United States Patent

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El Monte, Calif.

[54] **BEDSPRING FRAME MACHINE**
6 Claims, 12 Drawing Figs.

[52] **U.S. Cl.** **227/100**
[51] **Int. Cl.** **B27f 7/02**
[50] **Field of Search** 227/2, 3, 4, 5, 6, 7, 39, 40, 99, 100, 101, 151, 152, 153

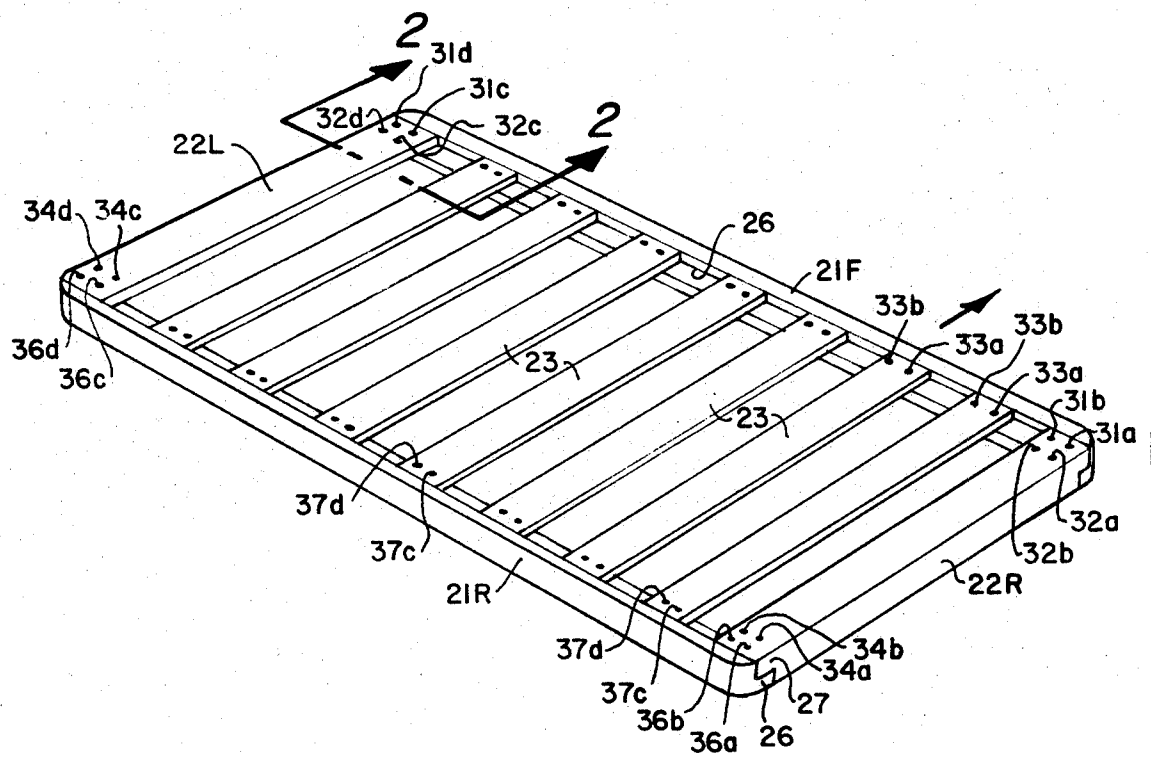
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Primary Examiner—Granville Y. Custer, Jr.
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ABSTRACT: A machine for making wooden frames for box springs has a support to hold the wood pieces in proper position and to advance the pieces in stages through the machine. As the joints between a transverse piece and a plurality of longitudinal pieces pass over an anvil, a head carrying a corresponding plurality of pneumatic nailing machines is depressed to bring the nailing machines into contact with the work and to trigger the same. Means is also provided to oscillate some of the nailing machines to set more than one nail at each joint.



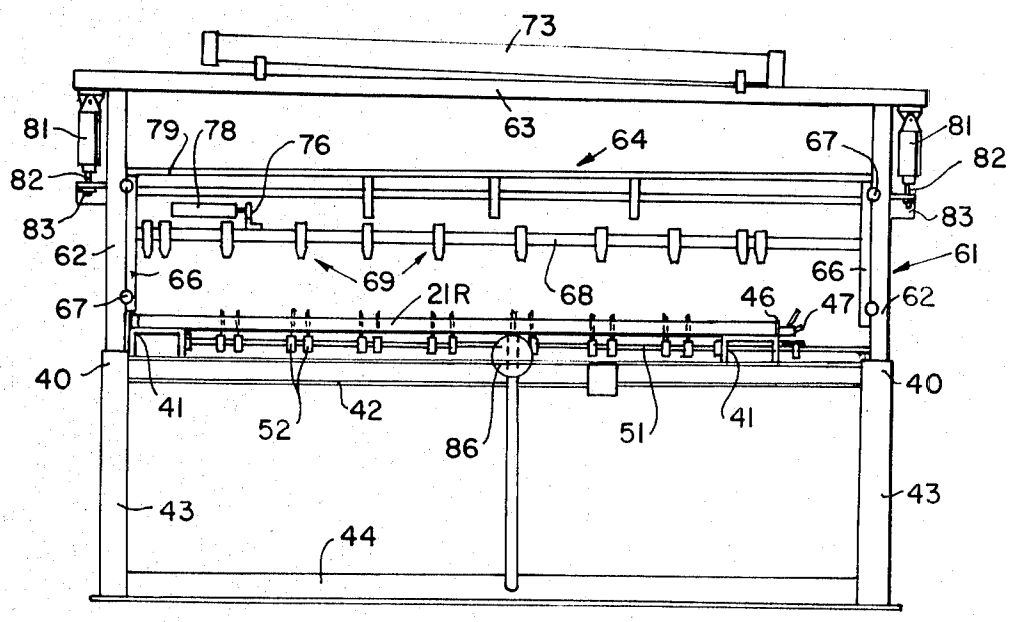


FIG. 3.

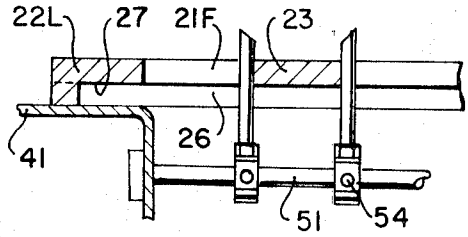


FIG. 2.

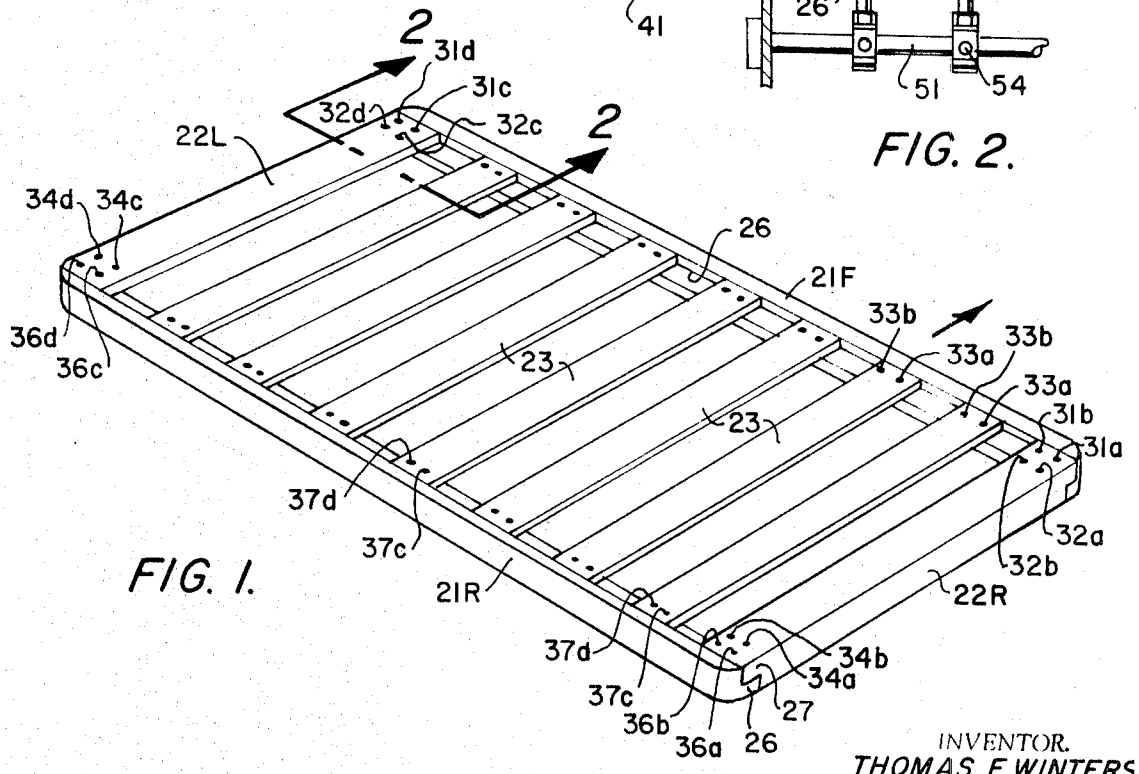


FIG. 1.

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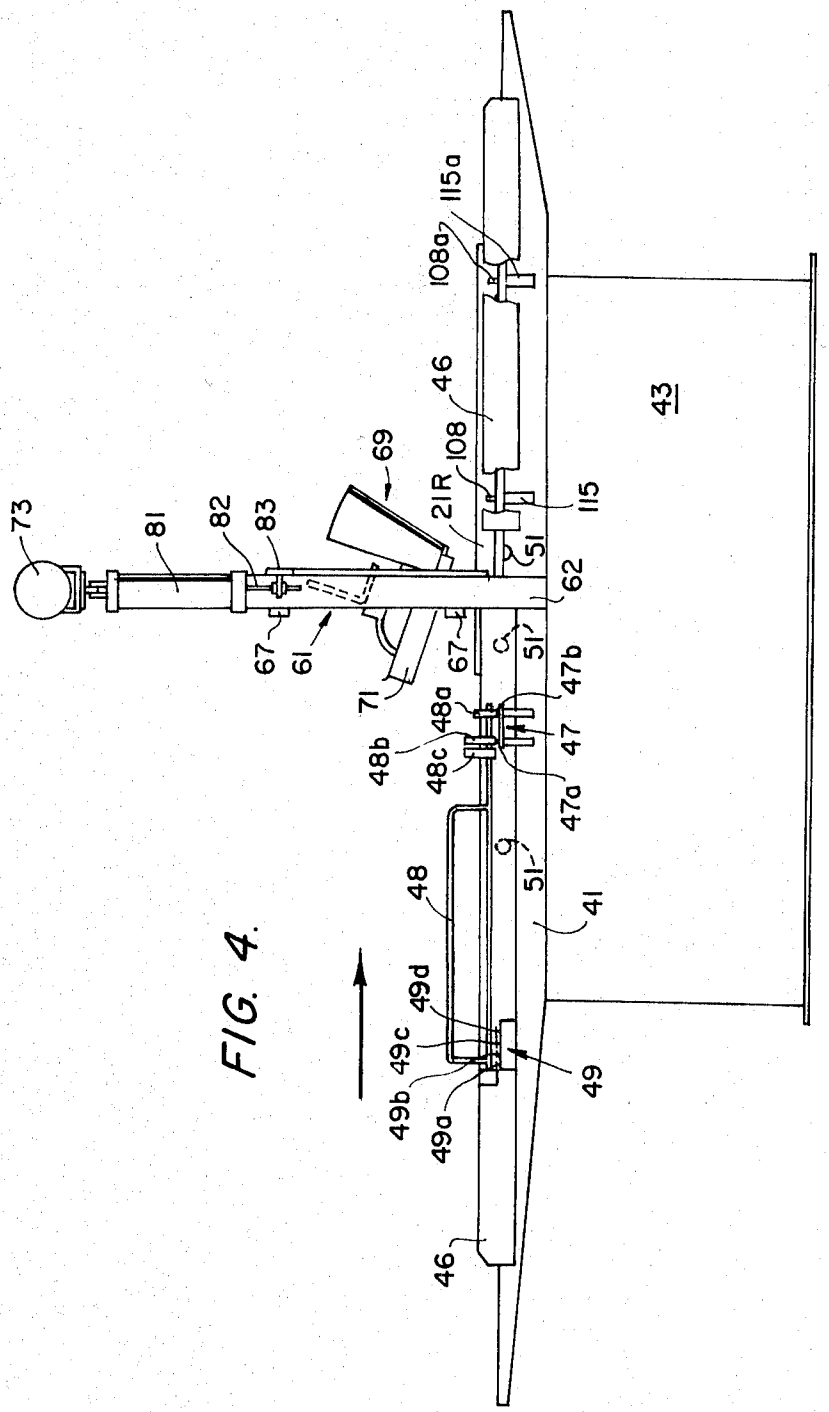


FIG. 4.

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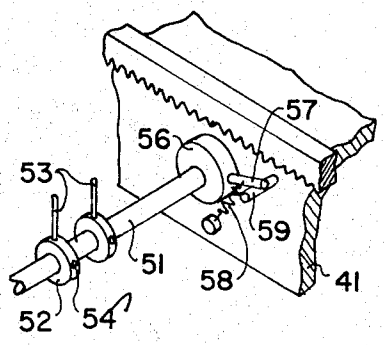


FIG. 7.

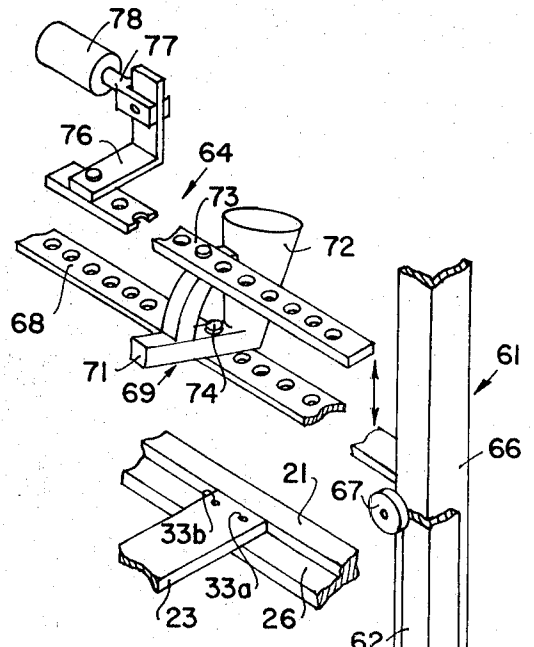


FIG. 5.

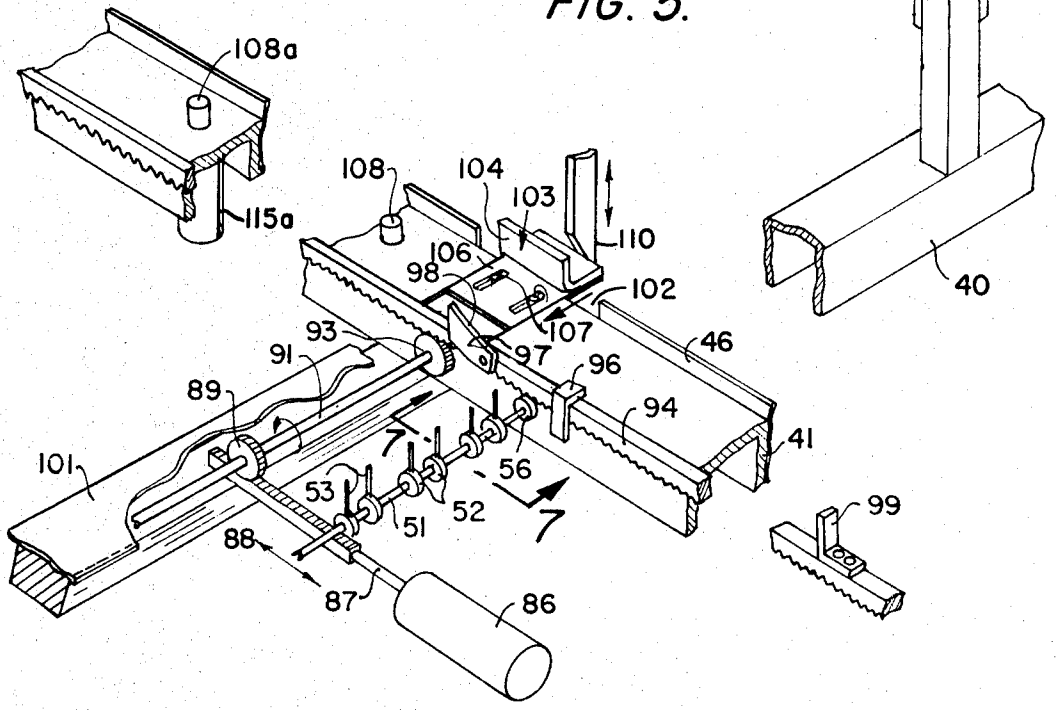


FIG. 6.

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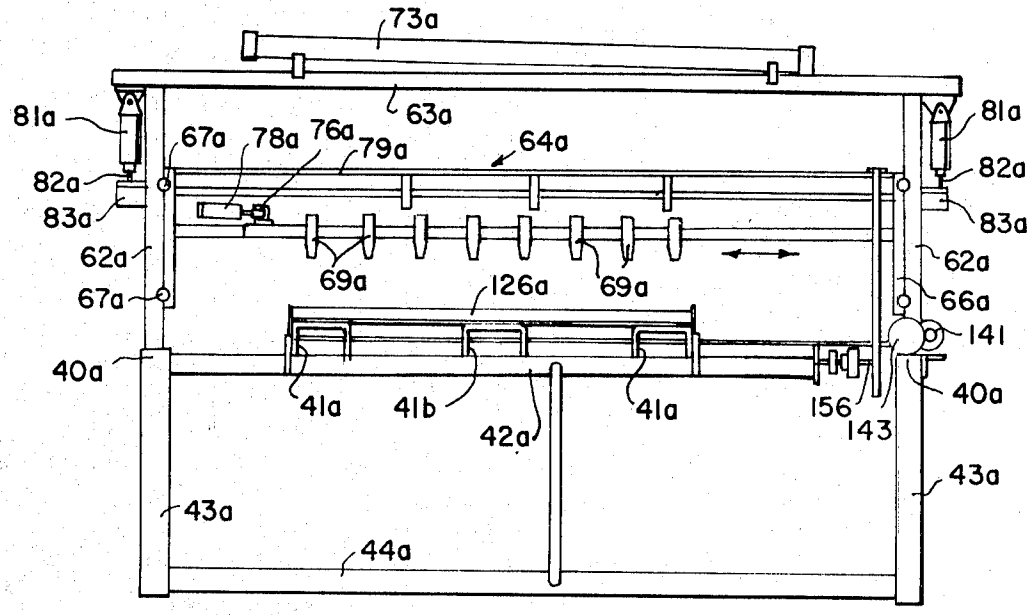
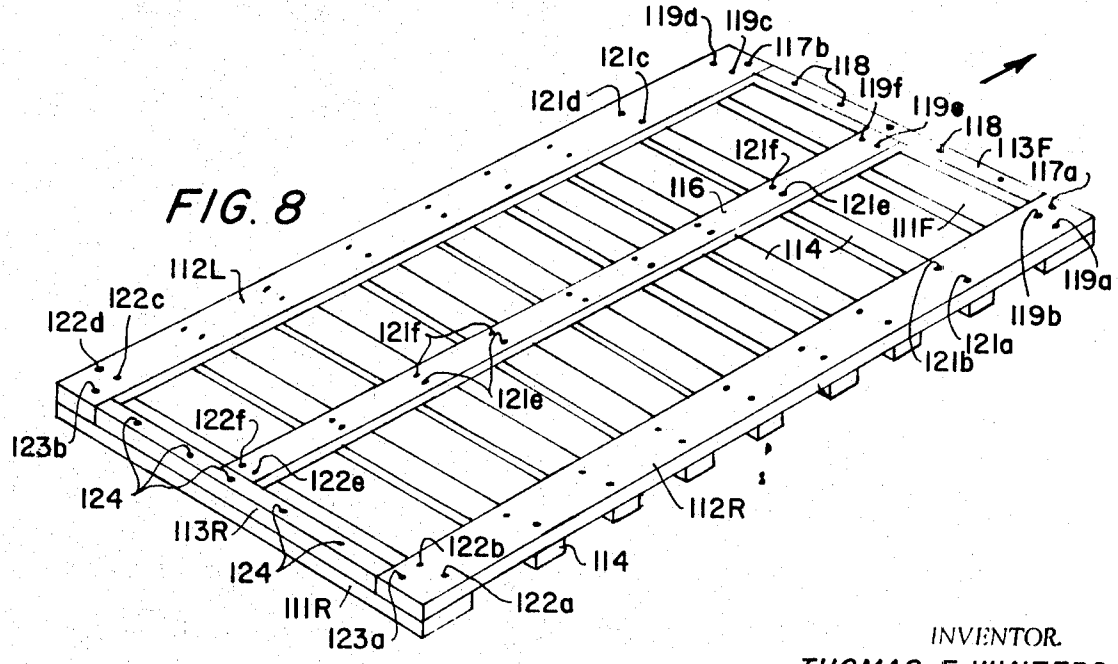


FIG. 9.

FIG. 8



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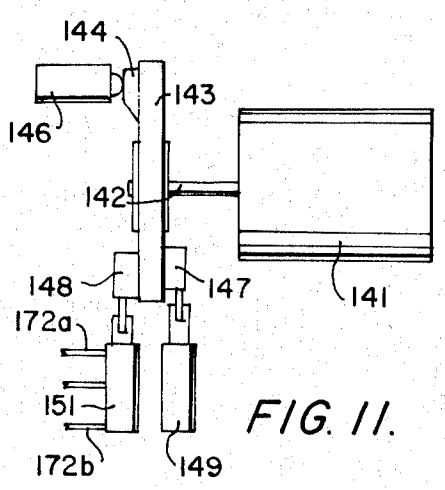


FIG. 11.

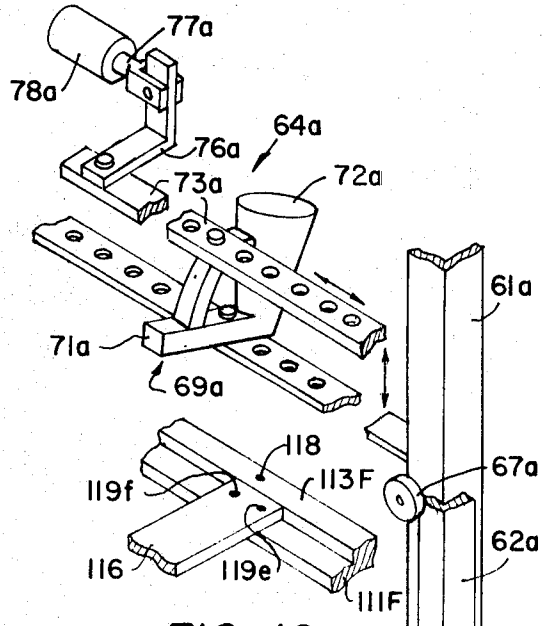


FIG. 12.

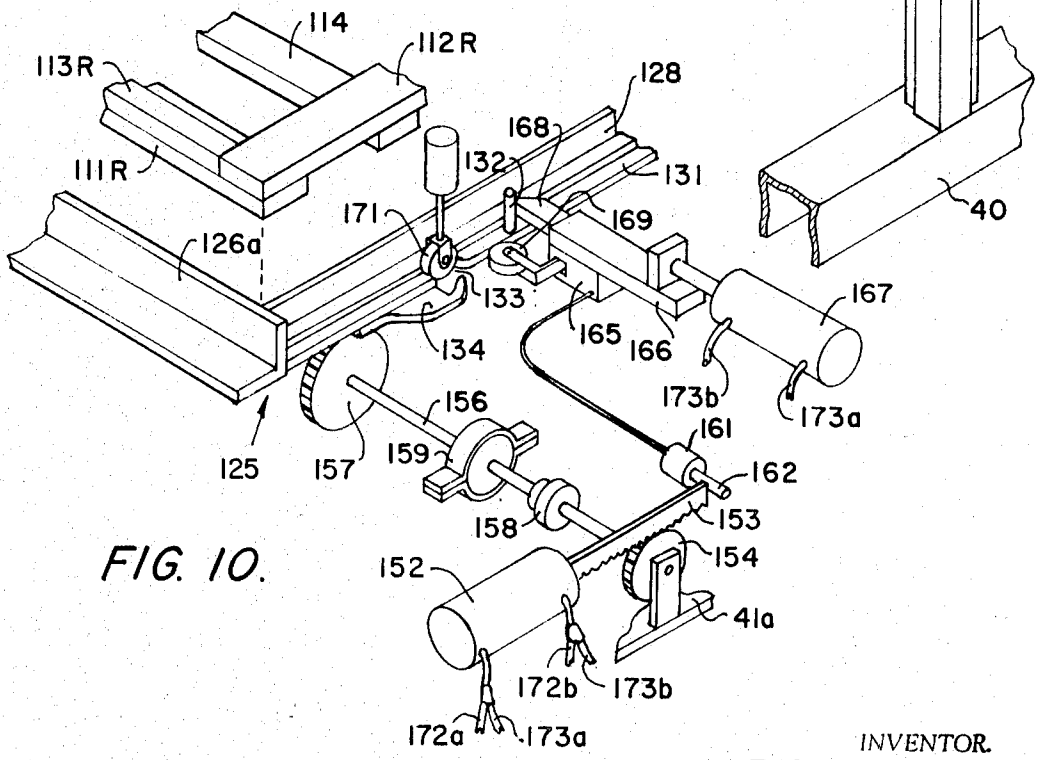


FIG. 10.

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BEDSPRING FRAME MACHINE

This invention relates to a new and improved bedspring frame machine. The machine is used to assemble and nail conventional wooden frames to which the coil springs making up a bedspring are subsequently attached. The frame comprises longitudinal and transverse marginal members and a plurality of slats intermediate two of the marginal members. In some forms of such frames, cleats are attached to marginal members and also to slats. The present invention positions the wooden pieces properly and mounts pneumatic stapling or mailing machines which drive nails through the joints of the wooden pieces.

A principal feature of the present invention is the provision of means on the machine to position the wooden members relative to each other so that uniform frames are produced. Uniformity in frame production is of particular importance when automatic equipment is used to position the springs on the frames, such equipment being shown for example in U.S. Pat Nos. 3,168,745 and 3,190,522.

Still another feature of the invention is the simplicity and ease with which various sizes of spring frames may be produced. Setting up the machine for changes in size of springs is rapid and simple yet there is positive location of the wood pieces for each size.

Still another feature of the invention is the simultaneous setting of several nails thereby reducing the time and making the frames manufactured more uniform.

Still another feature of the invention is the provision of means for supporting the wood pieces in position while the nailing is conducted in such manner that there is a firm locking of the joints of the frame. One of the machines hereinafter illustrated will nail a 2 × 4 frame and in order for this to be accomplished satisfactorily it is necessary to squeeze the wooden members in position at the joints as the nailing operation is conducted. The present machine is very satisfactory for this purpose.

Another advantage of the invention is the fact that any desired nail pattern may be carried out by alteration of the mechanism actuating the pneumatic nail-driving machine. This produces effective joints and at the same time effects an economy in the use of nails.

Still another feature of the invention is the fact that the frame is nailed upside down. Occasionally the clinched end of the nails project even when driven in accordance with the present invention. If such ends are exposed, they tend to rip the coverings of adjacent springs when the springs are stacked.

Still another feature of the invention is the fact that the nailing tools are all supported on a frame and uniformly depressed thereby reducing the likelihood of damage to the tools. Where nails are driven manually, the workman must set down the tool from time to time and the likelihood of damage from the tool being dropped is considerable. Furthermore, the pressure applied in manual actuation tends to vary and thereby increases the need for tool maintenance.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views.

In the drawings:

FIG. 1 is a perspective view of one form of spring frame made in accordance with the invention.

FIG. 2 is a fragmentary sectional view taken substantially along the line 2–2 of FIG. 1, and also showing part of the mechanism of the machine which is used in assembling the wood of the frame of FIG. 1.

FIG. 3 is a rear elevational view of one form of machine in accordance with the present invention.

FIG. 4 is a side elevational view thereof.

FIG. 5 is a fragmentary perspective view of a portion of the mechanism.

FIG. 6 is a fragmentary perspective view of another portion of the mechanism.

FIG. 7 is a detail of a portion of the mechanism as shown by line 7–7 of FIG. 6.

FIG. 8 is a perspective view of another spring frame made in accordance with the invention.

FIG. 9 is a rear elevational view of a modified machine.

FIG. 10 is a fragmentary perspective view of a portion of the mechanism of FIG. 9.

FIG. 11 is a schematic view of a portion of the cam system actuating the valves thereof.

FIG. 12 is a fragmentary perspective view of another portion of the mechanism.

Directing attention to the frame shown in FIGS. 1 and 2, a pair of side members 21F, R (referred to herein generally as 21) is provided, interconnected at either end by end members 22R, L (referred to herein generally as 22). Intermediate the end members 22 is a plurality of slats 23. In the manufacture of the frame, one of the sides 21 is at the front and proceeds extending transversely across the machine, the ends 22 and slats 23 moving longitudinally in the machine. Preferably members 21 and 22 are formed of 2 × 4 material while members 23 are formed of 1 × 4 material. A ¾-inch deep step 26 is formed in the top inner edge of member 21 and the ends of slats 23 are received in said step. Similarly, a ¾-inch step 27 is formed in the inner bottom edge of end 22 (see FIG. 2). At the corners, the steps 26 and 27 butt. The joints where members 21, 22, and 23 meet are nailed together and the machine hereinafter described is used in install the nails. Directing attention to the upper right-hand corner of FIG. 1, members 21 and 22 are connected by four nails 31*a*—31*d*, inclusive. Nails 31*a* and 31*b* are driven sequentially. The frame is then indexed forwardly approximately 1½inches and nails 32*a*—32*d* are installed sequentially. Directing attention to the upper left-hand corner, nails 31*c*—31*d* are installed in the same sequence and simultaneously with the nails 31*a*—31*b*. The joints where the slats 23 and sides 21 join are nailed by nails 33*a*, 33*b* which are applied at the same time that nails 31*a* and 31*b* are applied, respectively. There are no nails corresponding to nails 31*c*, 31*d* attaching the slats to the sides. On the other side of the frame, directing attention to the lower right-hand corner of the frame, nails 34*a*, 34 *b* are first applied simultaneously with nails 34*c*, 34*d* at the opposite corner. The machine then indexes the frame forward 1½inches and nails 34*c*, 34*d* are applied to the lower right-hand corner and simultaneously nails 36*c*, 36*d* are applied. At the same time that nails 34*c*, 34*a* are applied, the slats 23 are nailed to the side 21 by nails 37*c*, 37*d*, respectively. There are no nails in slats 23 corresponding to nails 34*a*, 34*b*.

The machine specially adapted to fabricate the frames shown in FIGS. 1 and 2 is illustrated in FIGS. 3—6, inclusive. On either side of the machine are horizontal longitudinal members 41 supported above the floor by transverse members 42 which are in turn supported by legs 43 tied together at the bottom by braces 44. On the outside of members 41 are vertical side guides 46 which guide the outer edges of ends 22. On the right-hand side of the machine to the outside of guides 46 are controls 47, 49 which actuate the valves for the various pneumatic controls which are hereinafter described in detail. A pivoted control bar 48 along one side provides a convenient remote control for some of the valves 47. Extending transversely across the machine and supported by members 41 are three horizontal rods 51, two at the rear and one at the forward end of the machine. Mounted on rods 51 are pluralities of discs 52, each having a radially projecting pin 53 and held in position relative to rod 51 by setscrew 54. On one side of the machine is a disc 56 fixed to rod 51 having a pin 57 projecting therefrom which is biased in a direction to project pins 53 upwardly by spring 58 fixed to side member 41. A stud 59 limits rotative movement of rod 51. The discs 52 are located in pairs spaced the width of slats 23 and positioned to locate slats 23 in proper position. As has been stated, there are two rods 51 on the forward end of the machine and one in the rear thereby guiding the slats prior to and subsequent to their nailing. When side 21 is pushed past one of the rods 51, the rod turns in a counterclockwise direction, as viewed in FIG. 7, to

permit position a of the side 21, and as soon as the side has cleared the pins 53, spring 58 returns the pins 53 to upstanding position.

In the middle of the machine is a superstructure 61. Superstructure 61 has vertical angles 62 welded at their bottoms to side member 41. At the top of the machine is a horizontal transverse tie 63 connecting the upper ends of members 62. Vertically reciprocating between members 62 is a carriage 64. Carriage 64 has a vertical angle 66 fitting inside angle 62 and carrying roller 67 which engages the outside of angle 62 so that the angle 61 slides vertically parallel to angle 62 and is held in position by roller 67. Fixed to angle 66 and extending horizontally transversely of the machine is an apertured bar 68 on which are mounted in adjustable position a plurality of pneumatic nailing tools 69 of commercially available construction. Nails are fed into the magazines 71 of tools 69 and actuating mechanism 72 drives the nails downwardly out of the tool 69 into the wood 23 and into the step 26 of side 21. A description of tools 69 is believed not to be in order in that these machines are of commercially available construction and well understood in this art. The compressed air driving the machine 69 is obtained from a manifold 73 mounted above tie 63. Valves (not shown) control actuation of the machines 69. Some of the machines 69, as hereinafter explained, are so controlled by their valves that they drive the nails upon contact with the wood 23 or 22, whereas some of the machines 69 have manually actuated valves, all as hereinafter explained. The tools 69 are pivoted on the bar 68 and are caused to oscillate. Thus transversely reciprocating tie bar 73*b* (FIG. 5) is connected to each tool 69 displaced from the pivot 74 which connects the tool to bar 68. Bracket 76 is connected to bar 73 and is also connected to the rod 77 of cylinder 78 which is fixed to upper frame member 79 connected to angle 66.

Carriage 64 is made to reciprocate by means of cylinders 81 on opposite sides of the machine attached at their upper ends to transverse member 63 and having their rods 82 at their lower ends attached to brackets 83 connected to member 79. The elevated position of carriage 64 is illustrated in FIG. 3. When the rods 82 of cylinders 81 are extended downwardly, the carriage 64 is lowered until the lower ends of tools 69 are in contact with the wood 22, 23. After the nails have been driven, the carriage 64 is raised and the frame moved forwardly.

Forward movement of the frame is controlled by cylinder 86 supported in the rear central position of the machine by means not herein described or illustrated and having its rod 87 connected to a rack 88 which reciprocates horizontally longitudinally. Pinion 89 on transverse horizontal rod 91 engages rack 88 and is supported at either end by members 41. Rod 91 carries at either side of the machine a pinion 93 which engages horizontal longitudinally reciprocating rack 94 held in position by cleats 96. Each rack 94 has a dog 97 pivoted thereto and biased in upright position as shown in FIG. 6 by a spring (not shown). The rearward edge 98 is curved so that the sides 21 may be pushed over dog 97 to depress the same and as soon as they have passed the dog 97 the spring returns it to an erect position. Rearwardly on rack 94 is an angle 99 which fits behind the rearmost side 21. Forward movement of rack 94 thus causes forward movement of the frame.

Immediately under superstructure 61 is a transverse horizontal anvil 101 which forms a support for sides 21 while the nailing operation is being conducted. A gap 102 is formed in right-hand edge guide 46 opposite anvil 101 and reciprocating transversely of the machine is a squeeze member 103 having an upstanding flange 104 and a horizontal sliding member 106 which is connected to member 41 by slot and pin connections 107. Fixed to reciprocating leg 61 is a cam 110 which engages the side edge of squeeze member 103 and pushes the same inwardly when the carriage 64 is depressed. The movement of the frame restores bar 106 to retracted position once cam 110 is out of engagement with bar 106.

Vertical pins 108, 108*a* are reciprocated by pistons 115, 115*a* to project above the level of channels 41 to provide stops for forward movement of side 21F, as hereinafter appears.

The operation of the machine shown in FIGS. 3—7, inclusive, is as follows: Front side 21F is laid transversely across the machine between edge guides 46. The ends 22 are positioned on top of channels 41 abutting the edge guides 46. Rear side 21R is laid in position. The discs 52 have been preset for the required number of slats 23 suitably spaced. The slats are installed longitudinally of the machine between pins 53 which hold the slats in longitudinal alignment at proper intervals. The forward ends of the slats 23 rest upon the step 26 of the forward side 21F and their rearward ends rest upon the corresponding step of the rearward side 21R. The rear edge of rear side 21R is placed in abutment with pushing bracket 99. The forward side 21F is limited by stop 108 which is projected by valve 49*a*. Valve 49*c* is activated energizing cylinder 86 and bracket 99 pushes side 21R forward and thus pushing side 21F against stop 108, clamping the parts together longitudinally of the machine. Control rod 48 is pushed forward and rotated outward so that lever 48*c* carried thereby contacts valve 47*a* (but lever 48*a* does not contact valve 47*b*). This causes cylinders 86 to be energized and depresses carriage 64. Carriage 64 is depressed and as it depresses, cam 110 causes squeeze member 103 to move inwardly squeezing the end 22 on the right-hand side of the machine as viewed in FIG. 6, and squeezing the opposite end against the corresponding edge guide 46 which has no gap equivalent to gap 102. This tightens the frame transversely by bringing the outside edges of members 22 even with the ends of members 21. When the carriage 64 is fully depressed, the nailing tools 69 which are above ends 22 are automatically fired upon contact of their valve control with the ends 22, driving nails 31*a*, 31*c*. Valve 49*d* is actuated manually, firing the nailing tools 69 above slats 23, driving nails 33*a*. Carriage 64 raises upon reverse rotation of rod 48. Control rod 48 is then pulled rearward and rotated outward. Lever 48*a* first contacts valve 47*b* energizing cylinder 78 and oscillating tools 69. Then lever 48*b* contacts valve 47*a* energizing cylinders 86 and depressing carriage 64. When fully depressed, tools 69 above ends 22 are automatically fired, driving nails 31*b*, 31*d*. Valve 49*d* is actuated manually, firing tools 69 above slats 23, driving nails 33*b*. Upon reverse rotation of rod 48, carriage 64 is raised and bar 73 returned to initial position.

After the carriage 64 has been raised, valve 49*a* is released and cylinder 86 is energized, causing the racks 94 to move forward about 1½ inches. Carriage 64 is depressed by pushing bar 48 forward and rotating out and upon contact of the nailing tools 69 at each side of the machine nails 32*a* and 32*c* are driven. The carriage is raised and bar 48 pulled rearward and pulled out so that cylinder 78 is energized to oscillate the tools 69 and thereupon the carriage 64 is again depressed causing the tools to drive the nails 32*b*, 32*d*.

After the forward end of the frame has been nailed, cylinder 86 is retracted by releasing valve 49*c*. Valve 49*a* has been released. Valve 49*b* is depressed, projecting pin 108*a*. The frame is pushed forward until the rear side 21R is immediately forward of dogs 97. Valve 49*c* is depressed energizing cylinders 86 and dogs 97 push side 21R forward, squeezing side 21F against stop 108*a*. Rod 48 is pulled rearward and rotated outward causing lever 48*c* to contact valve 47*a*, depressing carriage 64. When the carriage 64 is fully depressed, nails 34*a* and 34*c* are driven upon contact of the side tools 69 with the ends 22. Rod 48 is pushed forward and rotated outward, causing lever 48*a* to contact valve 47*b* to energize cylinder 78 to oscillate tools 69 and then causing lever 48*b* to contact valve 47*a* energizing cylinders 81 and causing nails 34*b*, 34*d* to be driven. Valve 49*b* is released, retracting pin 108*a*. The frame is pushed forward 1½ inches. Upon depression of carriage 64, nails 36*a*, 36*c* are driven automatically and manual control 49*d* is actuated to cause the corresponding tools 69 to drive the nails 37*c*. Upon subsequent depression of the carriage 64 the cylinder 78 is energized to oscillate the tools and by manual and automatic valve controls the nails 34*b*, 34*d* and 37*d* are driven. This completes the nailing the frame.

Directing attention to the frame shown in FIG. 8, the direction of movement of the frame through the machine of

FIGS. 9—12 is at right angles to that of the preceding modification. The frame of FIG. 8 is made up of longitudinal members which are 1 × 4 in size as contrasted to the 2 × 4 marginal members of FIG. 1. At the forward end is a transverse end member 111F extending the full width of the frame and at the rear is a similar member 111R. Superimposed on the corners of the members 111 are longitudinal members 112R and 112L which overlap members 111. At each end is a cleat 113F, 113R parallel to members 111 extending between members 112 along the outer edges of members 111. At intervals between ends 111F and 111R are transverse slats 114. A longitudinal cleat 116 intermediate sides 112 extends over the top of slats 114.

The machine hereinafter described applies the nails holding the wooden members together. In the first downward stroke of the machine a nail 117*a* is applied near the forward edge of side 112R, nailing the end 111F and side 112R together. Simultaneously the nail 117*b* is applied at the opposite corner. At the same time that nails 117*a* and 117*b* are applied, a plurality of nails 118 which are spaced rearwardly from the forward edge of the frame the same distance are applied nailing the cleat 113F to the forward end 111F. The frame is then moved forward in the machine approximately 1½inches. The machine then applies nails 119*a*, 119*e* and 119*c* to nail side 112R, intermediate member 116 and side 112L to underlying end 111F. The nailing machine then oscillates and the machine then simultaneously applies nails 119*b*, 119*f* and 119*d* to nail sides 112R, intermediate member 116 and side 112L to forward end 111F. The machine thereupon indexes forwardly until the first slat 114 is under the nailing tools. The carriage of the nailing machine is depressed and simultaneously nails 121*a*, 121*e*, 121*c* are applied to nail members 112R, 116, and 112L to the first slat 114. The machine then oscillates the nailing tools and nails 121*b*, 121*f* and 121*d* are applied to nail the same members together. This operation is repeated until all of the slats have been nailed. When the rear end 111R reaches the nailing machines the machine first applies nails 122*a*, 112*e* and 122*c* to nail the members 112R, 116 and 112L to the inner edge of end 111R. The machine then oscillates the nailing tools and applies nails 122*b*, 122*f*, 122*d*. The frame is then indexed forwardly in the machine approximately 1½inches and nails 123*a*, 123*b* are applied to nail the sides 112R and 112L to end 111R and simultaneously nails 124 are applied to nail the cleat 113R to end 111R.

The frame heretofore described is assembled in a metal locating frame 125 made of angle bars preliminary to being inserted in the machine. The right-hand side 128 has lateral extension 131. Vertical pins 132 corresponding in spacing to the slats 114 are located on extension 131. At the rear end of the metal guide frame the extension 131 is formed with a cutout or notch 133 and immediately rearwardly thereof is a projecting hooklike extension 134. A similar extension (not shown) is located at the front of the metal frame. The purpose of the extensions, pins and hooks will hereinafter appear.

The machine shown in FIG. 9—12 is in many respects similar to that shown in the preceding modification and parts which correspond in general construction and function are identified by the same reference numerals followed by the subscript *a*. The following description will be directed essentially to those portions of the machine which differ in function or construction.

Transverse members 42*a* are supported by longitudinal members 40. Side members 41*a* rest on members 42*a* and an intermediate longitudinal member 42*b* is provided.

Mounted on the machine is an electric motor 141 having a shaft 142 carrying a timing cam 143. One cam portion 144 on cam wheel 143 controls a stroke control valve 146. Additional cam members 147, 148 on wheel 143 control valves 149, 151, which control oscillation of the nailing tools 69*a* and the advance of the frame through the machine, respectively.

Thus valve 151 controls reciprocating stroke cylinder 152 which has a rack 153 as its rod which engages pinion 154 on shaft 156. At the opposite end of shaft 156 is drive wheel 157 which engages the metal guide frame sides 128 and moves the guide frame through the machine. A one-direction clutch 158, manually controlled, is installed on shaft 156 as is a brake 159. The effect of clutch 158 and brake 159 is that when the metal frame is retracted, shaft 156 is not counterrotated. Limit cylinder 161 has its rod 162 disposed in proximity to rack 153 so that when its rod 162 is projected it limits forward movement of rack 153.

Mounted on the machine is a slide 166 which reciprocates transversely and is controlled by a cylinder 167. The forward end of slide 166 has a latch 168 which engages the various pins 132 on extensions 131 to limit forward movement of the frame. Mounted adjacent slide 166 is a switch 165 having a switch-contact roller 169 which rides on the outer edge of extension 131 and is actuated to move outward by hook 134. Mounted adjacent the rear of the machine is a switch contact 171 which rides on top of extension 131 and when notch 133 is under contact 171 a switch is actuated deenergizing motor 141.

The foregoing system of switches and cams performs the following function: Cam 144 and its associated valve 146 control cylinders 81*a* which raise and depress the frame 64*a* on which the nailing tools 69*a* are mounted. The two outermost tools 69*a* and the center tool are constructed so that they are triggered upon contact while the intermediate tools are manually triggered. Thus at the commencement of operation the locating frame is inserted in the machine, raising roller 171 and starting motor 141. One of the cams 144 controls valve 146 which activates cylinders 81*a*, depressing carriage 64*a*, causing the outermost tools 69*a* to automatically fire driving nails 117*a*, 117*b* and the intermediate tools are then manually actuated, driving nails 118. There is no oscillation of tools 69*a* in a preferred sequence of operation of the machine upon application of the first row of nails. The turning of motor 141 causes cam 148 to energize valve 151 which controls cylinder 152 pushing the frame forwardly in the machine. The forward hooklike extension (not shown) on the front of locating frame 125 contacts roller 169 causing projection of rod 162 stopping extension of rack 153. Hence the frame is moved forward only 1½inches. A second cam 144 activates valve 146 and the nails 119*a*, 119*e* and 119*c* are driven upon depression of carriage 64*a*. Cam 147 contacting valve 149 causes oscillation of the nailing tools 69*a* by energization of cylinder 78*a* and upon subsequent depression of the frame 64*a* the nails 119*b*, 119*f* and 119*c* are driven. Thereupon the frame is indexed forwardly in the machine by cam 148 actuating valve 151 and energizing cylinder 152. The cylinders 152 and 167 are double-acting and are arranged for sequential operation. Thus valve 151 has two outlet conduits 172*a*, 172*b* leading to opposite ends of cylinder 152. Connections are installed in said conduits for branch conduits 173*a*, 173*b* leading to cylinder 167. Thus latch 168 is first projected limiting forward movement of locating frame 125 and then cylinder 152 causes movement of frame 125 until the next pin 132 engages latch 168, thereby accurately positioning the wooden members relative to tools 69*a*. Since the hooklike extension is no longer in contact with its roller 169, rod 162 is not extended, permitting the rack 153 to fully project. The nails 121*a*, 121*e* and 121*c* are then applied. Cam 147 causes oscillation of the nailing machines by reason of energization of cylinder 78*a* and the nails 121*b*, 121*f* and 121*d* applied. The sequence is repeated for nailing of each of the slats 114.

After the last slat 114 has been nailed, cam 114 indexes locating frame 125 forward until the last pin 132 is engaged by latch 168 so that the frame is properly located to drive nails 122*a*—*f* in the same manner nails 119*a*—*f* were driven. Upon the next energization of cylinder 152, rear extension 134 engages roller 169 causing rod 162 to stop rack 153 so that the frame 125 is properly located to drive nails 123*a*, *b* and 124. Roller 171 drops into notch 133, stopping motor 141 in this position. A valve (not shown) disengages clutch 158, permitting frame 125 to be retracted. The wooden frame is now complete and is removed and the wooden parts for the next frame are placed in position.

I claim:

1. A bedspring frame nailing machine for nailing together transverse and longitudinal marginal wooden members and wooden slat members comprising a longitudinal horizontal machine frame, a transverse horizontal anvil at about the midpoint of said machine frame, a transverse superstructure above said anvil of said machine frame, a carriage mounted for vertical reciprocation on said superstructure toward and away from said machine frame, a plurality of pneumatic nailing tools on said carriage positioned above said anvil, guide means on said machine frame for guiding said wooden members in predetermined aligned positions along said machine frame and beneath said nailing tools, power-actuated means for moving said wooden members in increments longitudinally through said machine, and power-actuated means for reciprocating said carriage on said superstructure, said guide means comprising at least one transverse horizontal shaft supported by said machine frame, and a plurality of carriers adjustably positioned along said shaft, each said carrier having a pin projecting above the path of movement of said slat members, pairs of carriers confining movement of said slat members transversely of said machine frame.

2. A machine according to claim 1, which further comprises mounting means mounting said nailing tools on said carriage comprising a first transverse member fixed to said carriage, means pivotally mounting said tools on said first transverse member, a second transverse member, power-actuated means for reciprocating said second member parallel to and spaced from said first member, and means connecting said tools to said second member, whereby upon movement of said second member in one direction at least some of said tools discharge nails in first positions and after movement of said second member in the opposite direction at least some of said tools discharge nails in second positions transversely spaced from said first positions.

3. A machine according to claim 1, in which said shaft is oscillatory between a first position with said pins projecting upward and a second position with said pins below said path of movement to permit passage of said transverse marginal members and resilient means biasing said shaft toward first position.

4. A machine according to claim 1, in which said guide means is formed with an opening at one side of said superstructure, a squeeze member horizontally reciprocable opposite said opening and cooperating means on said carriage and said squeeze member to move said squeeze member inward of said opening to clamp one said transverse marginal member relative to said longitudinal marginal members.

5. A bedspring frame nailing machine for nailing together transverse and longitudinal marginal wooden members and wooden slat members comprising a longitudinal horizontal machine frame, a transverse horizontal anvil at about the midpoint of said machine frame, a transverse superstructure above said anvil of said machine frame, a carriage mounted for vertical reciprocation on said superstructure toward and away from said machine frame, a plurality of pneumatic nailing tools on said carriage positioned above said anvil, guide means on said machine frame for guiding said wooden members in predetermined aligned positions along said machine frame and beneath said nailing tools, power-actuated means for moving said wooden members in increments longitudinally through said machine, power-actuated means for reciprocating said carriage on said superstructure, a permanent frame surrounding said wooden members and providing support therefor as said wooden members advance through said machine, cooperating first means on said permanent frame and second means on said machine frame for limiting sequential increments of movement of said permanent frame through said machine, timing means for reciprocating said second means in timed relation of reciprocation of said carriage, and second timing means for limiting movement of said permanent frame to lesser increments than the movement limited by said first-mentioned timing means.

6. A bedspring frame nailing machine for nailing together transverse and longitudinal marginal wooden members and wooden slat members comprising a longitudinal horizontal machine frame, a transverse horizontal anvil at about the midpoint of said machine frame, a transverse superstructure above said anvil of said machine frame, a carriage mounted for vertical reciprocation on said superstructure toward and away from said machine frame, a plurality of pneumatic nailing tools on said carriage positioned above said anvil, guide means on said machine frame for guiding said wooden members in predetermined aligned positions along said machine frame and beneath said nailing tools, power-actuated means for moving said wooden members in increments longitudinally through said machine, power-actuated means for reciprocating said carriage on said superstructure, a permanent frame surrounding said wooden members and providing support therefor as said wooden members advance through said machine, a rack on said permanent frame, a transverse shaft in said machine frame having a pinion engaging said rack, and means for intermittently rotating said pinion in a direction to advance said permanent frame and a one-direction clutch in said shaft permitting retraction of said permanent frame.