Oct. 15, 1940. A. F. EDERER 2,217,894

CORRUGATED FASTENER DRIVING MACHINE

Filed Aug. 6, 1938 3 Sheets-Sheet 1

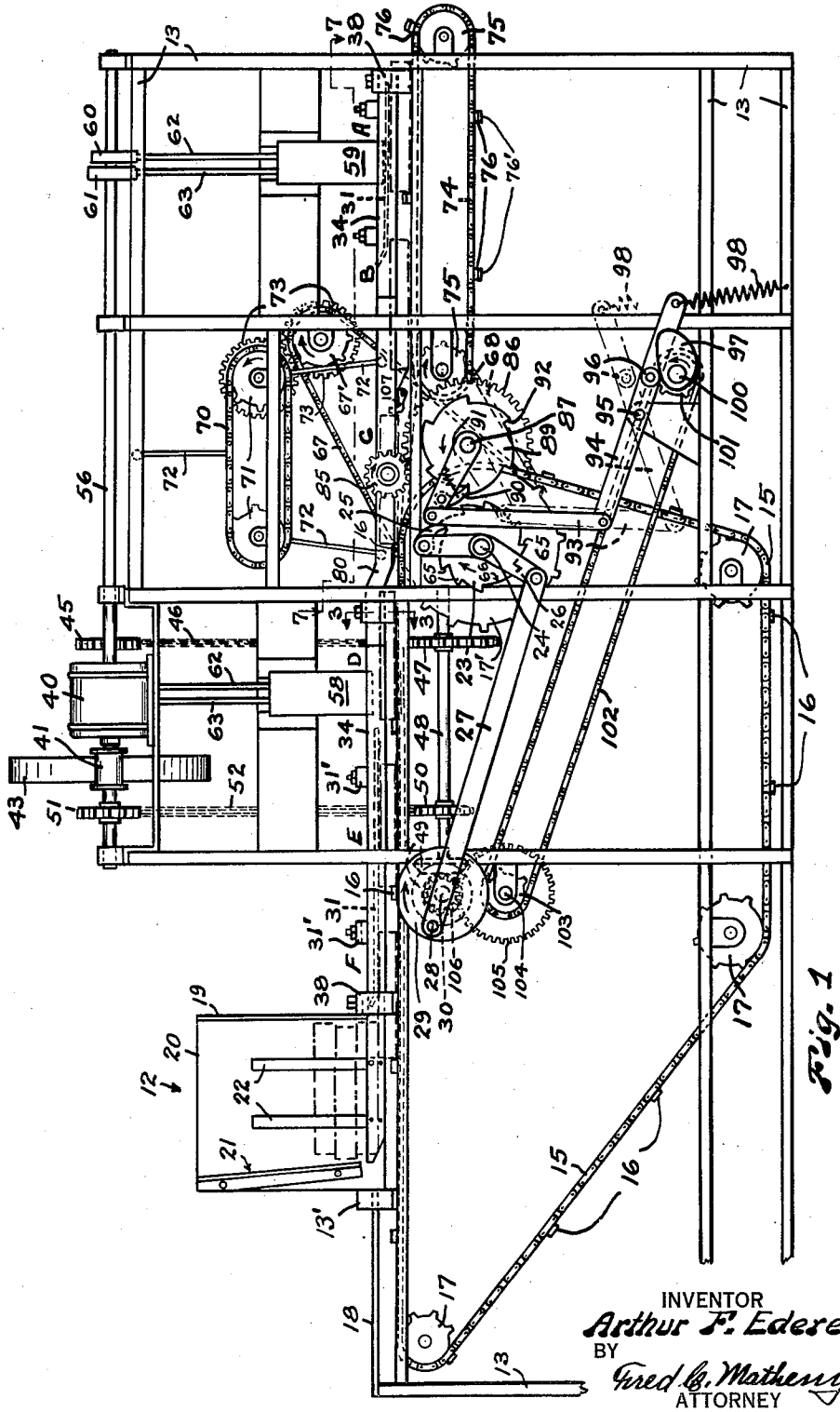


Fig. 1

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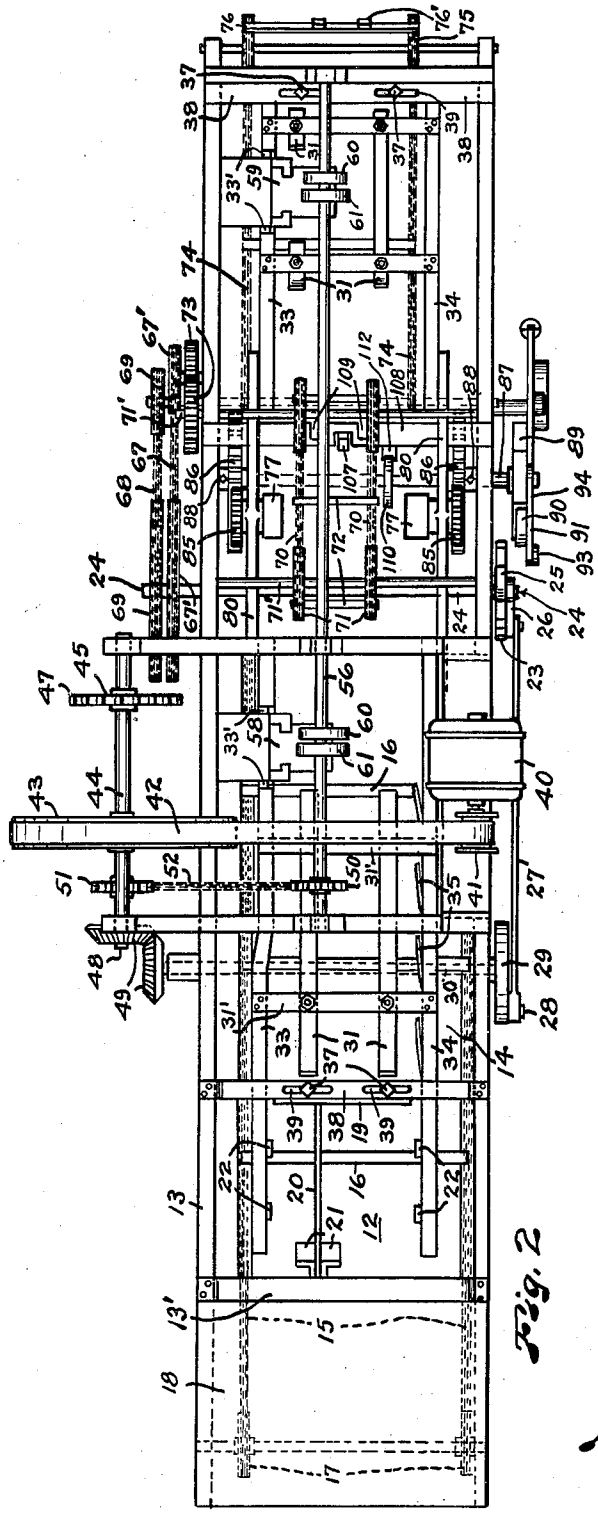


Fig. 2

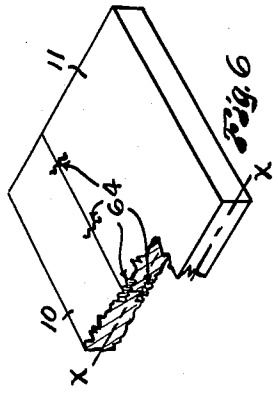


Fig. 6

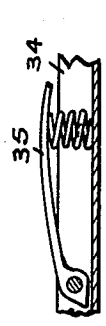


Fig. 4

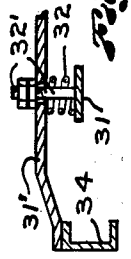


Fig. 5

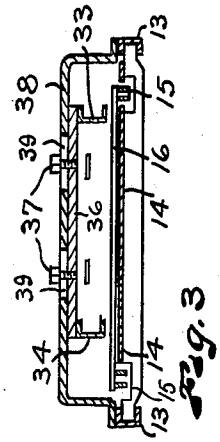


Fig. 3

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Filed Aug. 6, 1938 3 Sheets-Sheet 3

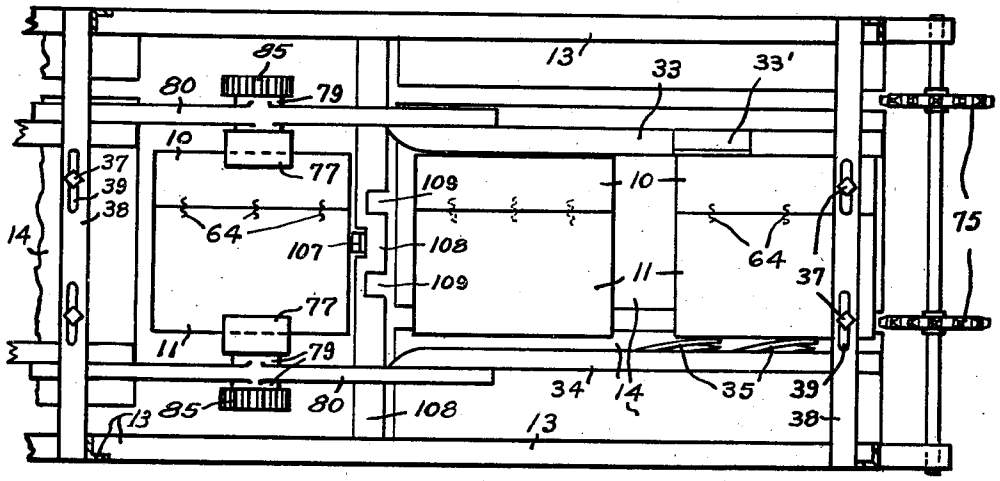


Fig. 7

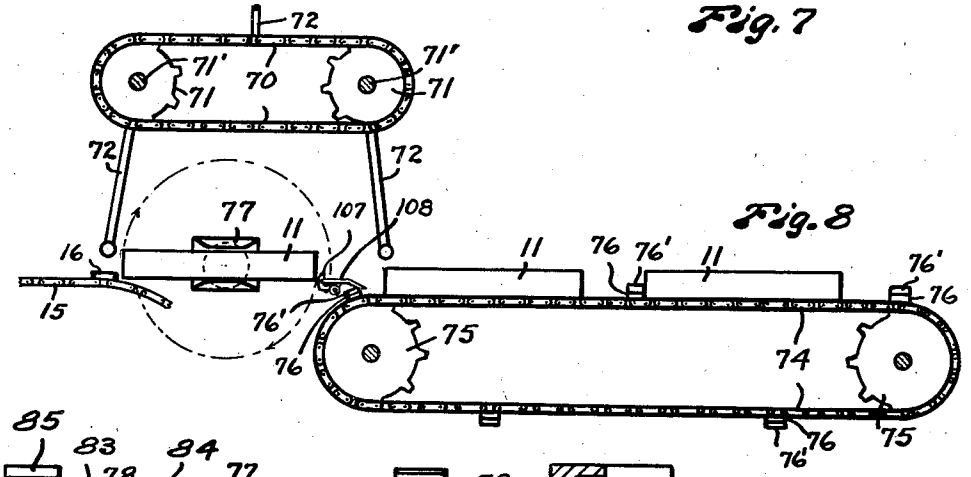


Fig. 8

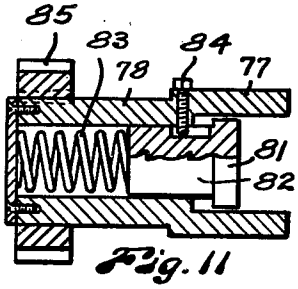


Fig. 11

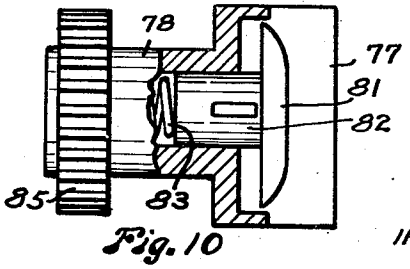


Fig. 10

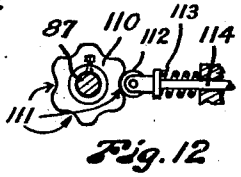


Fig. 12

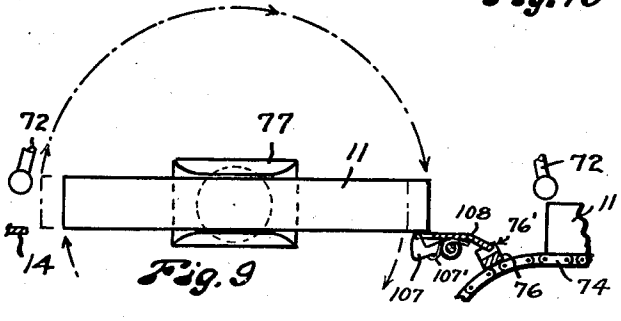


Fig. 9

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UNITED STATES PATENT OFFICE

2,217,894

CORRUGATED FASTENER DRIVING MACHINE

Arthur F. Ederer, Seattle, Wash., assignor to Ketcham Wire and Manufacturing Co., Seattle, Wash., a corporation of Washington

Application August 6, 1938, Serial No. 223,498

5 Claims. (Cl. 1—8.1)

This invention relates to machines for applying corrugated fasteners to pieces of wood.

An object of this invention is to provide an automatic machine of efficient construction for feeding and supporting pieces of wood which are to be secured together to form built up slabs and for driving corrugated metal fasteners in said pieces of wood to secure said pieces of wood together.

Another object of the invention is to provide a corrugated fastener driving machine designed to apply corrugated fasteners to two opposite sides of a slab of wood in a series of continuous operations, said machine having simple and efficient means for inverting or turning over a piece of wood after fasteners have been applied to one side thereof and preparatory to applying fasteners to the other side of the same.

A further object is to provide work inverting or turn over means positioned between two fastener driving heads and adapted to invert a slab of wood by rotating the same on an axis which is slightly off center as respects the length of said slab whereby the slab will be longitudinally moved a short distance when inverted but will be substantially balanced for the purpose of rotation.

Another object is to provide efficient means for guiding and positioning and holding the slabs as they are advanced by intermittent movements to the driving heads, said guiding and positioning and holding means being adjustable transversely of the machine to provide for the use of pieces of wood of different widths in building up the slabs.

The present invention resides chiefly in the slab inverting or turn over means which is positioned between the two fastener driving heads.

Other and more specific objects of the invention will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings

Fig. 1 is a side elevation of a machine constructed in accordance with this invention.

Fig. 2 is a plan view of the same.

Fig. 3 is a fragmentary sectional view substantially on broken line 3—3 of Fig. 1, showing adjustable supporting means for work guide and hold down members.

Figs. 4 and 5 are fragmentary detached sectional views of the work hold over means and the work hold down means respectively.

Fig. 6 is a perspective view, partly in section, of a built up wooden slab constructed in accordance with this invention.

Fig. 7 is a detached plan view taken substantially on broken line 7—7 of Fig. 1, parts being omitted.

Fig. 8 is a side elevation with parts in section of the turn over means and overhead and discharge conveyors.

Fig. 9 is a fragmentary detached view, on a larger scale than Fig. 8, showing a piece of wood inverted in position as respects the showing in Fig. 8.

Figs. 10 and 11 are two detached sectional views with parts in elevation of the devices for turning the slabs over.

Fig. 12 is a detached view partly in section and partly in elevation of detent means for insuring a correct positioning of the slab turn over means.

The machine shown in the accompanying drawings is adapted for driving corrugated fasteners into pieces of wood to secure said pieces together for the purpose of forming stock from which box ends may be made. This stock is hereinafter termed wooden slabs. The machine illustrated uses two pieces of wood to form each slab but it will be understood that the slabs may be made up of more than two pieces if desired and that they may be used for any desired purpose.

The machine herein disclosed is designed to take a plurality of pieces of wood of equal thickness and preferably thick enough to form two box ends and secure these pieces together by driving corrugated fasteners into opposite sides of the pieces. The pieces thus secured together may be re-sawed later in the medial plane, along the line X—X shown in Fig. 6, to form from each piece two box ends of standard thickness. The machine may be adjusted to handle pieces of wood of different widths and different thickness and obviously may be used for fastening together pieces which have previously been sized to the standard thickness of box ends.

The machine comprises a frame 13 having horizontal work supporting means forming a work table 14 over which the material passes. Three conveyors are provided in the machine, namely, an infeed conveyor comprising two endless link belts 15 operable on sprocket wheels 17 and 17' and having cross slats 16; an overhead conveyor comprising link belts 70 operable on sprocket wheels 71 and shafts 71' and having relatively long outwardly protruding arms 72; and an outfeed conveyor comprising two link

belts 14 operable on sprocket wheels 15 and having cross slats 16.

A feed table 18 is provided at the intake end of the machine. A dual feed hopper, designated generally by numeral 12 is provided just in front of the feed table to receive and hold the pieces of material which are to be engaged by the conveyor slats 16. This feed hopper preferably comprises a front plate 19 extending crosswise of the machine, a longitudinal partition plate 20, inclined guide members 21 at the rear of the hopper and upright side bars 22 at each side of the hopper. The pieces of wood of one size are placed at one side of the partition plate 20 and those of another size are placed at the other side of the partition plate 20. The lowermost pieces of wood rest on the work supporting table 14 and the conveyor slats 16 engage with and advance the two lowermost pieces as said slats pass under the piles of wood on the table 14. Some of these pieces of wood are indicated by dot and dash lines in Fig. 1.

The movement of the conveyor belts 15 is intermittent as is also the movement of the other conveyor belts. This is accomplished by the use of a ratchet wheel 23 on a shaft 24 on which two large sprocket wheels 17' at the discharge end of the conveyor 15 are secured. A pawl 25 on a lever 26 engages ratchet wheel 23. A connecting rod 27 connects lever 26 with a crank pin 28 on a disc 29. The disc 29 is secured to a continuously driven shaft 30. The ratchet wheel 23 has unequally spaced teeth as shown so as to advance the pieces of wood a greater distance between successive pieces and then two shorter steps between the driving of successive fasteners in the same piece. In the present instance I have shown three groups of teeth 65 on the ratchet wheel 23 with three teeth in each group and spaces 66 between the respective groups. The spaces 66 are greater than the distance between two adjacent teeth of a group but slightly less than the distance between the first and third teeth of any group. For instance the angular distance between the faces of adjacent teeth 65 in the groups may be thirty-two degrees, while the angular distance between the face of the last tooth of one group and the face of the first tooth of the next adjacent group may be fifty-six degrees. With this spacing of the teeth 65 if the stroke of the pawl 25 is more than fifty-six degrees and less than sixty-four degrees, sixty-four degrees being twice the angular distance between two teeth 65 of any group, said pawl will always span the distance between the last tooth of one group and the first tooth of the next adjacent group and will have a substantial amount of lost motion between the adjacent teeth 65 of each group. The result will be that the shaft 24 and conveyor 15—16 will be advanced by intermittent movements in which two short steps and one long step will take place alternately.

One of the shafts 71' of the overhead conveyor 70 is connected with the shaft 24 by spur gears 73 and link belt means 67 operable on sprocket wheels 67'. The spur gears 75 provide a reversal in direction of rotation necessary to secure the correct lineal direction of movement of overhead conveyor 70 and the spur gears 73, and sprocket wheels 67' provide the proper gear ratio for driving the overhead conveyor 70 at the same speed as the conveyor 15. The outfeed conveyor 74 is driven from shaft 24 by link belt 68 operable on sprocket wheels 69 and also operates at the same lineal speed as infeed conveyor 15. Driving all of the conveyors off of the intermittently movable shaft 24; as above described provides for intermittently advancing all of said conveyors simultaneously and at the same rate of speed and the same distance at each forward excursion.

Hold down members 31, urged downwardly by springs 32 Fig. 5, are provided for holding the pieces of wood down on the table. Stud bolts 32' are rigid with hold down members 31 and extend upwardly through suitable holes in cross bars 31' and the springs 32 are positioned on the stud bolts 32' between the hold down members 31 and the cross bars 31'. The cross bars 31' are secured to two spaced apart substantially parallel side guide members 33 and 34 which are fixedly but adjustably secured to the frame and are adapted to be engaged by the sides of the pieces of wood. Spring pressed hold over members 35 are provided in connection with the side guide 34. Cross bars 36 extend crosswise of the side guides 33 and 34 and are secured by cap screws 37, Fig. 3, to transverse frame bars 38. The frame bars 38 have slots 39 through which the cap screws 37 pass. This permits the guide members to be moved or adjusted transversely of the machine when the cap screws 37 are loosened and it also provides an adjustment for correctly positioning the side guides 33 and 34 for engagement by the outer edges of pieces of wood of different widths whose abutting edges are positioned in line with corrugated fastener driving heads. For instance, the slabs may be made up of one piece 3¼ inches wide and one piece 7¼ inches wide or they may be made up of one piece 4 inches wide and one piece 6½ inches wide. It is necessary to adjust for these variations in width.

The upright side bars 22 which form the sides of the hopper are secured to the side guide members 33 and 34 so that they are always adjusted transversely with the side guide members. The partition plate 20 is positioned in line with the fastener driving heads 58 and 59 and is not adjustable with the side guide members. The inclined guides 21 at the rear of the hopper are secured to the partition plate 20. Preferably the front plate 19 of the hopper is secured to the frame by welding or otherwise securing it to one of the cross bars 38. The partition plate 20 preferably has one edge thereof secured to the front plate 19 and the other edge thereof secured to a cross bar 13'.

The drive means comprises a motor 40 having a pulley 41 connected by a belt 42 with a sheave 43 on a shaft 44. A sprocket wheel 45 on shaft 44 is connected by a link belt 46 with a sprocket wheel 47 on a shaft 48. Bevel gears 49 connect the shaft 48 with the shaft 30. A sprocket wheel 50 on the shaft 48 is connected by a link belt 52 with a sprocket wheel 51 on a fastener driving head operating shaft 56.

The corrugated fastener driving heads used in this machine are of standard construction. One head which is suitable for use is commercially known as the "Morgan" head. It is indicated generally in the drawings but is not shown or described in detail. Two fastener driving heads 58 and 59 are provided in spaced apart aligned relation. These fastener driving heads drive corrugated fasteners of well known form into the pieces of wood. Movement of each driving head 58 and 59 toward and away from the work is controlled by cam means 60 on the shaft 56 by which the driving head is operated and driving

operation of each head 58 and 59 is similarly controlled by cam means 61. Connecting rods 62 and 63 connect the respective cam means 60 and 61 with the driving heads. The cam and connector means is also a part of the standard corrugated fastener driving head. The corrugated fasteners 64 are shown in Fig. 6, and are of well known form. These fasteners may be supplied to the heads 58 and 59 from rolls, not shown, the fasteners being in strap or tape form. The heads 58 and 59 cut them off and drive them.

The side guide member 33 is notched as shown at 33' to provide working clearance for the fastener driving heads 58 and 59 to move down onto the work.

The hopper 12 is a divided hopper with the partition 12 in alignment with the heads 58 and 59. The hold over members 35 and guide rails 33 and 34 provide means for holding the two pieces of wood together while they are being advanced and fasteners driven therein. The sides of the hopper formed by parts 22 are carried by the guide rails 33 and 34 and are adjustable with them.

The large sprocket wheels 17' are spaced apart far enough so that the pieces of wood may be turned therebetween and the supporting means or table 14 is cut away at a location beginning substantially directly above the shaft 24 to provide clearance for the turning over of the pieces of wood. The guide members 33 and 34, Fig. 7, are cut away at this same location to provide clearance for the turning of the pieces of wood and to provide clearance for the operation of U shaped turning members 77 of a form more clearly shown in Figs. 7 to 12.

Each U shaped turning member 77 is provided with a tubular shank 78 which is journaled in a bearing 79 in a bracket 80 that is secured to the adjacent guide members 33 or 34. This mounts the U shaped turning members 77 on the guide members 33 and 34 so that when the guide members 33 and 34 are adjusted transversely of the frame the U shaped turning members will be adjusted with them. It further provides for always maintaining the U shaped turning members 77 in the correct position relative to the guide members 33 and 34. Obviously the members 77 may be mounted on the frame 13 and independently adjusted.

Each U shaped turning member 77 has a shoe 81 mounted therein and positioned to engage with the edge portion of the slabs which are moved into the turning members. Each shoe 81 has a rigidly connected shank 82 which is slidably disposed in the tubular shank 78 of the turning member. Each shoe 81 is urged toward the path of the pieces of wood by a compression spring 83 positioned within the tubular shank 78 of the turning member and engaging the end of the shank 82 of the shoe 81. A set screw 84 is shown in Fig. 11 as illustrative of one device for limiting movement of the shoe 81 toward the path of the pieces of wood. The shoe members 81 yield and move outwardly as the pieces of wood or slabs are moved into the U shaped turning members 77 and said shoe members 81 cooperate with the U shaped turning members 77 to hold the pieces of wood firmly during the turning operation.

The tubular shanks 78 are respectively provided with fixed gear pinions 85 which mesh with gear wheels 86 on a transverse shaft 87. The gear wheels 86 are shown in Fig. 2, as secured to the shaft 87 by set screws 88 to permit them to be adjusted longitudinally of shaft 87. This illustrates one means for maintaining enmeshed relation between pinions 85 and gears 86 if the pinions 85 are moved transversely of the machine in adjusting the guide members 33—34. Obviously other methods may be used for providing for this adjustment and still retaining the pinions 85 in mesh with gear wheels 86.

The shaft 87 has a ratchet wheel 89 secured thereto. A pawl 90 on a lever arm 91 is positioned to engage the teeth 92 of ratchet wheel 89. The lever arm 91 is preferably mounted for oscillation on the shaft 87. The ratchet wheel 89 shown in the drawings has six teeth positioned at intervals of sixty degrees. The gear wheels 85 and 86 are of the proper size to provide a three to one gear ratio. The lever arm 91 has an oscillatory movement, preferably slightly in excess of sixty degrees whereby the pawl 90 will be carried just far enough to span the distance between two adjacent teeth 92 at each oscillation of the lever. This combination will result in the turning members 77 being rotatively moved one hundred eighty degrees in the direction of the arrow shown in Fig. 1 for each stroke of the lever arm 91. Obviously other devices may be provided for intermittently imparting one hundred eighty degree movements to the turning members 77.

The lever arm 91 is connected by a link 93 with another lever arm 94 which is mounted on a pivot 95 that is secured to a fixed part of the frame 13. A roller 96 on the lever arm 94 is positioned to be engaged by a cam 97 which moves the lever arm 94 in one direction. A spring 98 yieldingly urges the lever arm 94 in the other direction. The cam 97 is secured to a shaft 100 upon which is a sprocket wheel 101 that is connected by a link belt 102 with another sprocket wheel 103 on a shaft 104. The shaft 104 is connected by two gear wheels 105 and 106 with the driven shaft 30. I have provided a three to one gear ratio between the driven shaft 30 and the shaft 104. This provides for imparting a sixty degree movement to the shaft 104 for each half revolution of the shaft 30. The cam 97 is shaped so that it will impart a full advance stroke to the pawl 90 in a movement of sixty degrees or less for the purpose of imparting a half turn to the U shaped turning members 77 to turn a piece of material over. The cam 97 is positioned so that it will operate the turning members 77 while the crank pin 28 is traversing a half revolution in which the pawl 25 is moving idly over the teeth 65 and the conveyors are stopped. This is also the period in the cycle of operation in which the driving heads 58 and 59 are driving the last corrugated fastener in the two respective sides of the pieces.

The overhead conveyor 70—72 is provided for the purpose of advancing the slabs forwardly out of the turning members 77 after they have been turned over. After the slabs are moved out of the turning members 77 they pass over an inclined plate 108 and drop downwardly far enough to free them from engagement with the arms 72. It is to be noted that the slabs are not engaged by any hold over members at this location so that they are free to move downwardly by gravity. The inclined plate 108 has slots 109 therein, see Fig. 7, and the slats 76 on the outfeed conveyor 74 have lugs 76' thereon which move upwardly through these slots 109 back of the advancing slabs and insure that the slabs will be picked up by the outfeed conveyor

as soon as they are released by the arms 72 of the overhead conveyor.

It will be noted that the brackets 80, Fig. 7, are spaced further apart than the side guide members 33 and 34 to provide ample room for the slabs and for the turning members 77. These brackets are connected at their opposite ends with the side guide members 33 and 34.

A spring pressed stop member 107 is provided at the location of the inclined plate 108, in the path of the moving slabs, see Figs. 7, 8 and 9. This stop member 107 normally projects above the level of the table 14 on which the slabs are carried but is yieldingly supported by a spring 107' so that it easily may be depressed below the level of said table 14. This stop member 107 stops the slabs in such a position that the axis of rotation of the turning members 77 is a short distance forwardly of the center of the slab. When the turning members 77 and the slab are rotated on this axis slightly forward of the center of the slab the turning movement through 180 degrees advances the slab sufficiently so that the end portion thereof which is foremost, at the end of the turning movement, will come down on the stop member 107 and depress said stop member 107 so that the slab may be advanced beyond the stop member while it holds the stop member depressed, as shown in Fig. 9.

The overhead conveyor link belt 70 is positioned far enough above the path of the pieces of wood to provide clearance for turning the pieces and said pieces are turned while they are between the arms 72.

To insure correct positioning of the U shaped turning members 77 after each turning movement thereof I preferably provide on the shaft 87 a cam 110, Fig. 12, having six diametrically opposite peripheral depressions 111. A roller 112 engages the face of the cam 110 and is yieldingly urged toward said cam by a spring 113 on a roller bracket or stem 114. When the U shaped turning members 77 are correctly positioned the roller 112 will be seated in one of the depressions 111. If there should be a tendency for the members 77 to stop in a wrong position the pressure of the roller 112 against the face of the cam will move said members 77 to the correct position. The cam 110 and spring pressed roller 112 thus serve to correct for small errors in the positioning of the U shaped turning members 77.

The conveyor 15 is operated so as to advance one of the slabs into the turning members 77 and against the stop member 107 in the position shown in Figs. 1 and 8 at the end of every third forward excursion of said conveyor. Each time the conveyor 15 stops with one of the slabs in the position shown in Figs. 1 and 8 one of the cross slats 16 thereof will be positioned substantially in engagement with the rear side of the slab, as best shown in Fig. 8. Also the machine is timed so that when the conveyors stop in the position shown in Fig. 8 one of the arms 72 of the overhead conveyor is positioned closely behind the slab which is held in the turning members 77. This arm 72 will have been moving in an arcuate path and the outer end of said arm will have been moving at a greater speed than the link belt 70 when it is thus stopped. When the conveyors again start to move the end of this arm 72 will initially move at a faster speed than the slat 16 because it will still be moving in the arc of a circle and said arm 72 will engage with the rear end portion of the slab and advance said slab ahead of the slat 16 just enough to provide clearance for the slat 16 as said slat moves around the sprocket wheels 17'. This will obviate all tendency for the slats 16 to bind on the slabs as the slats 16 pass around the sprocket wheels 17'. As soon as the outer end portions of the arms 72 begin to move in a straight line they will move at the same speed as the conveyor chains. A cycle of operation of the machine shown in the drawings is completed in three complete turns of the shaft 30. Assuming that the parts are in the positions shown in Fig. 1, and the shaft 30 is being rotated in a clockwise direction. All of the conveyors will be stopped and the fastener driving heads will be just beginning to operate. While the crank pin 28 is moving through the next half turn the fastener driving heads will each engage with one of the pieces of wood, drive a fastener and be retracted. During this same time the cam 97 will be advanced substantially sixty degrees and will rotate the turning members 77 through one-half of one turn. During this same time retractile movement will be imparted to pawl 25 and said pawl will be positioned to engage with the first tooth 65 of the next group of three teeth on ratchet wheel 23. During the next half revolution of the shaft 30 the conveyors will all be advanced through one long step and the devices controlled by cam 97 will start to move the pawl 90 idly toward the next ratchet tooth with which it is to engage. Succeeding half revolutions of the shaft 30 will first operate the fastener driving heads to drive the first fasteners in the pieces of wood under the respective heads, then advance the conveyors one short step then again operate the fastener driving heads to drive the second fasteners and then again advance the conveyors one short step to complete the cycle and bring the several parts back into the positions shown in Fig. 1, so that the fastener driving heads 58 and 59 and cam 97 will be ready to operate to drive the third fasteners and turn over the piece in the U shaped member 77 upon further rotary movement of the shaft 30.

The pieces of wood to be used in forming the slabs are placed in the hopper 12 with the lowermost pieces resting on the table 14. When the motor 40 is started the conveyor slats 16 will successively engage with the two lowermost pieces of wood and advance said pieces in pairs by intermittent movements in a sequence of steps comprising one long step, two short steps, one long step, two short steps etc. Each pair of pieces of wood is advanced by a long step of the carriage and stopped in a proper position under the driving head to receive the first fastener. It is then successively advanced two short steps and the second and third fastener driven. Another long step of the conveyor moves the piece to which the fasteners have been applied out from under the head and moves in the next succeeding piece into the first fastener driving position. Assuming that the machine has been started and pieces of wood shown by dot and dash lines, Fig. 1, and designated by A, B, C, D, E and F respectively have been advanced into the positions shown in Fig. 1. The piece A is in a position to receive the last fastener, the piece B has had all fasteners applied on one side and has been turned over, the piece C has had all fasteners applied on one side and is positioned againts the stop 107 and held within the U shaped turning members 77 in a position ready to be turned over, the piece D is in a position ready to receive the third and last fastener to be applied to the first side thereof,

the conveyors are all stopped, the pawl 25 is at the beginning of its idling movement in a counterclockwise direction Fig. 1, preparatory to a long step movement of the conveyor mechanism, the fastener driving heads 58 and 59 are just beginning their cycle of operation and the cam 97 and link and lever and ratchet mechanism connected therewith is just ready to start the turning movement of the piece of wood C. Further advance movement of the machine from the position shown in Fig. 1, will cause the two heads 58 and 59 to drive fasteners in the pieces A and D and be retracted from said pieces while the piece C is being inverted in position or turned through an angle of one hundred eighty degrees. After this the conveyor will again operate to advance all of the pieces of wood through one long step. This brings the pieces B and E respectively into a position to receive the first fastener on the side of the piece then uppermost. When the piece C is inverted it is turned in a clockwise direction as respects the showing in Fig. 1, on the axis of the turning members 77, which axis is slightly forward of the center of said piece. This causes the end of the piece which is forward after the turning takes place to come down on top of the stop 107 and depress said stop 107 out of the way so that forward movement of the piece may take place. At the same time it positions the end of the piece which is to the rear after the turning takes place forwardly of and clear of the adjacent conveyor slat 16 and the adjacent arm 72. As the conveyors begin to move, on the next succeeding step the arm 72 will move faster than the adjacent conveyor slat 16 and will insure that the piece C is kept out of the way of the slat 16 as said slat moves around the sprocket wheel 17. The arms 72 of the conveyor 70 will move the piece of wood C out of the U shaped turning members 77 after said piece has been reversed and will advance said piece far enough so that it will be picked up by the lugs 76' on the slats 76 which will come up through the slots 109 and engage behind said piece of wood.

The foregoing description and accompanying drawings clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that changes may be made which are within the spirit and scope of the following claims.

I claim:

1. A corrugated fastener driving machine comprising means positioned to support in edge to edge relation pieces of wood which are to be secured together by corrugated fasteners; means positioned to advance said pieces of wood by intermittent movements; two spaced apart corrugated fastener driving heads positioned at one side of the path of movement of said pieces of wood; fastener driving head operating means connected with said corrugated fastener driving heads; two U shaped work turn over members positioned between said two corrugated fastener driving heads at the sides of the path of movement of the pieces of wood and adapted to receive the edges of the pieces of wood; resiliently supported shoe members positioned within the U shaped work turn over members for yieldingly engaging the edges of the pieces of wood and means for imparting intermittent rotary movements to said U shaped work turn over members.

2. A fastener driving machine comprising means positioned to support in edge to edge relation pieces of material which are to be secured together; means positioned to advance said pieces by intermittent movements; two spaced apart fastener driving heads positioned at one side of the path of movement of said pieces; fastener driving head operating means connected with said fastener driving heads; a depressible stop member positioned between said two heads in the path of movement of the pieces; and work turn over means positioned to receive the pieces when the pieces are positioned against the stop member, said work turn over means being rotatable on an axis transverse to the path of movement of the pieces and forwardly of the center of the pieces whereby an end portion of the pieces will come down on the stop member and depress the stop member when the pieces are turned over.

3. A corrugated fastener driving machine comprising means positioned to support in edge to edge relation pieces of wood which are to be secured together by corrugated fasteners; means positioned to advance said pieces of wood by intermittent movements; two spaced apart corrugated fastener driving heads positioned at one side of the path of movement of said pieces of wood; fastener driving head operating means connected with said corrugated fastener driving heads; work turn over means rotatably mounted between said two corrugated fastener driving heads for rotary movement on an axis transverse to the direction of travel of the pieces of wood and positioned to receive the pieces of wood; depressible stop means disposed in the path of said pieces of wood and positioned to stop said pieces of wood in said work turn over means with the axis of the work turn over means forwardly of the center of the pieces of wood whereby said pieces of wood will be advanced a short distance when they are turned over and will descend on and engage with said depressible stop means and depress said stop means out of the path of the piece of wood positioned thereon; and devices for imparting intermittent rotary movements of substantially one hundred eighty degrees to said work turn over means to turn said pieces of wood over in the direction of their travel.

4. In a fastener driving machine of the class described, work supporting table means; an infeed conveyor and an outfeed conveyor positioned in end to end spaced apart relation and operable on said table means; work turn over means positioned between said infeed and outfeed conveyors; a fastener driving head positioned above each said infeed conveyor and said outfeed conveyor; an overhead conveyor positioned in spaced relation above said table means between said infeed conveyor and said outfeed conveyor providing working clearance for operation of said work turn over means; arms on said overhead conveyor positioned to engage with and transfer work from said infeed to said outfeed conveyor; and means for intermittently advancing all of said conveyors simultaneously.

5. The apparatus as described in claim 4 in which the outfeed conveyor and table means associated therewith are positioned below the plane of the infeed conveyor and its table means whereby the work will be lowered clear of the arms of the overhead conveyor as it is transferred to the outfeed conveyor.

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