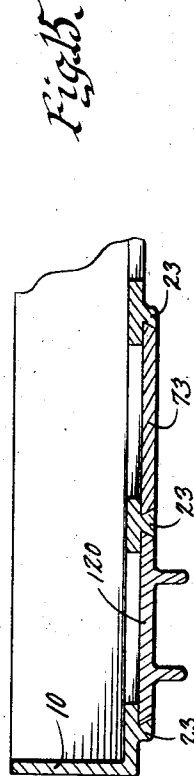
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VENEER CORE MACHINE

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8 Sheets-Sheet 2



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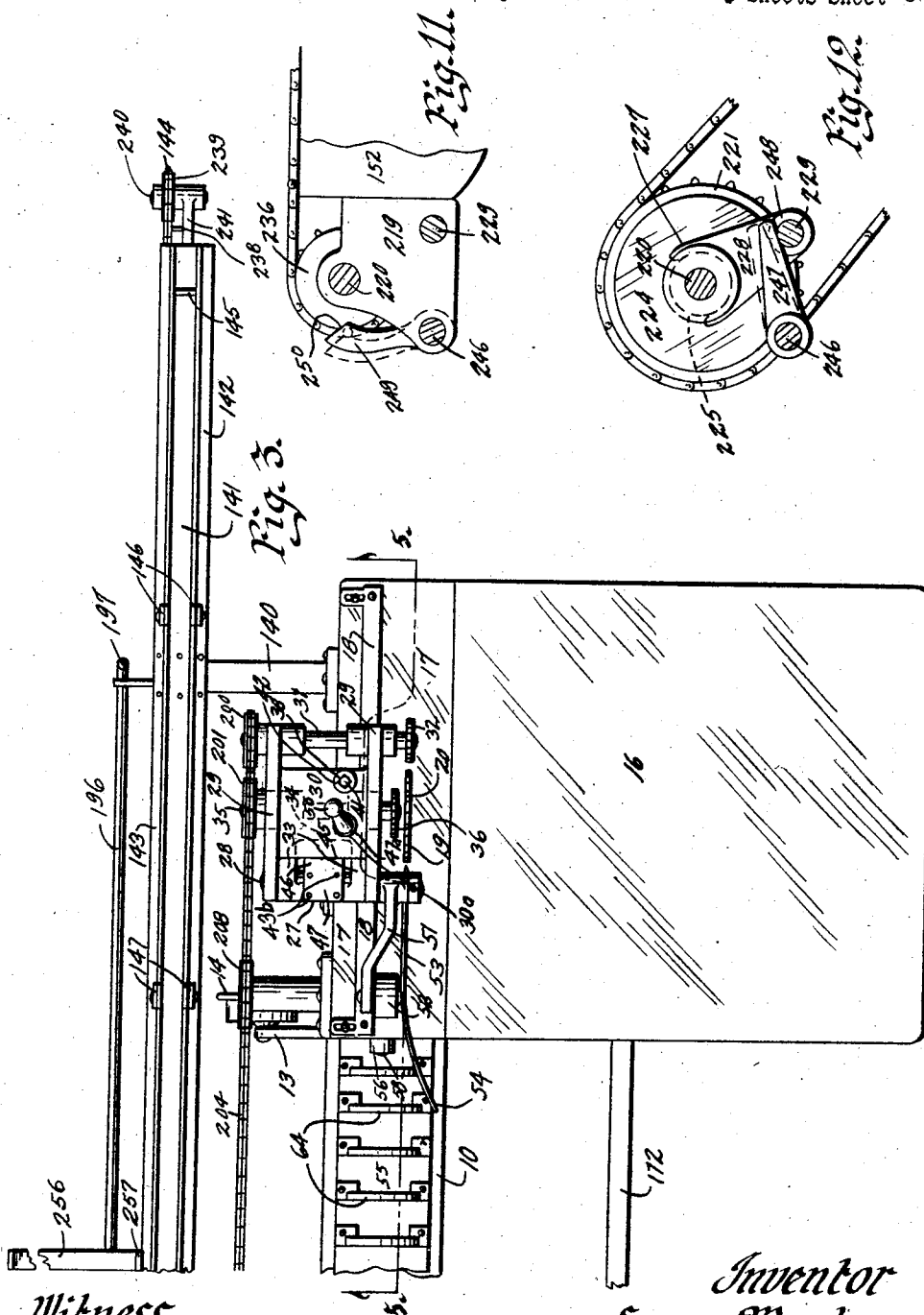
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VENEER CORE MACHINE

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8 Sheets-Sheet 3



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VENEER CORE MACHINE

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8 Sheets-Sheet 4

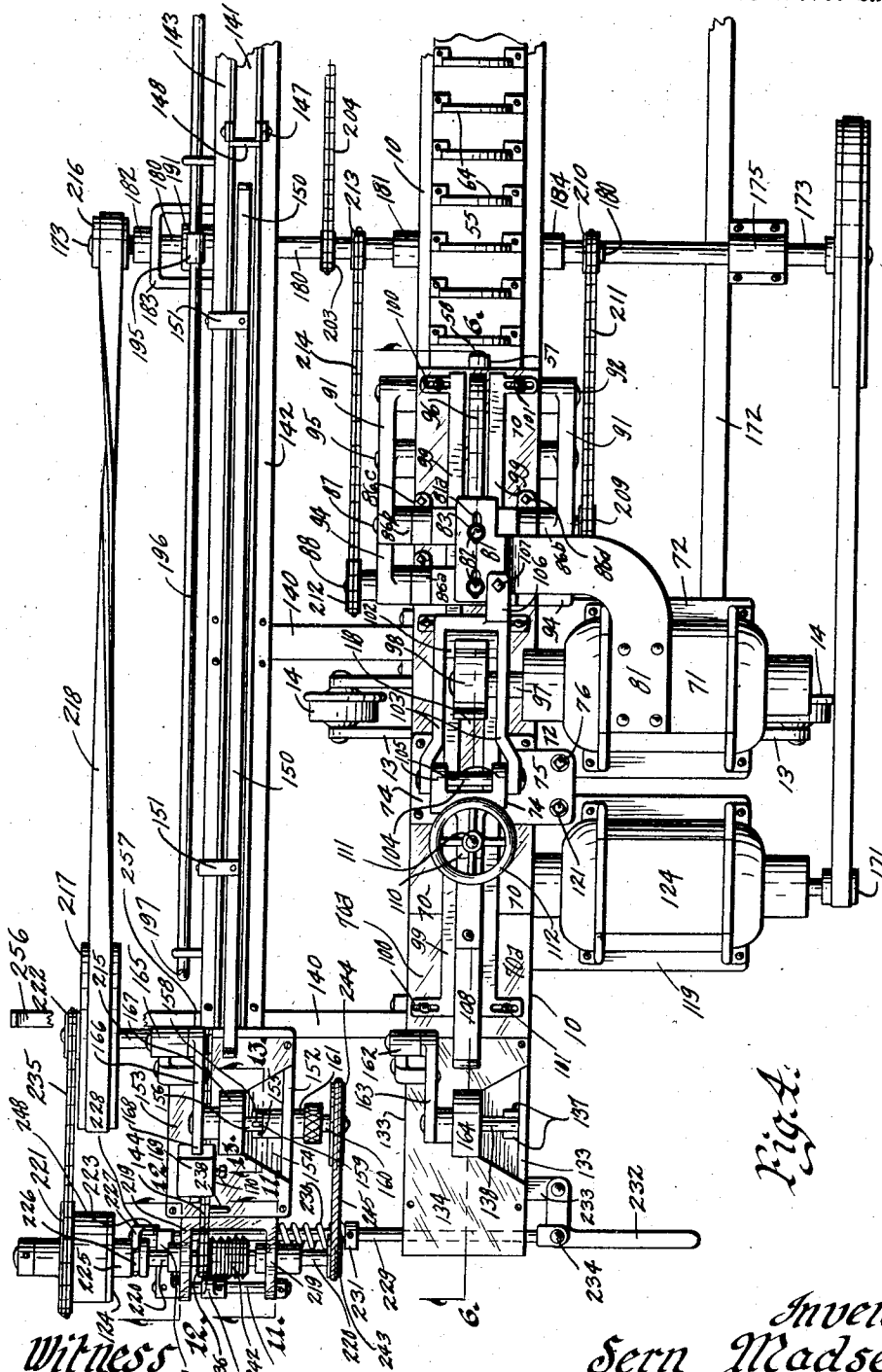


Fig. 4.

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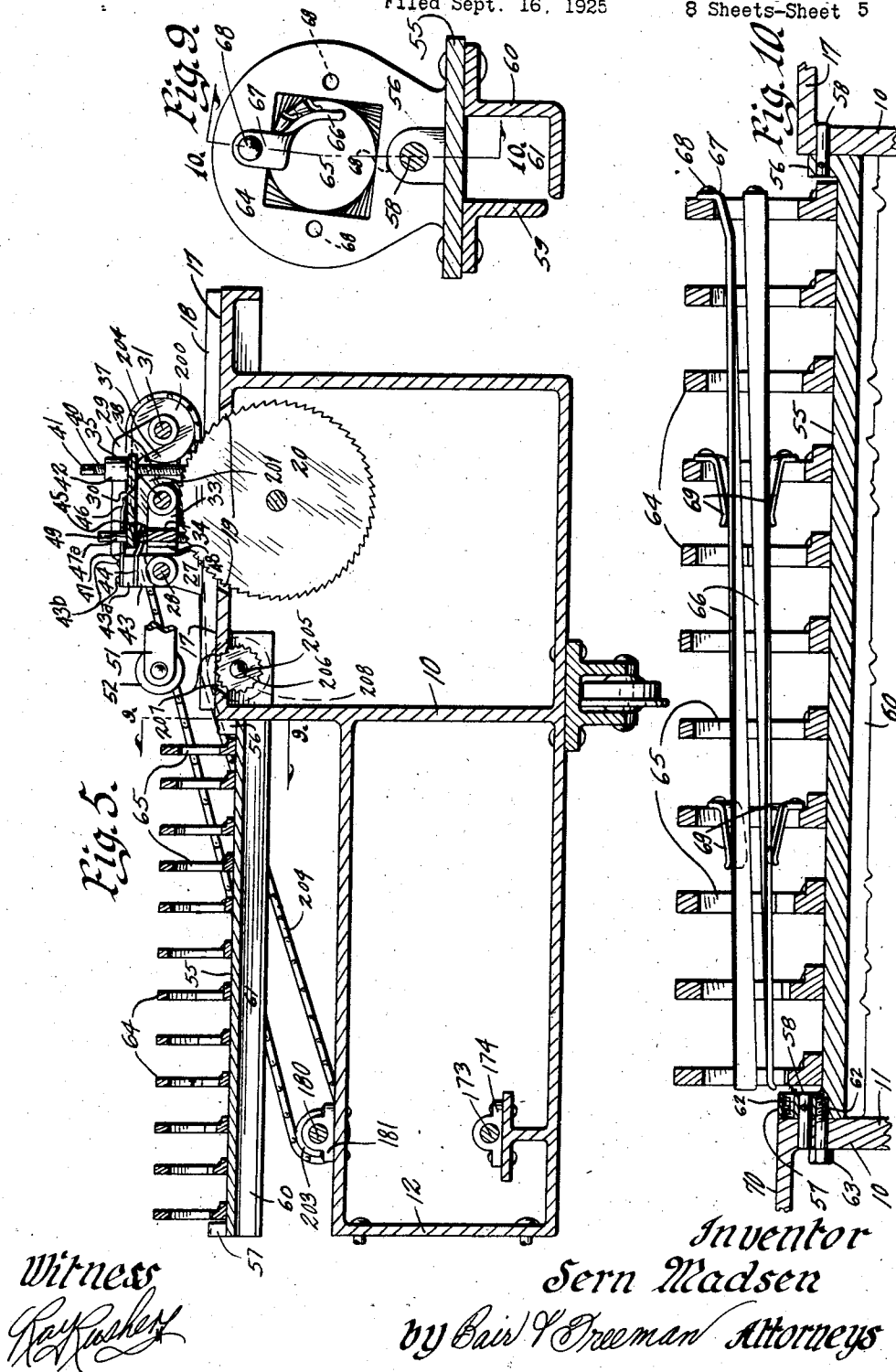
S. MADSEN

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VENEER CORE MACHINE

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July 5, 1927.

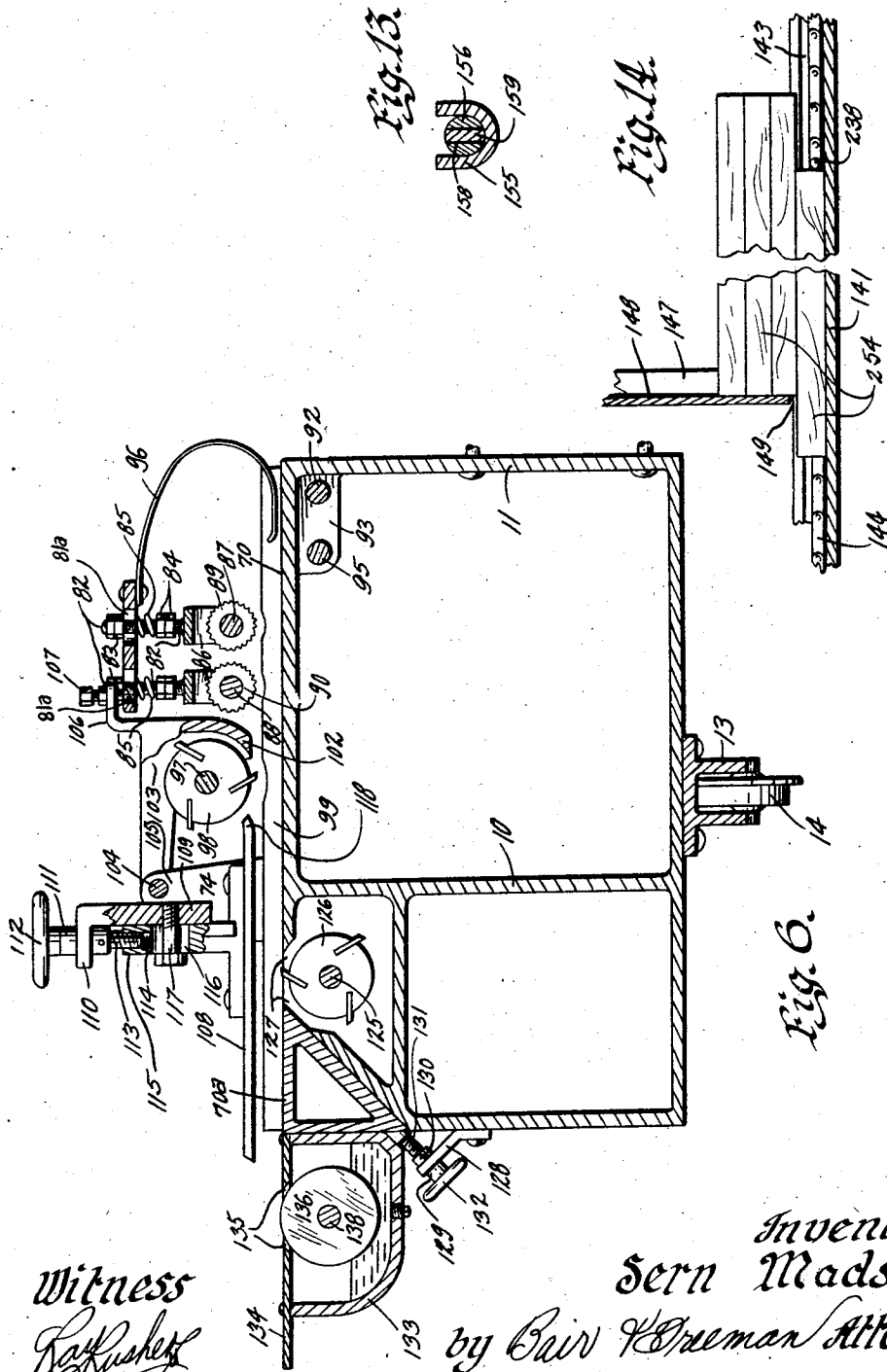
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VENEER CORE MACHINE

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8 Sheets-Sheet 6



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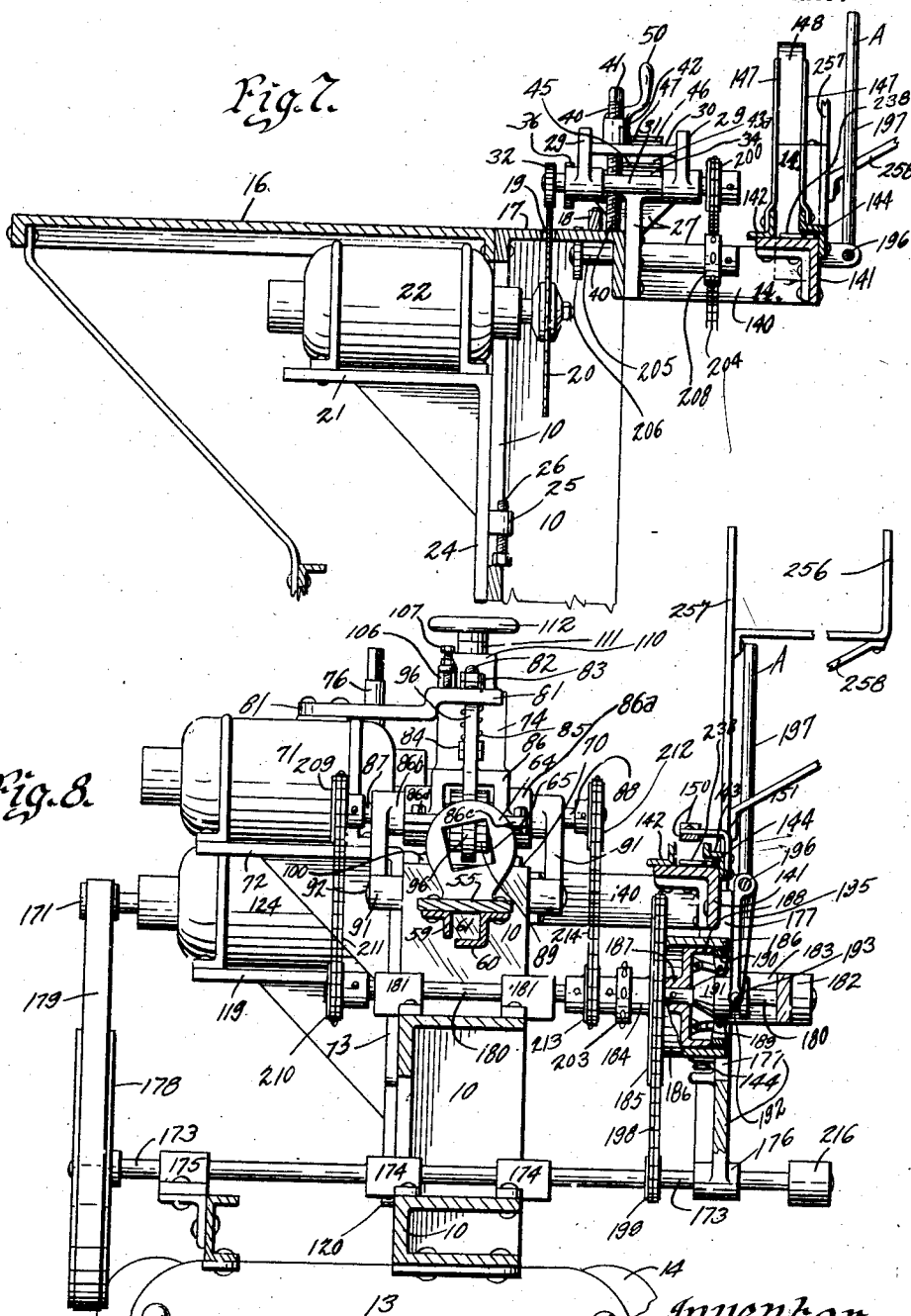
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VENEER CORE MACHINE

Filed Sept. 16, 1925

8 Sheets-Sheet 7



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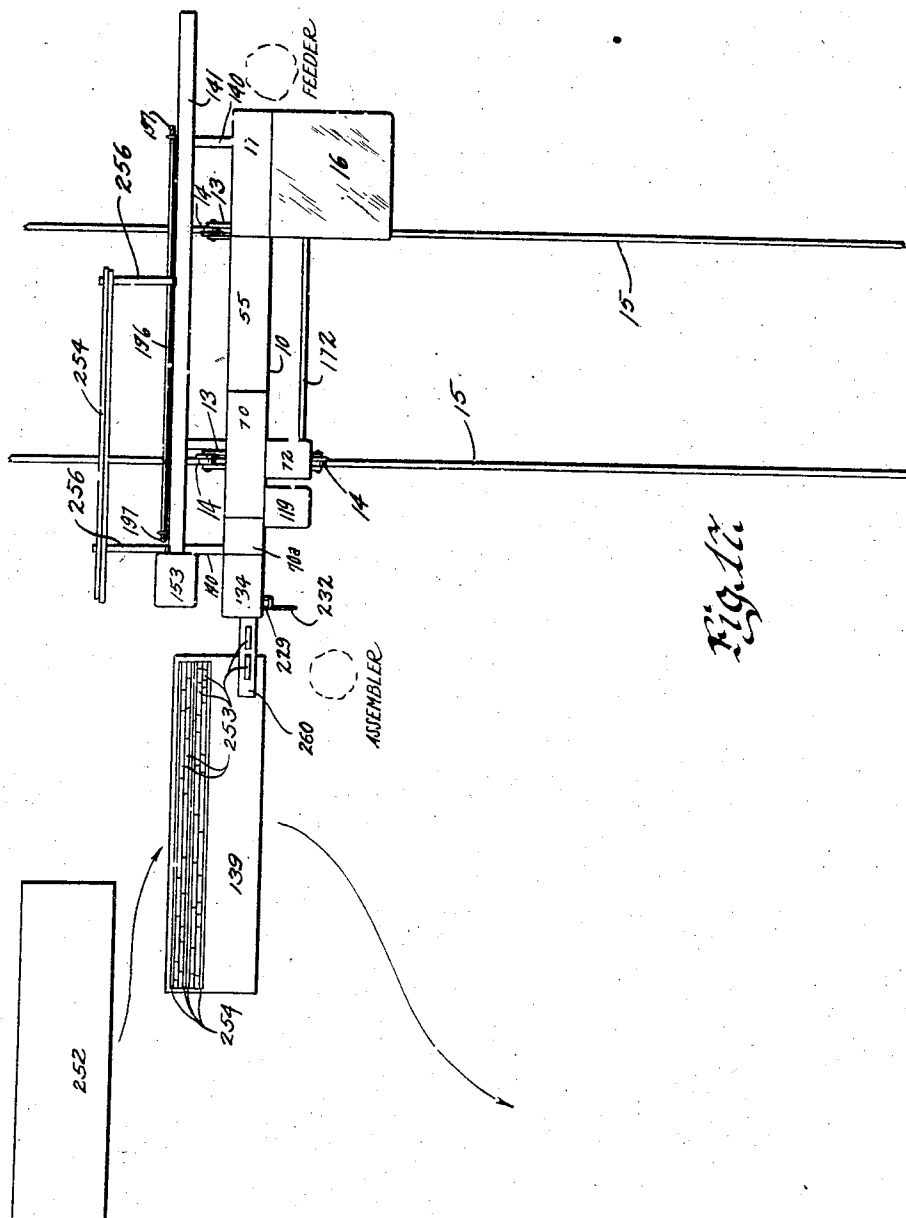
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VENEER CORE MACHINE

Filed Sept. 16, 1925

8 Sheets-Sheet 8



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UNITED STATES PATENT OFFICE.

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VENEER-CORE MACHINE.

Application filed September 16, 1925. Serial No. 56,675.

The purpose of my present invention is to provide a machine for facilitating the economical shaping, gluing and assembling of the various members entering into the construction of a built-up core, which is later covered with face veneer.

This machine is useful in any of the wood-working industries using veneer construction but is more particularly adapted for work on parts entering into doors.

More particularly, it is my object to provide a machine whereby the members of a built-up core are cut to shape during the passage through the machine, and whereby each of the core members is glued on one side and one of the edge strips is glued.

It is desirable to make various products of wood, for example, door stiles, of a built-up veneered core. This is true because of the desirability for economy in the use of smaller material and of cheaper material for the cores than for the veneer strips.

The assembling of a veneered core door stile for example is an operation requiring considerable labor and it is necessary that the work be facilitated in every possible way, in order to keep the labor cost down to a minimum, in order that the increased labor cost may not offset the saving on material.

I have therefore provided a machine for facilitating the assembling of veneered cores for door stiles and other products of similar nature. This machine facilitates the ripping and dressing of the core stock, the automatic movement of the core stock from the ripping to the dressing mechanism, either with a linear movement or with a linear movement and axial rotation, the gluing of one surface of each piece of core stock, the delivery of the dressed and glued core stock to an assembling table, the furnishing of glued and of unglued edge strips to the assembling table, and the so mounting of the means for operating on the core stock and the means for operating on the edge strips, that the stock may be simultaneously moved to proper positions with relation to the assembling table.

Likewise, the whole machine may be conveniently moved to proper positions for receiving stock from different bins.

With these and other objects in view, my invention consists in the construction, com-

bination and arrangement of the various parts of my veneer core machine, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 shows a side elevation of the core stock handling and edge strip handling mechanism mounted on tracks for simultaneous movement to different positions relative to an assembling table, not shown in this figure.

Figure 2 shows a side elevation of the opposite side of the machine from that shown in Figure 1.

Figure 3 is a top or plan view of the front end of the core stock handling and the edge strip handling mechanisms.

Figure 4 is a top or plan view of the rear ends of the mechanisms shown in Figure 3.

Figure 5 is a vertical, sectional view taken on the line 5—5 of Figure 3.

Figure 6 is a vertical, sectional view taken on the line 6—6 of Figure 4.

Figure 7 is a transverse, vertical, sectional view taken on the line 7—7 of Figure 1.

Figure 8 is a similar view taken on the line 8—8 of Figure 1.

Figure 9 is a vertical, sectional, detail view taken on the line 9—9 of Figure 5.

Figure 10 is a vertical, longitudinal, sectional view taken on the line 10—10 of Figure 9.

Figure 11 is a vertical, sectional view taken on the line 11—11 of Figure 4.

Figure 12 is a vertical, sectional view taken on the line 12—12 of Figure 4.

Figure 13 is a similar view taken on the line 13—13 of Figure 4.

Figure 14 is a vertical, sectional view taken on the line 14—14 of Figure 7.

Figure 15 is a horizontal, sectional view taken on the line 15—15 of Figure 1.

Figure 16 is a transverse, vertical, sectional view of a door stile or the like with the cores and edge strips assembled together but with the veneer strips omitted; and

Figure 17 is a diagrammatic plan view of the entire mechanism, illustrating the relation of the machines to the assembling table and to each other.

My veneer core machine is intended to be used in connection with an assembling table.

Core stock is fed to the mechanism which rips the core stock to its desired width and then delivers the ripped blocks from the ripping mechanism to a dressing mechanism by direct linear movement or by linear movement and axial rotation. The core blocks are then dressed on one or two sides, either straight-faced or tongued and grooved, as may be desired, and are then automatically moved past a gluing mechanism, by which one side is glued. They are then delivered to the assembling table.

Provision is made for supplying part of the edge strips automatically from a hopper, supplying glue to them, and delivering them to the assembling table adjacent to the point of delivery of the core stock. The rest of the edge strips are carried on a rack on the machine.

Controlling means are provided for the edge strip handling mechanism adjacent to the delivery end of the strip handling mechanism and the core stock handling mechanism and consequently adjacent to the assembling table.

The core stock handling mechanism and the edge strip handling mechanism are so mounted as to be simultaneously adjustable along a track, so that core stock or edge strips may be taken from different supply bins.

I shall now proceed to describe first the mechanism for acting on the core stock and then the mechanism for gluing, the edge strips and delivering them to the assembling table.

Core stock ripping, dressing, gluing and delivering mechanism

The main frame of the machine is indicated at 10 in Figures 1, 2, 7 and so forth, and is preferably made of two parts, having their flanges 11 and 12, (Figure 2), bolted together as shown.

The frame 10 is supported on two spaced wheel beams 13, as shown in Figures 1, 2 and 8, each of which has two flanged wheels 14 traveling on tracks 15, so that the whole machine may be readily moved sidewise on the tracks.

It will, of course, be understood that the frame 10 has suitable flanges and bosses for supporting and being connected with various other parts, which will be described.

At the front or feeding end of the machine on the left-hand side, there is supported a table 16 for core stock. (Figures 1 and 3). Core stock may be supplied to the table 16 in any suitable way.

Adjacent to the table 16 is what may be called the bed 17, supported on the main frame or made integral therewith, as may be desired. Stock is fed by hand from the table 16 to the ripping mechanism.

On the bed 17 is mounted a guide 18.

Any means may be employed suitable for the purpose of supporting the guide 18 for lateral adjustment.

In the bed 17 is a slot 19 for the saw 20. A suitable bracket 21 supports a motor 22 having the saw 20 mounted on its shaft.

The motor 22 and other motors herein-after referred to are mounted on the frame 10 for vertical adjustment as illustrated for instance in Figures 7 and 15.

The bracket 21 and the brackets for the other motors have uprights, that for the bracket 21 being indicated at 24 in Figure 7, mounted for vertical adjustment in the gibbed ways 23 in the frame 10.

The upright 24 has a lug 25 (see Figure 7) to receive a screw bolt 26, the head of which rests on the frame 10 for limiting the downward movement of the bracket 21 in the gibbed ways of the frame 10.

By rotating the screw bolt 26, it may be raised or lowered for regulating the height of the motor 22 and consequently the height of the saw 20 for cutting core stock of different sizes.

For holding the core stock and feeding it past the saw, there are provided spur wheels and a roller as follows:

Supported on the bed 17, as illustrated for instance in Figure 7, is a bracket 27, in which is mounted a transverse shaft 28, (Figure 3). There is provided a frame, consisting of the side members 29, each having one end pivotally mounted on the shaft 28, which side members are connected by a cross plate 30, as shown in Figure 3. The side members 29 at their ends opposite the pivotal connection with the shaft 28 carry a rotatably mounted transverse shaft 31, (Figure 3). On one end of the shaft 31 just forwardly with relation to the saw 20 is a spur wheel 32. (Figures 1, 3 and 7).

Pivoted on the shaft 28 between and under the side members 29 are the side members 33 of a second frame, which are connected by a cross bar 34. (Figure 5). The side members 33 carry a shaft 35, as shown in Figures 1, 3 and 5, on one end of which above and spaced laterally from the saw 20 is a spur feed wheel 36.

In order to properly adjust the downward tension on the spur wheels 32 and 36 and on the stock being fed to the saw 20, I provide the bracket 27 with a portion 43 extending above the shaft 28 between the side members 33. On the portion 43 of the bracket 27 is a spring 44 of the so-called flat type, which is extended over the cross bar 34, as indicated at 45 in Figure 5.

On the spring 44 is a spacer block 43^a on which is a spring 47 similar to the spring 44. The spring 47 extends over the cross plate 30, between the side members 29, which support the spur wheel 32, as shown at 46, in Figure 5.

The springs 44 and 47 and the spacer block 43^a are secured to the portion 43 by cap screws or the like 43^b.

To limit the downward movement of the spur wheel 32, I provide a screw-threaded rod 40. The rod 40 coacts with an internally screw-threaded boss 42 on the cross plate 30. The upper end of the rod 40 is squared as at 41 and the lower end rests against the bed 17 as shown in Figure 7.

To similarly limit the spur wheel 36, I provide a screw-threaded rod 47^a, which coacts with an internally screw-threaded boss 48 on the cross bar 34. The rod 47^a extends upwardly through an enlarged hole 30^a (Figure 3) in the plate 30 and terminates in a squared portion 49. The lower end of the rod 47^a rests against the bed 17.

Thus it will be seen that I have a spring pressure for causing the spur wheels 32 and 36 to bear down against the core stock passing through the ripping mechanism and that by turning the rods 40 and 47^a, the spur wheels 32 and 36 may be adjusted to a position slightly below the level of the top of the core stock and thereby allow the stock to be forced under them and still derive the full benefit of the pressure of the springs 44 and 47. For turning the rods 40 and 47^a, I provide a wrench 50, having a squared socket in one end to fit the squared portions 41 and 49 of the rods 40 and 47^a.

Beneath the bed 17 is another spur wheel 206 on a shaft 205, which extends through an opening 207 in the bed 17.

Pivotally supported on the shaft 28 is a rearwardly extending arm 51, which supports a roller 52 adapted to rest by gravity on the core stock, after the core stock has passed the saw 20 for holding such stock down on the bed 17 and the spur wheel 206.

The stock is taken from the table 16, placed against the guide 18, after the guide has been properly adjusted and pushed under the spur wheel 32. The spur wheel 32 then advances the stock toward the saw 20 (see Figure 3), and as the stock advances it is also acted upon by the spur wheel 36.

Just rearwardly from the saw, there is mounted a spring of the flat type, as indicated at 53, which extends from its forward end rearwardly in line with the saw 20, and at its rearward end is curved to the machine as at 54.

The purpose of the spring guide device 53 is to move the stock sawed from the piece which has been cut to size to the left. If the piece thus cut off is large enough for further use, the operator again passes it through the ripping mechanism. If not, it is allowed to drop off the table.

The means for operating the spur wheels 32 and 36 and the roller 52 will be herein-

after described. The spring 53 is called a splitter.

Core stock guides.

The sawed core stock members are fed from the bed 17 to a turret guide. This turret guide, shown in Figures 1, 3, 4, 5, 8, 9 and 10, comprises a plate, which may be in the form of a casting 55, illustrated in Figures 5, 9 and 10. The plate 55 has at its ends the ears 56 and 57 mounted on trunnions 58 rotatably supported on the main frame 10. (See Figures 9 and 10.)

On opposite sides of the plate 55 are mounted guides, one of which is for the purpose of guiding the core stock in a direct line, and the other of which is for guiding the core stock and turning it a quarter turn during its movement through the guide.

The first, which I shall for convenience call the straight guide, is illustrated in section in Figure 9, and comprises an angle bar 59 secured to the plate 50 and a Z bar 60 secured in spaced position. The bars 59 and 60 form a guide passage 61 substantially rectangular in cross section and large enough to receive any stock, which the machine is designed to handle.

When the turret member is moved with the straight guide up, the core stock moves in a direct line, and without rotation through the guide, each piece being pushed along by the succeeding piece. The turret device can be rotated on the trunnions 58. To hold either guide, the ear 57 is provided above and below the trunnions 58 with screw-threaded openings 62. A screw bolt 63 is extended through a portion of the frame 10 and may be screwed into either of the openings 62 for locking the turret with either guide up.

What I shall call the spiral guide is illustrated in Figures 5, 9 and 10 for example and is intended to guide the stock as it is advanced and to give it a quarter turn. Mounted on the plate 55 on the side opposite the straight guide is a series of spaced yokes 64. The yokes 64 each have a rectangular opening 65 having its center substantially on the central line of travel of the core stock. These openings 65 are somewhat greater in cross section than the cross section of any core stock fed therethrough.

The first yoke at the front end of the series has the sides of the rectangular opening 65 arranged in vertical and horizontal planes or nearly so. In each succeeding yoke, the openings are so arranged that their sides incline at regularly pronounced angles. From the sides of the opening in the first yoke, the inclination of the angles is such that in the last yoke of the series the sides of the rectangular opening are again in substantially vertical and horizontal planes.

The whole effect, however, in the varia-

tion of the arrangement of the openings, is that in passing from the first yoke to the last, the rectangular outline of the opening has rotated on an axis parallel to the path of advance through an angle of ninety degrees. Thus, we have what might be called a series of spirally arranged rectangular openings.

Secured to the first yoke 64 are four long strip steel springs 66. These springs 66 are each provided with a twist along a lengthwise axis to lie flat against the respective sides of the series of rectangular openings in the series of yokes 64.

Thus the strips lying in horizontal planes at the front of the guide will lie in vertical planes at the rear end, and those which lie in vertical planes at the front of the guide will lie in horizontal planes at the rear.

The front ends of the strips are bent at right angles as at 67 and secured to the front yoke 64 by means of bolts 68.

At intervals along the length of these strip springs 66 are short springs 69 secured to the yokes, intending to press the long spiral springs 66 inwardly.

The object of the entire arrangement of yokes, springs 60 and springs 69 is to provide a yielding tube-shaped spiral guide with an opening rectangular in cross section at any point in its length, and which in its entire length makes an axial twist of one-quarter of a turn.

It will be seen that a piece of core stock forced through this guide will have a constant tendency to twist and in passing through the guide will have been given a quarter turn.

The core stock is discharged from either of the guides above described upon the bed 70 for the core stock dressing mechanism.

Core stock dressing mechanism.

Upon the bed 70 are mounted in succession, feed rolls, a chip breaker, a top dresser head, a top pressure shoe, a lower dresser head, an adjustable rear table, a glue pot and a glue roller, which will now be described.

Because the feed rollers are mounted partially on the motor for the top dresser head, I will first describe the mounting of that motor. The top dresser head motor 71 (see Figure 1) is supported on a bracket 72 having an upright member 73 similar to the upright member 24 of the bracket 21 and mounted in gibbed ways 23, such as have been described.

Supported on the bed 70 is a bracket 74 (see Figures 1, 2, 4 and 6), which has an extension 75. Rotatably mounted in the extension 75 is a rod 76 having a shoulder above the extension 75 and a screw-threaded portion 77 below it. A collar 78 is fixed in the rod 76 below the extension 75. The

screw-threaded portion 77 is extended through a screw-threaded hole in the bracket 72 and the boss 79 formed thereon.

The upper end of the rod 76 is squared to receive a removable wrench or crank handle 80 similar to the wrench 50.

By rotating the rod 76 in the extension 75, the screw-threaded connection between the rod and the bracket 72 will impart vertical raising or lowering movement to the bracket 72 and the motor 71 mounted thereon.

Fixed on the motor 71 is a bracket 81, shown in Figures 1 and 4, which projects laterally over the bed 70.

Mounted in the bracket 81 above the bed 70 and above the path of travel of the stock passing along the bed are longitudinally spaced screw-threaded rods 82 having nuts 83 thereon above the bracket 81.

The rods 82 slide freely in longitudinally slotted holes 81^a in the bracket 81.

On each rod 82 below the bracket 81 are nuts 84 and between the nuts 84 and the bracket 81 are springs 85.

On the lower ends of the rods 82 are yokes 86 in which are mounted shafts 87 and 88 respectively carrying the spur feed wheels 89 and 90.

Pivotally supported on the outer ends of the shaft 88 (Figure 4) are links 91 extending rearwardly and forwardly and pivoted at their forward ends on a transverse shaft 92 mounted on brackets 93 on the frame 10, as shown in Figure 6.

Similarly pivotally mounted on the ends of the shaft 88 are links 94 extending forwardly and downwardly and pivoted at their lower ends on a shaft 95 supported by the bracket 93.

The hubs 86^a of the yokes 86 are large enough to receive the hubs 86^b of the links 91 and 94. The hubs 86^a have split ears 86^c and clamping bolts 86^d (Figures 4 and 8). The bolts 86^d are loosened during vertical adjustment of the feed rollers 89 and 90 and tightened after this adjustment is made.

A curved pressure spring 96 is supported on the bracket 81 and is arranged to yieldingly press the moving stock against the bed 70. (See Figure 6.)

Referring to the feed rollers 89 and 90, it will be seen that they have a positive vertical adjustment by means of the nuts 83, and also that they have a certain degree of yielding, vertical adjustment against the tension of the springs 85 for accommodating said rollers to the thickness of the stock being operated on. They also have a positive vertical adjustment due to the fact that they are raised and lowered with the motor 71 when the motor is adjusted for operating on different thicknesses of stock.

Core stock passing beneath the rollers 89 and 90 will cause a slight swinging move-

ment of the links 91 and 94 and a corresponding movement of the rods 82, the yokes 86 of which are clamped to the links by the bolts 86^a. The elongated holes 81^a in the bracket 81 permit this movement.

On the shaft 97 of the motor 71 is the top dresser head 98 for dressing the top surface of the stock passing through the machine.

On the bed 70 rests the guides 99 having the elongated slots 100 through which are extended the lock bolts 101 mounted in the bed 70.

The chip breaker 102 (Figure 6) has a yoke 103, (see Figures 4 and 6), the arms of which are mounted on a transverse shaft 104 mounted in bearings 105 on the bracket 74. The yoke 103 has a forwardly projecting arm 106 in which is adjustably mounted a set screw 107, the lower end of which adjustably rests on the bracket 81, as shown in Figures 4 and 6.

It will thus be seen that the chip breaker will maintain its operating position in any vertical adjustment of the top dresser head 98.

Just rearwardly of the top dresser head is mounted the top pressure shoe 108. (See Figures 4 and 6).

The bracket 74 has a connecting member 109 and an horizontal extension 110. Rotatably but non-slidably mounted in the extension 110 (Figure 6) is an upright rod or the like 111 having on its upper end, the hand wheel 112 and having its lower end screw-threaded as at 113, and screwed into a screw-threaded opening 114 in a bracket 115, which supports the shoe 108.

The bracket 115 has a vertically elongated slot 116. A headed screw-threaded bolt 117 is extended through the hole 116 and is screwed into the connecting member 109 of the bracket 74 as shown in Figure 6.

It will thus be seen that the pressure shoe 108 may be raised or lowered by loosening the screw bolt 117, and rotating the screw-threaded rod 111, and may then be held rigidly in position by tightening the screw bolt 117. The forward end of the shoe 108 is preferably slightly up-curved as at 118.

Referring now to the lower dresser head, it will be noted that there is provided a bracket 119 similar to the bracket 72 having an upright member 120 mounted in gibbed ways 23, similar to those already described, formed in a portion of the frame 10. The bracket 119 is raised and lowered by means of a rod 121 (see Figure 1) rotatably but non-slidably mounted in the extension 75 in the same manner as the rod 76 already described.

The lower end of the rod 121 is screw-threaded as at 122 and has a screw-threaded connection with the bracket 119 and the boss 123 thereon.

On the bracket 119 is a motor 124 (Fig-

ures 4 and 8) on the shaft 125 of which is the lower dresser head 126 shown in Figure 6, which operates through a hole 127 in the bed 70.

The rear portion 70^a of the bed 70 is detachable and is adjustable vertically.

The bed portion 70^a is substantially triangular in vertical, longitudinal, cross section, as shown in Figure 6.

Below it, a bracket 128 is supported on the frame 10. Rotatably mounted in the bracket 128 is the screw-threaded rod 129, which is held against sliding movement by a shoulder and by the collar 130, and has a screw-threaded end 131 screwed into a suitable threaded socket in the bed portion 70^a.

On the screw rod 129 is a hand wheel 132 for adjusting the bed 70^a.

Mounted on the adjustable bed section 70^a is a glue pot 133. The glue pot is covered by a top member 134, which forms an extension of the bed portion 70^a and is provided with a suitable opening 135 through which projects the upper portion of the corrugated-faced glue roller 136.

On the interior of the glue pot 133, upwardly opening U-shaped yokes 137 are supported on the side walls of the glue pot. (See Figures 4 and 13).

Figure 13 shows a portion of the gluing mechanism for the edge strips, but the yokes 137 for both gluing mechanisms are the same.

The yokes 137 receive the ends of the shaft 138 of the roller 136. From the bed members 70, 70^a and 134, the stock is delivered to the assembling table 139.

Edge strip handling mechanism.

On the main frame are laterally projecting brackets 140, shown in Figures 3 and 4, which support the hopper feeding mechanism and gluing mechanism for the edge strips.

Supported on the brackets 140 is a bed 141 comprised of an angle iron (see Figures 4 and 8). Mounted on the bed 141 on the left-hand side thereof is an angle 142, which forms a guide for one side of the edge strip-stock.

Mounted on the other side of the bed is a Z-shaped angle 143 (see Figures 3, 7 and 8), the central web of which, as illustrated, stands above the horizontal portion of the base 141, as illustrated in Figures 7 and 8, for providing a space or housing between said web and bed for the chain 144 herein-after referred to.

Suitably mounted near the forward ends of the angles 142 and 143 is an upright 145 forming the front end of a hopper for edge stock. Spaced rearwardly from the upright 145 are uprights 146 arranged opposite each other and forming side members for a hopper. Spaced rearwardly from the up-

rights 146 are similar uprights 147 also forming side members for the hopper. Spaced rearwardly from the uprights 147 is an upright 148 forming the back of the hopper, the lower edge of which is cut away as at 149 above the bed 141 to permit the egress of one piece of edge strip stock.

Supported above the bed 141 rearwardly of the hopper member 148 is a hold-down strip 150, shown in Figures 2 and 4, supported by the brackets 151.

At the rear end of the portion of the machine now being described is a glue pot 152 similar in structure to the glue pot 133, already described, and having a similar top or cover member 153 with an opening 154 therein. The top member 153 forms an extension of the bed 141.

The glue pot 152 has secured to its side walls, the U-shaped members 155, similar to the U-shaped members 137, which support the shaft 156 of a glue roller 136, similar to that already described. One end of the shaft 156 has formed therein a slot 158, which receives a flat extension 159 of the shaft 160.

The shaft 160 is extended through one of the walls of the glue pot 152, as shown in Figure 4, through a packing gland 161, whereby a tight joint is provided.

Above the glue rollers mentioned are hold-down rollers.

A bracket 162 is supported on the glue pot 133. To the bracket 162 is pivoted an arm 163, shown in Figures 1 and 4, from which is rotatably mounted a hold-down roller 164, which rests by gravity on the core stock passing through the first above-described mechanism and over the glue roller in the pot 133.

Supported on the glue pot 152 is a bracket 165 to which is pivoted an arm 166. A roller 167 is rotatably supported on the arm 166 above the glue roller 136 in the glue pot 152. The arm 166 has an extension 168 on which a weight 169 is adjustably mounted and fixed by means of a set screw 170, so that the weight may assist in holding the roller 167 against the edge strip stock.

I will now describe the mechanism for actuating the various operative mechanisms of the machine.

It will be understood that the motors 22, 71 and 124 are operated from an electrical power line.

The outer end of the shaft of the motor 124 as shown in Figure 1 has thereon a pulley 171. Supported on the wheel beams 13 is a longitudinally arranged channel bar frame member 172. A transverse operating shaft 173 is mounted in bearings 174 on the frame 10 and in a bearing 175 on the channel bar 172 and in a bearing 176 carried by the bracket 177, which is in turn supported on the bed 141. (See Figures 2 and 8).

On the shaft 173 is a large pulley 178 in line with the pulley 171. A belt 179 travels on the pulleys 171 and 178 for transmitting rotation from the shaft of the motor 124 to the operating shaft 173.

A shaft 180 is mounted in suitable bearings 181 on the main frame 10 and in the bearing 182 carried by the cross piece 183 of the bracket 177 already referred to. (See Figures 2 and 8).

Loosely mounted on the counter shaft 180 is the hub 184 of a sprocket 185 having the laterally projecting drum 186 (Figure 8). Fixed on the shaft 180 is the hub 187 of a drum or the like 188 forming a support for 80 clutch shoes.

Pivoted to the drum 188 are links 189 which pivotally support the shoes 190.

For actuating the shoes 190 of the clutch structure now being described for moving 85 them into frictional engagement with the inner face of the drum 186, there is slidably mounted on the shaft 180, a cone-shaped hub 191 having the annular slot 192 into which project the fingers 193 from a yoke arm 195 90 fixed on a rock shaft 196 extending alongside the machine. Near each end of the machine, the rock shaft 196 has the upright arms 197 by which it may be rocked and actuated for controlling the clutch. 95

It will be seen that when the clutch just described is thrown into its operative position, motion transmitted to the sprocket 185 by the chain 198, which travels on said sprocket, and on an aligned sprocket 199 on 100 the shaft 173, will be transmitted through the drum 186, the shoes 190, the links 189, the drum 188 and the hub 187 to the shaft 180.

Motion is transmitted from the shaft 180 105 to the shafts 31 and 35, which carry the spur feed wheels 32 and 36 in the following manner:

On the shafts 31 and 35 are sprockets 200 and 201. (See Figures 1, 2 and 7). On the 110 shaft 180 is a sprocket 203 shown in Figure 5 and arranged in alignment with the sprockets 200 and 201. A sprocket chain 204, shown in Figures 1, 2 and 5, travels on the sprockets 203 and 201 and 202 for transmitting motion from the shaft 180 to the 115 shafts 31 and 35.

Below the forward part of the bed 17 is mounted a stub shaft 205 on which is a spur feed roller or wheel 206, which projects upwardly through a hole 207 in the bed 17 just below the roller 52 and is designed for assisting in advancing the core stock.

On the shaft 205 in line with the sprockets 201 and 202 is a sprocket 208 over which the 125 lower strip of the chain 204 travels, (see Figures 3 and 5) for thus transmitting motion to the feed spur roller 206.

On the left-hand end of the shaft 87 is a sprocket 209 aligned with a sprocket 210 on 130

the shaft 180. (See Figure 1). A sprocket chain 211 travels on the sprockets 209 and 210 for transmitting motion from the shaft 180 to the shaft 87, which carries the spur feed wheel 89.

On the right-hand end of the shaft 88 is a sprocket 212 in line with a sprocket 213 on the shaft 180. (See Figure 4). A chain 214 travels on the sprockets 212 and 213.

At the rear of the machine is mounted a counter shaft 215. On the shaft 173 is a pulley 216 in line with a pulley 217 on the shaft 215. (See Figure 2). A cross belt 218 travels on the pulleys 216 and 217.

Supported on the glue pot 152 is a bracket 219 which supports a shaft 220. (See Figure 4). On the shaft 220 is a sprocket 221 in line with a sprocket 222 on the counter shaft 215. Formed on the sprocket 221 is a drum 223 forming part of a clutch mechanism, such as that which has been described as on the shaft 180.

The clutch mechanism now under consideration has the member 224 similar to the member 188 heretofore described and provided with the shoes, not shown.

The clutch member 224 is fixed to the shaft 220. The shoes of the clutch member are actuated by a cone device 225 similar to the cone member 191 heretofore mentioned. The hub of the cone 225 has the annular groove 226, receiving the fingers 227 of the fork 228. The fork 228 is carried by a longitudinally slidable shaft or rod 229 shown in Figure 4. A spring 230 is arranged on the rod 229 between the collar 231 and the bearing formed by the bracket 219. A lever 232 is pivoted on the bracket 233 and is pivoted as at 234 to the rod 229.

It will be noted that the lever 223 is at the delivery end of the machine, so as to be readily accessible to the workman at the assembling table adjacent to the delivery end of the machine.

A chain 235 travels on the sprockets 221 and 222.

On the shaft 220 is the sprocket 236 for the edge strip advancing chain 144, which has the spaced projecting fingers 238. The upper stretch of the chain 144 runs along the bed formed by the top 153 of the glue pot 152 and along the bed 141 to the front of the machine, where it travels over a sprocket 239 on the stub shaft 240 journaled on the bracket 241.

On the shaft 220 is an edge strip advancing roller 242 having deep grooves with comparatively sharp-edge strips, which will not remove much of the glue from the edge strips.

On the shaft 220 is a grooved pulley 243 in line with a grooved pulley 244 on the shaft 160. (See Figure 4).

A belt 245, which may be an endless coil

spring, travels on these grooved pulleys for imparting rotation to the glue pulley in the pot 152.

It will be noted from the foregoing description that the spring 230 normally holds the clutch structure 223, 224 and so forth out of operative engagement. By pulling on the lever 232, the clutch can be thrown into engagement.

In order to then hold the clutch automatically in engagement and to subsequently automatically throw it out of engagement, the following means are provided:

A rock shaft 246 is journaled in the bracket 219. Upon this rock shaft is mounted a lock finger 247, shown in Figures 4, 11 and 12, adapted to rest by gravity on the hub 248 of the yoke 228, and when the rod 229 is pushed to the right for throwing the clutch into engagement on the shaft 220, to drop behind the hub 248 for thus holding the clutch in.

On the shaft 246 is a trip finger 249, which stands adjacent to the sprocket 236, as shown in Figures 4 and 11. The trip finger 249 has a beveled face 250 adapted to be engaged by the fingers 238 on the chain 144 and to be moved rearwardly for rocking the shaft 246 and raising the lock finger 247 to permit the spring 230 to move the rod 229 endwise for throwing the clutch out.

It will thus be seen that when the lever 232 is pulled rearwardly, the shaft 229 will be actuated for throwing the clutch members 223 and 222 into operative engagement, and that the locking finger 247 will then drop behind the hub 248 for holding the clutch in. When the next finger 238 (see Figures 4, 11 and 12) reaches and moves the trip finger, the clutch is thrown out.

To further facilitate the operation of my machine, I provide a rack composed of members 256 for holding unglued edge strips. The racks 256 are supported on the angle bar 141 by upright members 257 and braces 258.

In Figure 17, I have shown the general arrangement of the machines with relation to the assembling table 139. The table 139 is arranged parallel with relation to the longitudinal axes of the machines hereinbefore mentioned. A second table 252 is also illustrated. The tables 139 and 252 are mounted on castors, so that they are capable of being rolled to any desired position on the floor.

The door stiles or other products to be completed are assembled on the table 139. The rack 256 is used for edge strip stock.

I will now describe somewhat in detail the operation of my improved veneer core machine.

Two operators are used with this machine. One works at the front of the machine and is called the "feeder" while the other works at the rear alongside the assembling table 139, and is called the "assembler".

In Figure 16, I have shown an assembled door stile comprising the core stock members 253 and the edge strips 254.

In building up the core for veneered door stiles and the like, it is necessary to glue up a group, generally two or more rows of blocks 253 between two edge strips 254. The core stock 253 may be of any length while the edge strips are the full length of the desired stile.

The material for the core stock blocks 253 is placed on the table 16. The feeder takes the pieces one at a time, places them on the bed 17, adjacent to the guide 18, runs them under the feed roll or wheel 32 to the saw and under the feed roll 42. The block 253, which has been cut to width, then passes under the roller 52 to the guide mechanism.

It will be understood that the core stock is dressed to thickness though the thickness is not necessarily uniform, before it is placed on the table 16. The saw 20 rips the blocks to width. The balance of the block is guided to the left by the member 54 and if of sufficient width is taken by the feeder and again sawed. Pieces too narrow for further use are permitted to drop off the bed 17 onto a conveyor for instance. The feed rollers 32, 36, 206 and 52 feed the core stock blocks to the guide mechanism on the turret plate 55.

If the stock is to be fed straight through, the machine is set by removing the screw 63, turning the turret plate 55 until the guide passage 61 is up and then re-setting the screw 63. The succeeding pieces of core stock force the advanced pieces through the guide to the bed 70.

If it is desired to give to the stock a quarter revolution between the beds 17 and 70, the turret plate 55 is turned over a half revolution until the yokes 65 are up, as shown in Figures 5 and 10. As the stock then passes through the yokes and the springs 66, it is given a quarter turn.

The stock is forced in a continuous succession of single pieces along the bed 70 between the guides 99 until the piece under consideration reaches the feed rollers 89 and 90.

The core stock is fed along the bed 70 under the feed wheels 89 and 90 to the top dresser head 98, which planes or dresses the top surface and thence to the lower dresser head 126, which planes or dresses the bottom surface.

The shoe 108 holds the stock against upward movement during the latter process.

Stock is then fed over the bed portion 70^a to the glue roller 136 over which it is held down by the roller 164.

Stock is then fed to the small table 260, which is attached to the machine and overhangs the assembling table 139. Each piece has one edge glued.

The assembler selects the pieces and arranges them, building them up in two rows of blocks in the form illustrated in Figure 16. The blocks of one row indicated at B may have the glue 255 at their outside face and the blocks of the other row, as indicated at C have the glue 255 adjacent to the row B.

The assembler may then take an edge strip from the rack 257 and place it against the row B, as shown at the left-hand side of Figure 16, and then to get the edge strip for the other side of the stile, he pulls the lever 232, which throws the edge strip handling mechanism into gear by throwing the clutch on the shaft 220 into engagement.

One of the fingers 238 on the chain 144 engages the bottom piece of stock in the hopper formed by the members 145, 146, 147 and 148, moves it along the bed 141 to the glue roller in the pot 154 and delivers it with one face glued to the assembling table, adjacent to the partly assembled stile, and the assembler places it against the right side of the row of blocks C with the glue 255 adjacent to the row C, and shoves the finished assembled stile as far forward as it can go on the table, and then commences the assembling of another stile.

It will be remembered that when the lever 232 is actuated, the yoke 228 moves to the right, whereupon the finger 247 drops behind the hub 248 for holding the clutch on the shaft 220 in gear until one of the fingers 238 on the chain 144 engages the trip arm 249 for rocking the shaft 246 and raising the locking finger 247 until it clears the hub 248, (see Figures 11 and 12), to permit the spring 230 to release the clutch. Thus only one piece of edge strip stock at a time is delivered to the assembling table for use for the stile then partly assembled.

In actual practice, the assembler frequently pulls the lever 232 for securing the delivery of one edge strip upon the assembling table, and the mechanism for delivering edge strips automatically stops when the piece is delivered.

Then the assembler assembles the rows of the required number of core blocks, which are being delivered by the core stock handling mechanism. He then lays an edge strip taken from the rack 257 against the core.

As the stiles are built up and the assembling table 139 is filled, the filled table 139 is moved away and an empty one 252 is rolled into place. When a table has been filled, the entire group of built-up stiles are clamped together and that tableful is removed and a second tableful started as before.

A machine of this kind effects a great saving of labor in the manufacture of door stiles and similar structures.

It is the practice to move the machine on the tracks to a point where stock may be taken conveniently from previously filled bins and used in connection with the machine.

It will be, of course, understood that many changes might be made in the details of the structure and arrangement of my improved machine without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any such changed structures or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In a structure of the class described, the combination of an assembling table, a frame mounted for movement along the end of the table adjacent thereto, means on said frame for dressing and gluing core stock and delivering the stock to the table, and means on said frame for automatically gluing edge strips and delivering them to said table adjacent to the point of delivery from said first means.

2. In a structure of the class described, the combination of an assembling table, a frame mounted for movement along the end of the table adjacent thereto, means on said frame for dressing and gluing core stock and delivering the stock to the table, and means on said frame for automatically gluing edge strips and delivering them to said table adjacent to the point of delivery from said first means, and means adjacent to such point of delivery for controlling the actuation of said last means.

3. In a structure of the class described, the combination of an assembling table, a frame mounted for movement along the end of the table adjacent thereto, means on said frame for dressing and gluing core stock, and delivering the stock to the table moving lengthwise, a hopper on said frame movable therewith, means on said frame for automatically taking edge strips, one at a time from said hopper, gluing them and delivering them to the table parallel with the core

stock being delivered and adjacent to the point of delivery from said first means.

4. In a structure of the class described, the combination of an assembling table, a frame adjacent thereto, means on said frame for dressing and gluing core stock, and delivering the stock to the table moving lengthwise, a hopper on said frame, means on said frame for automatically taking edge strips one at a time from said hopper, gluing them and delivering them to the table parallel with the core stock being delivered and adjacent to the point of delivery from said first means, and means adjacent to such point of delivery for controlling the actuation of said last means.

5. In an assembling machine, an assembling table, a mechanism arranged with its end adjacent the said assembling table, said mechanism including means for preparing strips to be secured together edge to edge for assembling, said means being positioned to dispose the strips longitudinally of the mechanism in position to be slid directly in a longitudinal direction onto the assembling table, whereon they will be disposed longitudinally, and a second mechanism synchronized with the first for delivering edge strips to the table alongside and parallel with said first strips.

6. In a machine of the class described, means for cutting stock, a turret guide device having means for receiving stock that has been cut and turning it through an angle of ninety degrees when the guide device is in one position, and having a straight guide device for receiving and guiding stock, when the turret guide device is in another position, and means for receiving stock from the guide device and dressing it.

7. In a structure of the class described, the combination of an assembling table, a frame mounted for movement, means on said frame for dressing stock, means for gluing such stock on either of two sides, means for delivering the stock to the table, and means on said frame for automatically gluing edge strips and delivering them to said table adjacent to the point of delivery from said first means.

SERN MADSEN.