Dec. 17, 1935. W. O. SIMS 2,024,750

WIRE STITCHING MACHINE

Filed Dec. 1, 1933 5 Sheets-Sheet 1

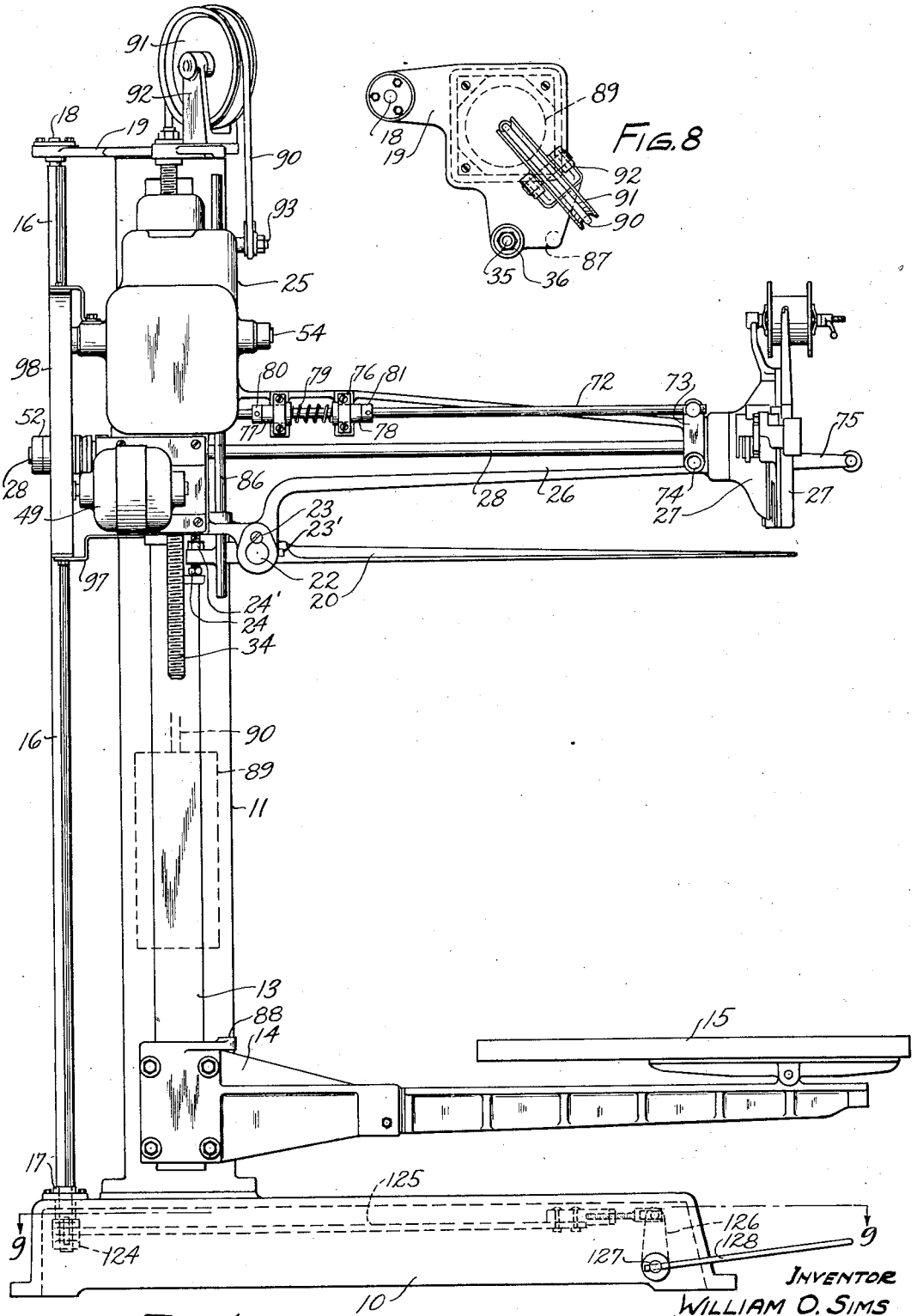

FIG. 8

FIG. 1

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WIRE STITCHING MACHINE

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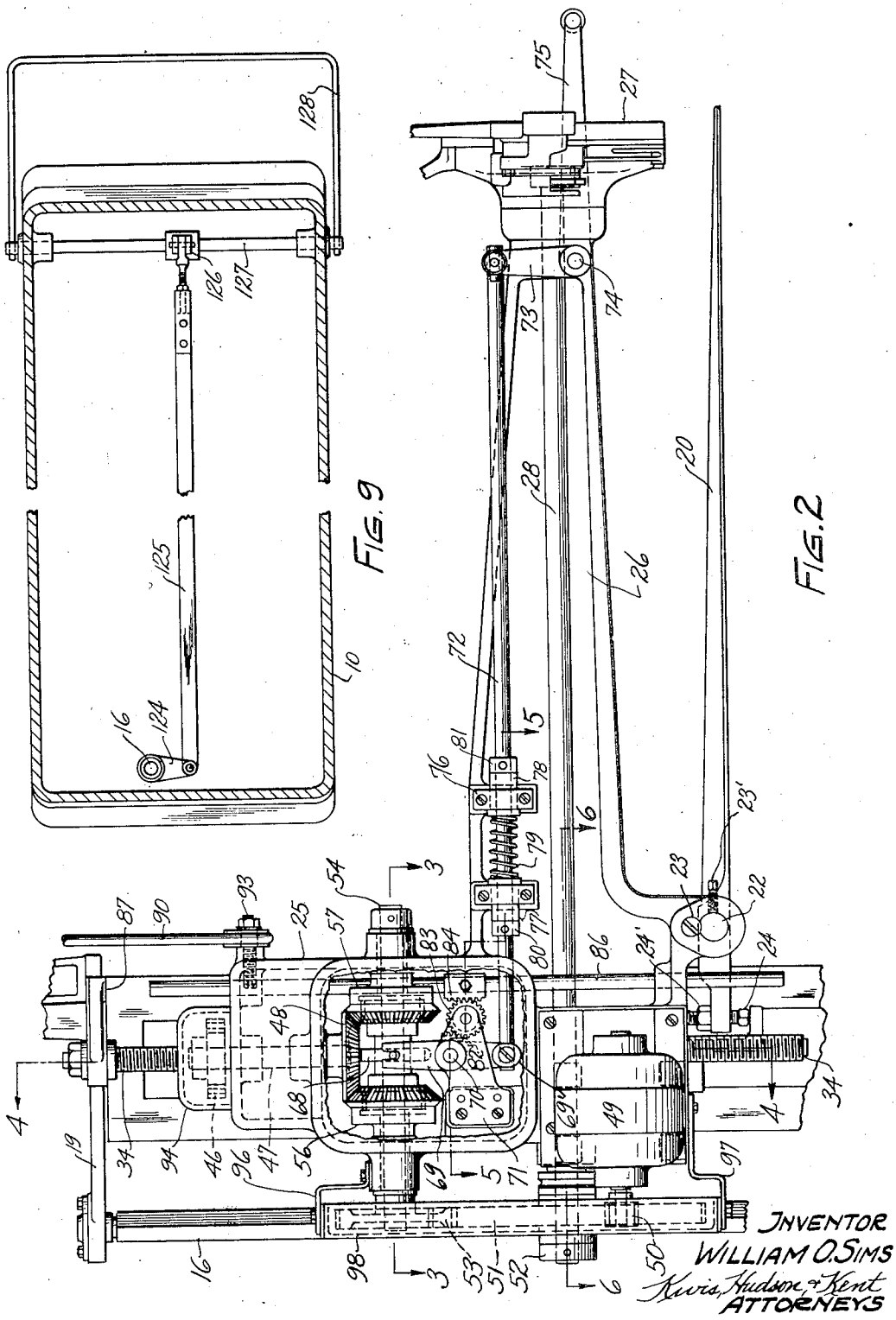

FIG. 9

FIG. 2

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WIRE STITCHING MACHINE

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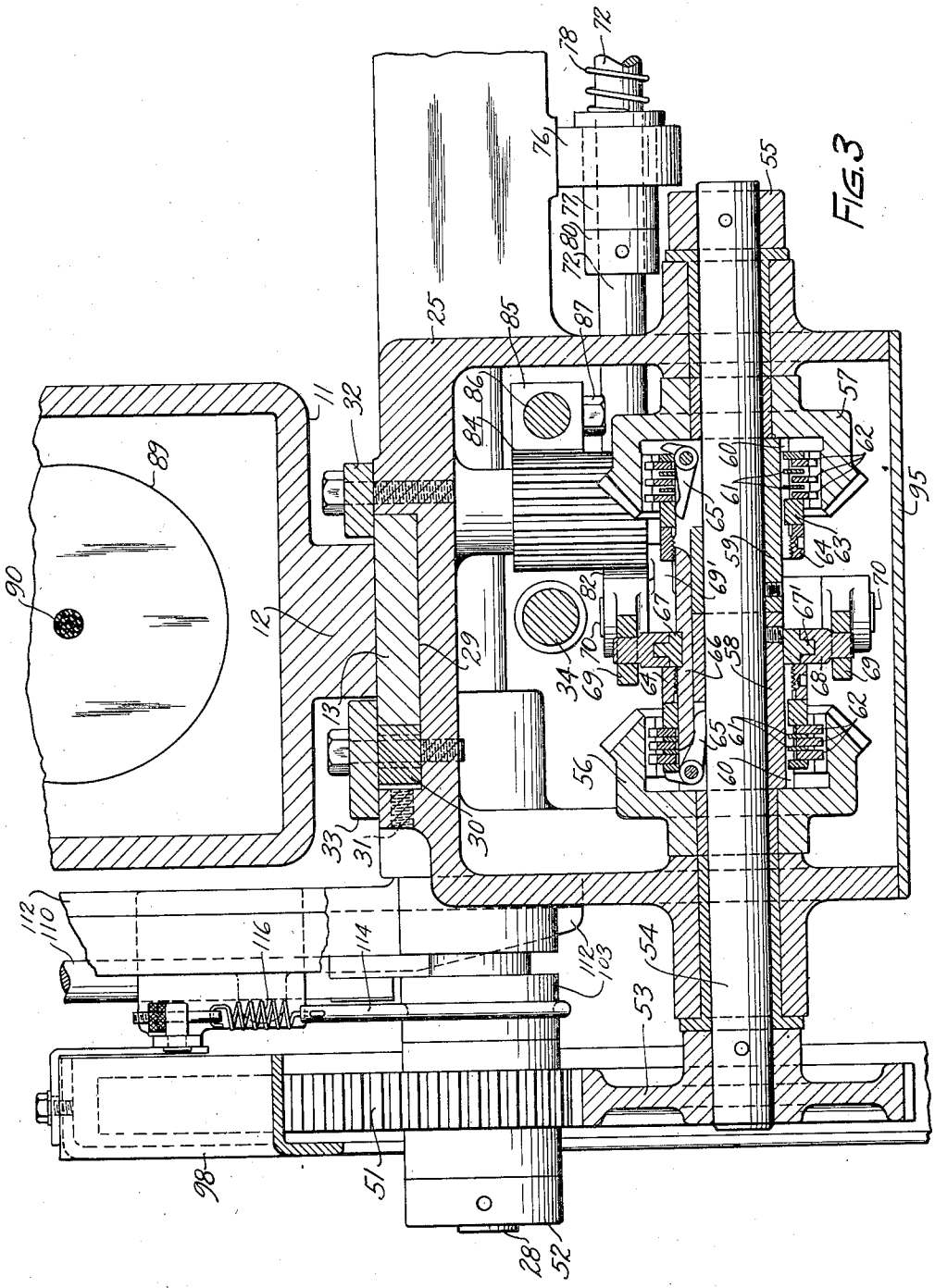

FIG. 3

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WIRE STITCHING MACHINE

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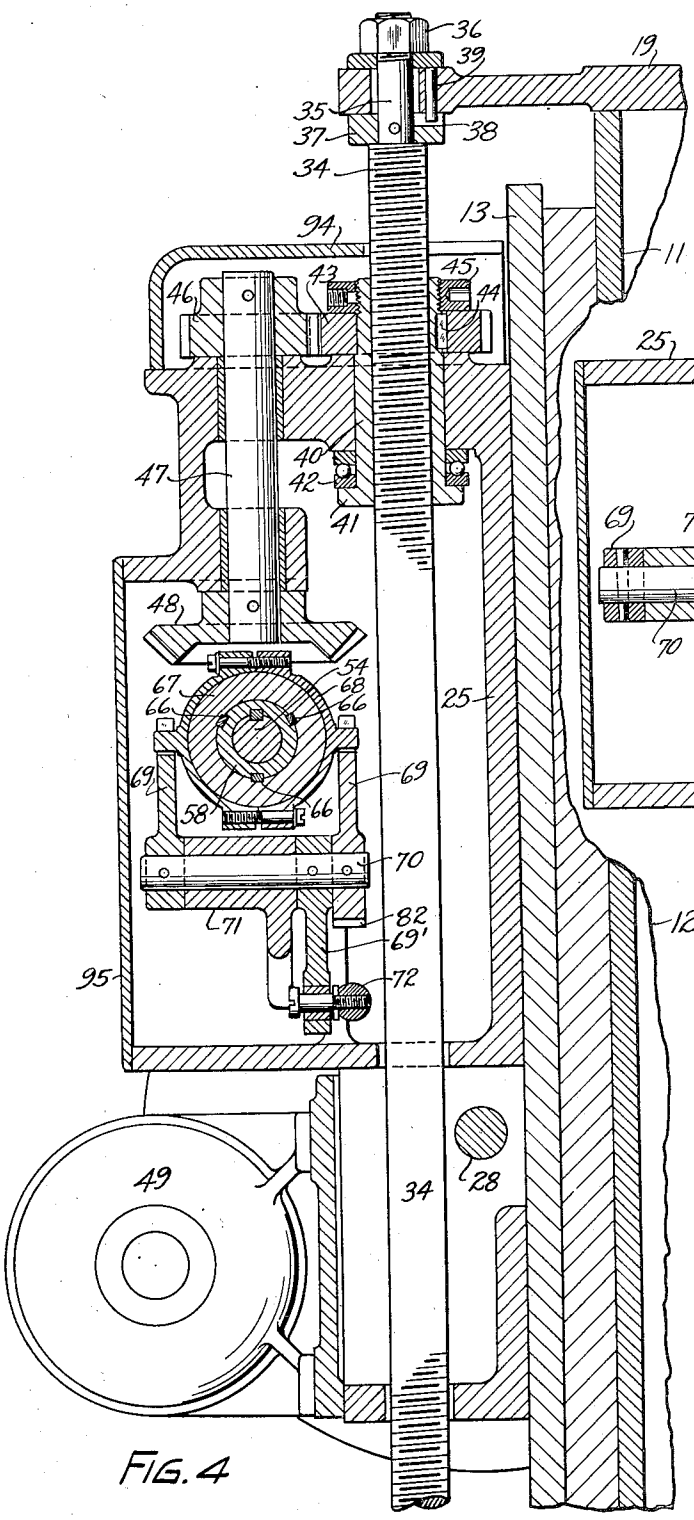

FIG. 4

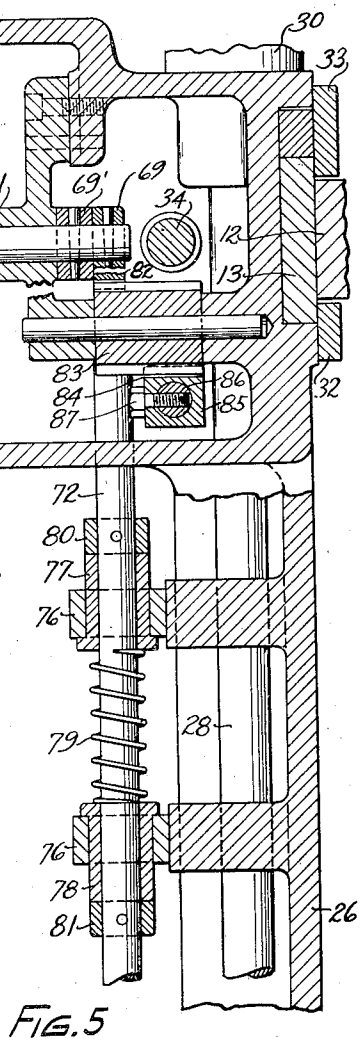

FIG. 5

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WIRE STITCHING MACHINE

Filed Dec. 1, 1933 5 Sheets-Sheet 5

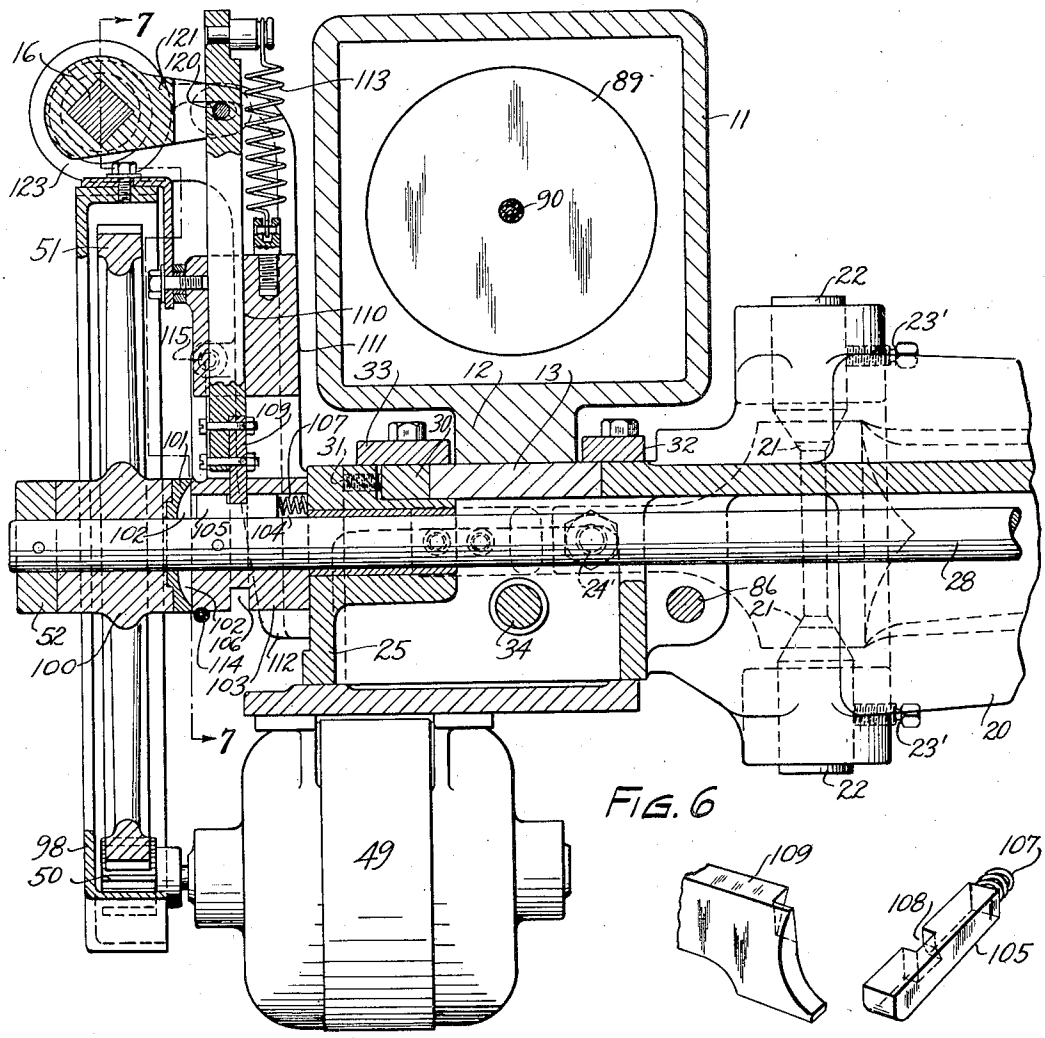

FIG. 6

FIG. 10

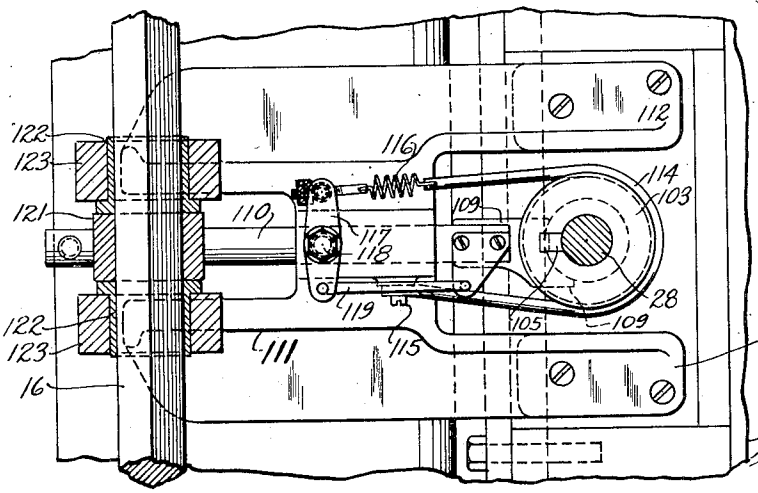

FIG. 7

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2,024,750

UNITED STATES PATENT OFFICE

2,024,750

WIRE STITCHING MACHINE

William O. Sims, Niagara Falls, N. Y., assignor to Harris Seybold Potter Company, Cleveland, Ohio, a corporation of Delaware

Application December 1, 1933, Serial No. 700,532

14 Claims. (Cl. 1—11)

This invention relates to improvements in wire stitching machines, particularly top stitchers for fibre board boxes, that is to say machines for stitching together the flaps used for closing the top of a fibre board box after the material which is to be shipped is packed therein.

In top stitchers as previously constituted, the stitcher head is mounted upon the frame at a fixed elevation, and the platform upon which the box is supported is arranged to be moved vertically in order to bring boxes of different heights into proper position to be stitched. The movement of such a platform, even where power is utilized for the purpose, is necessarily slow, particularly as it is not practical to counterbalance the variable weight of the box and contents supported upon the platform. Accordingly one of the objects of the invention is the provision of a different arrangement, in accordance with which the relative movement of the work and stitcher head toward and away from each other may be accomplished easily and rapidly by providing a stationary box support and a movable counterbalanced stitcher head.

It is desirable in some instances to employ a top stitcher in connection with an endless carrier belt upon which the boxes are supported and moved. The stitching machines as previously constituted do not lend themselves well to such a use, and another object of the present invention therefore is the provision of a machine which can be employed effectively in connection with an endless belt conveyor.

A further object of the invention is the provision of means for causing vertical travel of the carriage upon which the stitcher head is mounted, said means being controlled preferably by the hand of the operator applied to a lever located at or upon the stitcher head, and the carriage movement continuing only so long as the operator holds the lever in an operating position, the stopping of the carriage movement in other words being automatic and effective as soon as the operator releases the control lever.

Another object is the provision of a foot control for the stitcher drive shaft effective in all positions of the carriage and stitcher head, in other words, a control which remains in a fixed position while the stitcher itself moves.

Still another object is the provision of limit stops for preventing movement of the carriage in either direction beyond predetermined points.

Other objects and features of novelty will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawings, in which

Figure 1 is an elevational view of a machine embodying the invention.

Fig. 2 is an elevational view on a larger scale of the vertically movable carriage and stitcher head, certain parts being broken away to fully illustrate the control mechanism for the carriage.

Fig. 3 is a horizontal sectional view on a still larger scale, illustrating a portion of the carriage moving mechanism, this view being taken substantially on the line 3—3 of Fig. 2.

Fig. 4 is a vertical sectional view taken substantially on the line 4—4 of Fig. 2, showing on a larger scale a portion of the carriage moving mechanism.

Fig. 5 is a horizontal sectional view taken substantially on the line 5—5 of Fig. 2.

Fig. 6 is a horizontal sectional view taken substantially on the line 6—6 of Fig. 2, showing on a large scale a portion of the control for the stitcher shaft.

Fig. 7 is a vertical sectional view taken substantially on the line 7—7 of Fig. 6.

Fig. 8 is a plan view of the upper end of the machine.

Fig. 9 is a horizontal sectional view taken substantially on the line 9—9 of Fig. 1, illustrating a foot pedal operating means constituting part of the stitcher shaft control, and

Fig. 10 is a perspective view of the principal coacting elements of a clutch which may be employed in connection with the stitcher shaft control.

In the drawings I have shown at 10 a base adapted to rest upon the floor. A hollow column 11 is attached to and extends upwardly from the base 10. It is illustrated as rectangular in cross section, although obviously it may have other forms. On one side this column is provided with an extension 12, upon the outer face of which is secured a wide bar or elongated plate 13. The edge portions of this bar extend beyond the walls of the extension 12 to form a vertical track, upon which the vertically moving carriage is guided and by which it is held against movement in a horizontal plane.

14 is a bracket arm which may be clamped to the bar 13 in any desired position upon the latter, although usually near the bottom thereof as illustrated in Fig. 1. This bracket arm near its outer end supports a platform 15 which may be used as a support for the boxes to be sealed by the stitcher.

16 is a non-circular shaft which is rotatably

mounted at its lower end in a bearing 17 carried by the base 10 and at its upper end in a bearing 18 carried by a cover plate 19 which is secured to the top of column 11. This shaft 16 is illustrated as square in cross section, but it may have other non-circular cross sectional forms, and the term is to be understood as including a circular shaft with one or more spline grooves therein.

Extending forwardly from the vertically movable carriage is an anvil blade 20 of more or less conventional form. This blade, as indicated in Fig. 6, is provided with aligned cone shaped bearing sockets 21 that are engaged by supporting pivots 22 having cone shaped ends. The movement of both of these pivots in one direction adjusts the blade sidewise, which adjustment is employed when the machine is assembled so as to position the blade to give the best clinch on both legs of the staple. The movement of the pivots 22 inwardly is effected by means of screws 23 threaded into the supporting bracket and having flat heads overlying the faces of the pivots. After the sidewise adjustment is completed, the screws 23 are tightened sufficiently to permit free movement of the blade upon the pivots without any lost motion. The pivots are then locked in that position by means of set screws 23', and their adjustment is not thereafter disturbed. Adjustment of the outer end of the blade upwardly or downwardly may be effected by an adjusting screw 24 which is threadably mounted in the rear end of the blade and interposed between fixed upper and lower abutments on the carriage. These abutments engage both ends of the screw and prevent any relative movement thereof vertically. The screw is held in any desired position of adjustment by a lock nut 24'. Because of its arrangement between fixed abutments the screw functions to hold the butt end of the blade against movement and to prevent the blade from whipping when a number of stitches are driven in rapid succession. As this screw 24 is threaded through the butt end of the blade, turning it in either direction will cause the clincher end of the blade to raise or fall to take care of various thicknesses of work stitched or to regulate the tightness with which the staple is clinched.

Vertically moving carriage

The vertically moving carriage comprises a casing 25, from which extends forwardly an arm 26, on the outer end of which is supported a stitcher head 27. The latter is not shown or described in detail as the internal construction of the stitcher head constitutes no part of the present invention. The mechanism of the head is operated by a drive shaft 28, to which reference will be made hereinafter.

In one side of the casing 25 there is formed a vertical groove 29 that receives the guide bar 13 and an adjustable bar 30. By means of the latter the fit of the bar 13 in its groove may be regulated to a nicety, abutment screws 31 being employed for holding the bar 30 in the desired position. Elongated retaining plates 32 and 33 are bolted to the casing 25 and engage the rear side of the bar 13, and complete the saddle slidably embracing the guide bar 13.

Depending from an extension of the cover plate 19 there is a screw 34. On the upper end of that screw there is a reduced portion 35 which extends through a hole in the cover plate and is threaded on its upper extremity to receive a nut 36. This screw is fixed against rotation by any suitable means, as for instance by a collar 37 pinned to the reduced portion 35 of the screw and provided in its upper face with a cavity or slot 38 for the reception of a pin 39 mounted in the plate 19. The screw 34 is vertical and parallel with the column 11. It is unsupported at its lower extremity.

An elongated nut 40 is threadably mounted upon the screw 34, and is rotatably mounted within an upper horizontal wall of the casing 24, see particularly Fig. 4. At its lower end this nut is provided with a flange 41, which engages the lower race of a thrust bearing 42, the upper race engaging the upper surface of the casing wall. That portion of the nut 40 which projects above the wall of the casing 25 is of a slightly reduced diameter, and against the shoulder thus formed a pinion 43 is seated, the pinion being held against rotation with respect to the nut by a key 44. A collar 45 is threaded onto the upper extremity of the nut into engagement with the pinion 43. The nut is therefore mounted for rotation in the casing and held against vertical movement with respect to the casing by the engagement of the bearing 42 and the pinion 43 with opposite surfaces of the casing wall.

Meshing with pinion 43 there is a pinion 46 which is pinned to the upper end of a vertical shaft 47 rotatably mounted in the casing 25 and carrying at its lower end a bevel gear 48. The rotation of the gear 48 in one direction or the other acts through the pinions 46 and 43 to rotate nut 40 and thus effect the raising or lowering of the carriage.

I will now describe the transmission mechanism by means of which driving force is transmitted to bevel gear 48 in either direction selectively. Power is derived from an electric motor 49 which is bolted to the casing 25 and hence moves therewith. The motor shaft carries a pinion 50 which meshes with a large gear 51 that is free to turn upon shaft 28, being held against axial movement thereupon in one direction by a collar 52 pinned to the shaft. Meshing with gear 51 there is a further gear 53 which is pinned to one extremity of a shaft 54 rotatably mounted in bearings in the casing 25. The opposite end of shaft 54 has a collar 55 pinned thereto which, together with gear 53, prevents endwise movement of the shaft.

Within the casing 25 the shaft 54 carries two opposed bevel gears 56 and 57, both of which are normally free to turn upon the shaft. Suitable means is provided for clutching one or the other of these gears to the shaft selectively. While the particular means shown herein for this purpose is disclosed merely by way of example, it will nevertheless be described briefly.

Pinned onto the shaft 54, and serving in addition to their other functions as spacers for the gears 56 and 57, are two sleeves or collars 58 and 59. These collars are provided with splines 60 for holding clutch discs 61 against rotation. Other clutch discs 62 are held by means of splines against rotation with respect to the gears 56 and 57. Each collar carries an abutment ring 63 held against movement in one direction by a threaded ring 64. In sockets at relatively spaced intervals around the peripheries of the two collars 58 and 59 there are pivotally mounted bell crank levers 65, which have short arms adapted to engage behind the clutch plates, and long arms with cam surfaces adapted to be engaged by slides 66. The slides are attached to a ring 67 having a peripheral extension 67' received within a groove in a

yoke 68. The latter has trunnions that are received in slots in the upper ends of a pair of levers 69 that are fixed to a rock shaft 70 which is rotatably mounted in a bracket 71 carried by the casing.

When the levers 69 are swung in one direction, as for instance toward the left in Fig. 3, the cam ends of the slides 66 engage the cam surfaces on the long arms of the bell crank levers 65 mounted in the collar 58, causing the short arms of those bell crank levers to move the inner clutch discs 61 toward the right, pressing those discs into close contact with the outer discs 62 and against the abutment ring 63. By this means the bevel gear 56 is clutched to the collar 58 and thus to the shaft. Movement of the levers 69 as far as they will go in the other direction serves by similar action to clutch gear 57 to the shaft.

In order to move the levers 69 with the rock shaft 70, I pin to the shaft 70 a downwardly extending crank arm 69' which has a loose pivotal connection with a slide rod 72. This rod extends forward along the bracket arm 26, and at its forward extremity is joined by a loose pivotal connection with a crank 73 that is pinned or keyed to a rock shaft 74 mounted in the end of bracket 26. To the opposite end of the rock shaft 74 there is secured a crank handle 75 which projects forwardly into a convenient position for manipulation by the machine operator.

A pair of retaining members 76 with circular bores are attached to the bracket arm 26. These retaining members receive flanged sleeves 77 and 78 which surround the shaft 72 and are adapted to slide thereupon. The flanges of the two sleeves are adapted to engage the adjacent faces of the spaced retaining members 76. A coil spring 79 surrounding the shaft 72 tends to hold the sleeves apart. Collars 80 and 81, adapted to engage the outer ends of the sleeves 77 and 78, are pinned to the shaft 72 in position just beyond the sleeves when the parts are in their normal relation corresponding to neutral position of the transmission mechanism.

When the operator presses down on the outer end of the crank handle 75, rod 72 moves toward the right carrying with it sleeve 77, which compresses spring 79. At the same time the levers 69 turn anti-clockwise, causing bevel bear 56 to turn, which operates through bevel gear 48 and piniions 46 and 53 to rotate nut 40 in a clockwise direction as viewed from above, thereby moving the carriage downwardly. This continues while the operator holds the crank handle 75 in its lowered position. Immediately upon his releasing the crank handle however the spring 79 shifts the rod 72 back to its normal intermediate position illustrated in Figs. 1, 2 and 5, declutching gear 56 and immediately stopping the travel of the carriage. Should it be desired to raise the carriage, the crank handle 75 is raised, shifting the rod 72 toward the left. Sleeve 78 then moves in its retainer, compressing spring 79. The operator holds the parts in that position by maintaining an upward pressure on handle 75 until the desired upward movement of the carriage is completed, when he releases the handle 75 and the movement promptly ceases.

In order to guard against damage to the machine by inadvertent operation of the carriage moving mechanism too far in either direction, I provide an automatic stopping means. This comprises a gear sector 82 formed on the lower end of one of the levers 69. This sector meshes with a wide faced pinion 83, which in turn meshes with a rack 84 that is formed in a block 85 secured to a vertical rod 86 by a set screw 87 or the like. The rod 86 is of sufficient length to project somewhat beyond the carriage, top and bottom. An abutment 87 is provided on the cover plate 19 for the upper end of the rod and an abutment 88 on the bracket 14 is provided for the lower end of the rod.

When the crank handle 75 is pulled downwardly to set the mechanism in motion for lowering the carriage, the sector 82 is rotated anti-clockwise and the gear 83 is rotated clockwise, thereby shifting the rod 86 downwardly. Movement of the handle 75 upwardly similarly shifts the rod 86 upwardly. When the carriage is moving upwardly or downwardly and the operator fails to release the handle 75 before the desired end of the carriage travel is reached the engagement of the rod 86 with one of its abutments causes the rod to move back to its neutral position, and through the gear 83 and sector 82 the levers 69 are also returned to neutral, and the travel of the carriage is thereby stopped.

In order to reduce the power required to traverse the carriage up and down upon the column 11, I counterbalance the carriage and all parts supported thereon. The counterbalance weight 89 moves up and down in the hollow column 11, being hung from a cable 90 which runs over a pulley 91 mounted in a supporting bracket 92 carried by the cover plate 19, the opposite end of the cable being secured to a projecting pin 93 on the casing 25.

In order to provide ready access to the working parts of the transmission mechanism, I mount a removable arched cover 94 on the top of the casing 26 and a removable plate 95, broken away in Fig. 2, on one side of the casing. 96 and 97 are bracket arms attached to portions of the carriage and assisting in the support of an annular guard 98 which covers the gears 50, 51 and 53.

Stitcher control

It is important that the control for the stitcher may be such as to leave the hands of the operator free to manipulate the box. Control by the foot of the operator is convenient, and is that supplied in the machine of the present invention. For each stitch taken the drive shaft 28 for the stitcher head turns through a single revolution. The control is such that when operated it clutches the shaft 28 to the constantly rotating gear wheel 51, automatic means being employed to throw out the clutch again when the single revolution of shaft 28 is completed.

Gear wheel 51 has a hub 100 which, as previously explained, is free to turn upon shaft 28. On the inner side of this hub and turning with it there is a clutch plate 101 which is provided with two diametrically opposed clutch sockets 102. Between the clutch plate 101 and the casing 25, as illustrated in Fig. 6, there is a clutch collar 103 which is pinned to the shaft 28. In this collar there is a longitudinal slot 104 in which is slidably mounted a rectangular clutch pin 105 that is adapted to enter either of the clutch sockets 102. The clutch collar also has an annular groove 106 therein that communicates with the slot 104. A coil spring 107 tends to move the clutch pin 105 to the left as viewed in Fig. 6. The pin 105 is provided on its radially outward side with a slot 108 which has one cam surface, as clearly appears in Fig. 10. 109 is a cam blade which is adapted to enter the groove 106 and the slot 108 and by its cam action to shift clutch pin 105 to

the right, withdrawing it from the clutch socket 102, and thereby leaving the hub 100 free to turn without turning clutch collar 103.

The cam blade 109 is bolted or otherwise secured to a rod 110 which is mounted to slide in a bore formed in a bracket 111, which has bifurcated legs 112 straddling the clutch collar 103 and secured to the casing 25. The rod 110 is pulled inwardly toward the clutch collar 103 by a coil spring 113 attached to the outer end of the rod and to the bracket 111.

In order to prevent rotation of the shaft 28 after the clutch pin 105 is withdrawn from a clutch socket in plate 101, I provide braking means acting upon the clutch collar 103. This means comprises a brake belt 114 running in a groove in the periphery of the collar 103, having one extremity attached at 115 to a fixed point on the bracket 111, and having the other extremity attached through a spring 116 to the upper end of a lever 117 pivoted at 118 to the bracket 111. The lower end of lever 117 is connected by means of a link 119 with the slide rod 110. When the slide rod 110 moves forward to disengage the clutch pin 105, lever 117 is rotated anti-clockwise, as viewed in Fig. 7, putting tension upon the brake band 114. When the slide rod 110 is withdrawn, obviously this tension is relieved.

The rod 110 is connected at 120 by a pin and slot connection with a crank 121, which has a square hole in its hub fitting but slidable upon the square shaft 16. In the event that a shaft of some cross section other than square were to be employed, the hole in the hub of crank 121, would, of course, be correspondingly formed. Just above and just below the crank 121 there are flanged sleeves 122 which are formed internally to fit and slide upon the shaft 16, and which have cylindrical outer surfaces rotatably mounted in bearing holes formed in bosses 123 on the bracket 111. The bosses 123 and their sleeves 122 therefore constitute bearings for the shaft 16 and means for maintaining the crank 121 in proper relation to the moving carriage.

The shaft 16 extends somewhat below the top of the base member 10, where it carries a crank 124 that is pivotally connected with a link 125. The forward end of the link is pivotally attached to a bifurcated crank 126 on a horizontal rock shaft 127 mounted in the base 10. To the extremities of this shaft outside the base there is attached a bail-shaped foot lever or pedal 128. Depression of the foot pedal 128 serves to turn the shaft 16 in an anti-clockwise direction as viewed in Fig. 9 and Fig. 6, which acts to pull the rod 110 away from the clutch collar 103, thereby permitting spring 107 to advance clutch pin 108 toward clutch plate 101. As soon as one of the clutch sockets 102 comes opposite the pin 105, the pin enters that socket and the rotation of the shaft 28 begins. The rotation must then continue for a full revolution, or until the pin 105 again comes around where it may be engaged by the cam blade 109, when it is retracted, and the brake is set. By the arrangement shown, where the clutch operating crank 121 is slidable up and down upon a non-circular shaft 16, the control of the stitcher drive shaft 28 can be effected by a foot pedal regardless of the position of the carriage.

Operation.—In the use of the machine, the boxes may be supported upon the platform 15 or upon a conveyor belt, not shown. In the latter event the machine would be positioned so that the conveyor belt would travel crosswise of the machine between the platform 15 and the stitcher head 27. The heights of the boxes may vary between wide limits. Assuming that the carriage is set considerably above the height of the next box to be sealed, the operator brings the box into position below the stitcher head 27. He then depresses handle 75 and the carriage quickly travels downwardly until the anvil blade 20 comes to the height of the box top. The operator then releases handle 75, stopping the carriage. He thereupon arranges the box with its flaps in proper position with respect to the anvil blade 20, and presses down upon the foot pedal 128, withdrawing the clutch cam blade 109, whereupon the clutch pin 105 advances and sets the clutch, producing a revolution of the shaft 28 and making a stitch. The box is then moved to the position of the next stitch, the pedal 128 depressed, and the corresponding stitch made. The stitching operations are continued until the sealing of that box is completed. It is then moved off the platform 15, or permitted to travel away on the conveyor belt, as the case may be, and the next-box is placed adjacent the anvil blade 20. If the height of the box is different from that of the next preceding box, the hand crank 75 is raised or lowered to bring the stitcher head with the anvil blade to the desired height, and the stitching operations are resumed. The amount of manual effort required is small, and the work may be handled with speed and facility.

Variations from the described structure may be employed. Accordingly I desire it to be understood that the scope of the invention is to be regarded as defined exclusively by the appended claims, rather than by the foregoing description or the accompanying illustration.

Having thus described my invention, I claim:

1. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a radial arm on said carriage, a stitcher head mounted upon the outer end of said arm, power means for raising and lowering said carriage, and a control for said power means movable with said head.

2. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a radial arm on said carriage, a stitcher head mounted upon the outer end of said arm, a drive shaft for said head, a motor mounted upon the carriage, means driven by the motor under manual control for adjusting said carriage upwardly and downwardly, and means driven by the motor for rotating said stitcher head drive shaft.

3. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a stitcher head mounted upon said carriage, a drive shaft for said head, a motor mounted upon the carriage, means driven by the motor for raising and lowering said carriage, means driven by the motor for rotating said stitcher head drive shaft, a control for the carriage raising and lowering means arranged adjacent the head and movable up and down therewith, and a control for the stitcher head drive shaft fixed with respect to the column.

4. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a stitcher head mounted upon said carriage, carriage propelling means, a transmission mechanism adapted to transmit power in either direction to said propelling means, manual control means for shifting the transmission mechanism to either of its operative positions,

and automatically acting means for returning the transmission mechanism to neutral position when said manual control means is released.

5. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a stitcher head supported from said carriage by a cantilever mounting, power driven screw and nut means for producing travel of the carriage in either direction, and control means attached to the stitcher head for setting in operation said screw and nut means in either direction.

6. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a radial arm on said carriage, a stitcher head mounted upon the outer end of said arm, a motor mounted upon the carriage, a fixed screw arranged parallel to the direction of travel of the carriage, a nut mounted upon the screw supported by the carriage against axial movement with respect thereto, transmission means interposed between said motor and nut for rotating the latter in either direction, and a control for said transmission means located at the stitcher head.

7. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a stitcher mounted upon said carriage, a driving shaft for said stitcher, a motor, a one revolution clutch interposed between said motor and shaft, a non-circular shaft rotatably mounted parallel with said column, and operating connections for said clutch mounted upon said non-circular shaft, the operating connections for said clutch comprising a crank embracing said non-circular shaft and held against rotation with respect thereto, said crank being slidable along said shaft as the carriage moves up or down, whereby control of the clutch in any position of the carriage may be effected through the rotation of said non-circular shaft.

8. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a stitcher mounted upon said carriage, a driving shaft for said stitcher, a motor, a one revolution clutch interposed between said motor and shaft, a non-circular shaft rotatably mounted parallel with said column, and operating connections for said clutch mounted upon said non-circular shaft, the operating connections for said clutch comprising a crank embracing said non-circular shaft and held against rotation with respect thereto, said crank being slidable along said shaft as the carriage moves up or down, whereby control of the clutch in any position of the carriage may be effected through the rotation of said non-circular shaft, and pedal operating means at the lower end of the non-circular shaft for rotating the same.

9. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a stitcher head mounted upon said carriage, carriage propelling means, a transmission mechanism adapted to transmit power in either direction to said propelling means, manual control means for shifting the transmission mechanism to either of its operative positions, a vertical rod geared to said manual control means for upward movement when the control means is shifted to cause the transmission mechanism to transmit power for upward movement, and for downward movement when the control means is shifted to cause the transmission mechanism to transmit power for downward movement, and limit stops adapted to engage said rod when the desired limits of movement are reached, whereby the rod is returned to normal position and operates the manual control means to return the transmission mechanism to neutral.

10. In a machine of the class described, an anvil blade, a pivotal mounting for said blade intermediate the ends thereof, means for adjusting the butt end of the blade comprising a vertical screw threadably mounted in the blade, and abutments for both ends of the screw.

11. In a top stitcher, a vertical column, a carriage movable up and down thereupon, a stitcher head, a cantilever arm by which said stitcher is supported from said carriage, a blade anvil pivotally connected with the carriage and projecting outwardly therefrom beneath said cantilever arm, means movable with the carriage for adjustably swinging the said blade about its pivot, power means for raising and lowering said carriage, and a control for said power means movable with said cantilever arm.

12. In a top stitcher, a vertical column, a carriage movable up and down thereupon, a radial arm on said carriage, a stitcher head mounted upon the outer end of said arm, a work support arranged below said head at a fixed elevation, a motor mounted upon said carriage, driving connections between said motor and stitcher head, power means driven by said motor for raising and lowering said carriage, and control means for said power means supported upon said radial arm adjacent said stitcher head.

13. In a top stitcher, a vertical column, a carriage movable up and down thereupon, a cantilever arm extending forward from said carriage, a stitcher head on the extremity of said arm, a motor mounted upon the carriage, driving connections between said motor and stitcher head, power means driven by said motor for raising and lowering said carriage, hand control means for said power means supported upon said cantilever arm adjacent said head, and foot control means for said driving connections, the position of said foot control means being unaffected by the movements of the carriage.

14. In a top stitcher for fibre board boxes, a vertical column, a carriage movable up and down thereupon, a stitcher head mounted upon said carriage, carriage propelling means, a transmission mechanism adapted to transmit power in either direction to said propelling means, manual control means for shifting the transmission mechanism to either of its operative positions, said manual control means being mounted upon the carriage, and automatically acting means for returning the transmission mechanism to neutral position when said manual control means is released.

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