

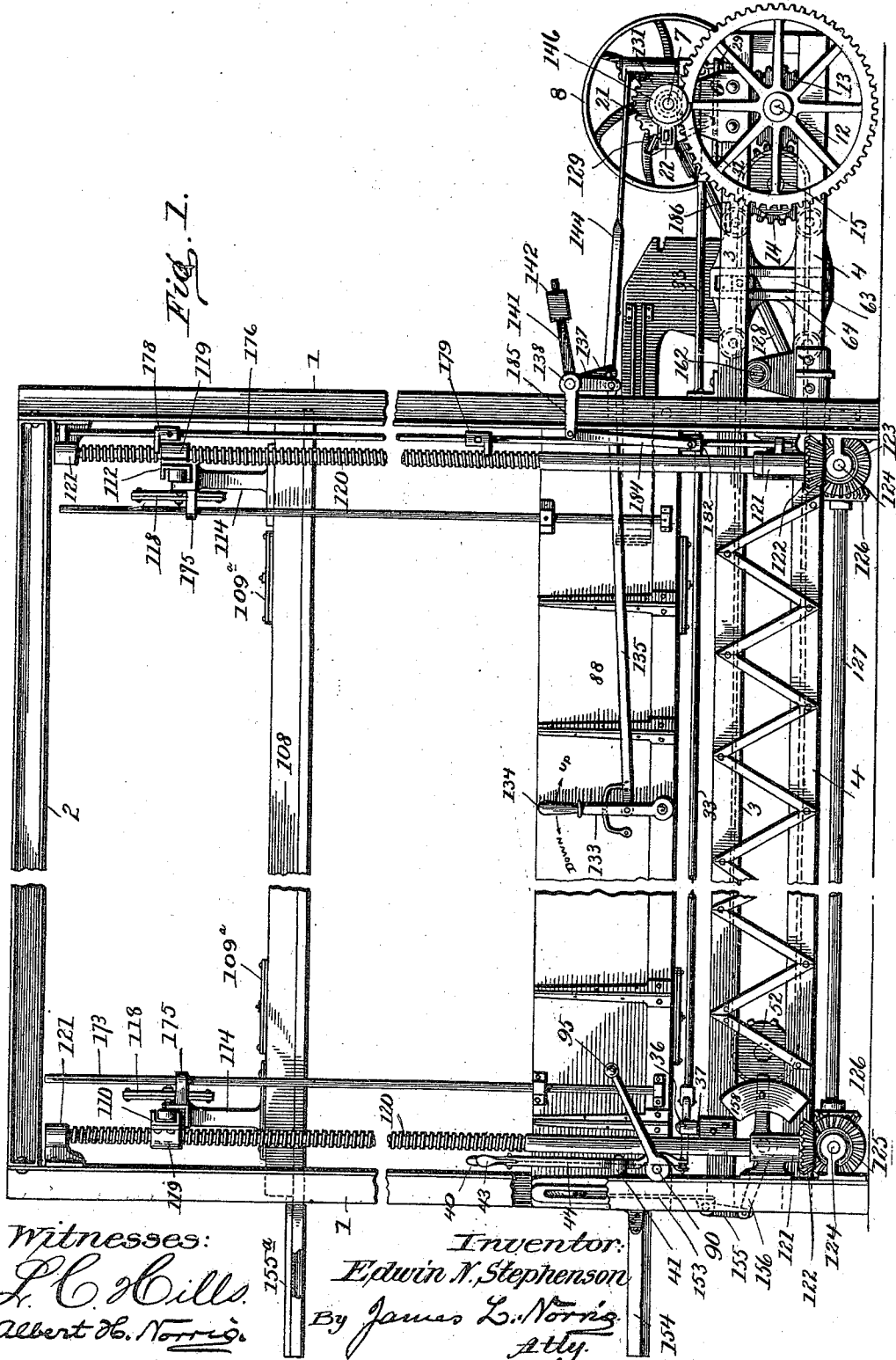
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9 Sheets—Sheet 1.

E. N. STEPHENSON.
MACHINE FOR STUFFING MATTRESSES.

No. 572,914.

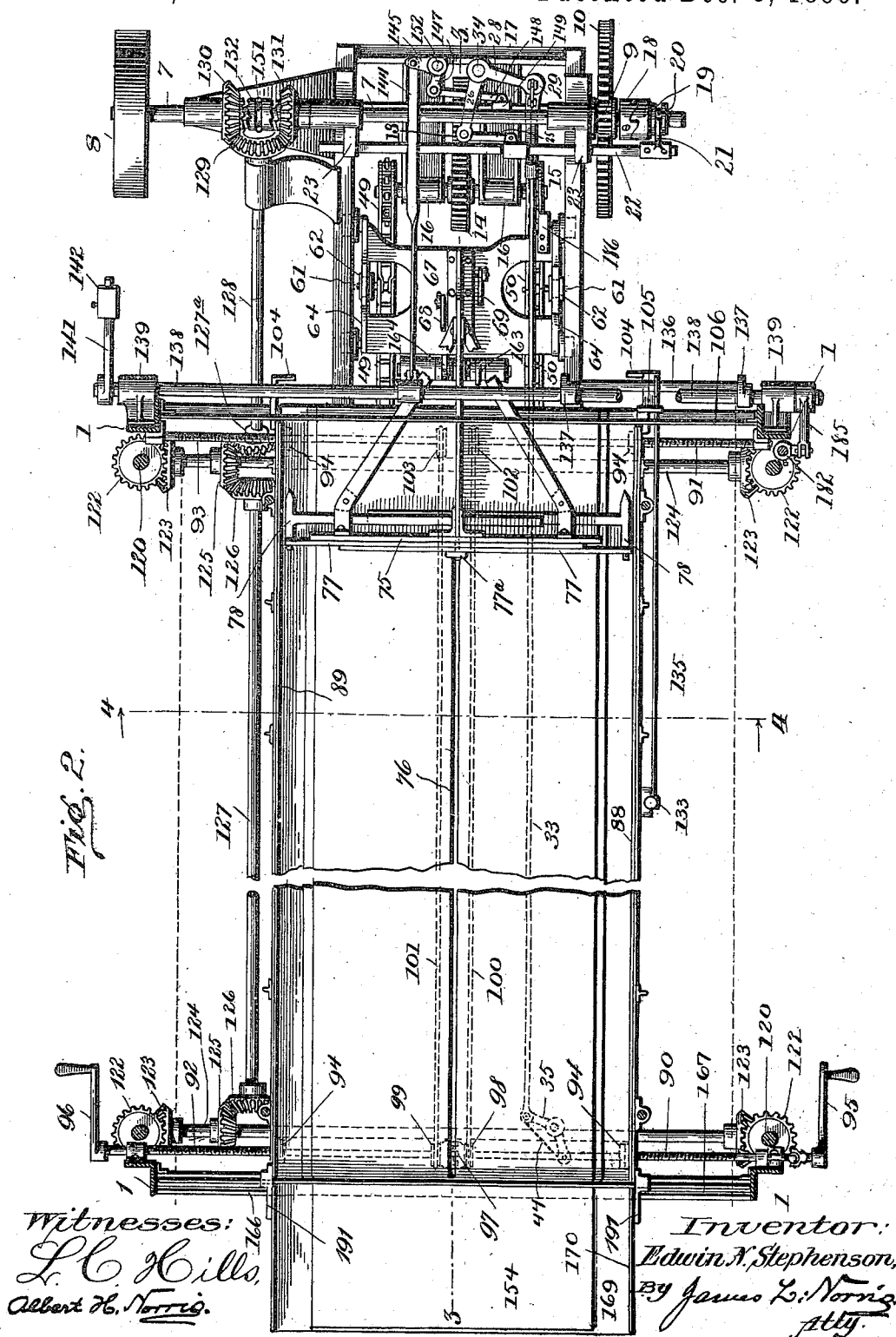
Patented Dec. 8, 1896.



9 Sheets—Sheet 2.

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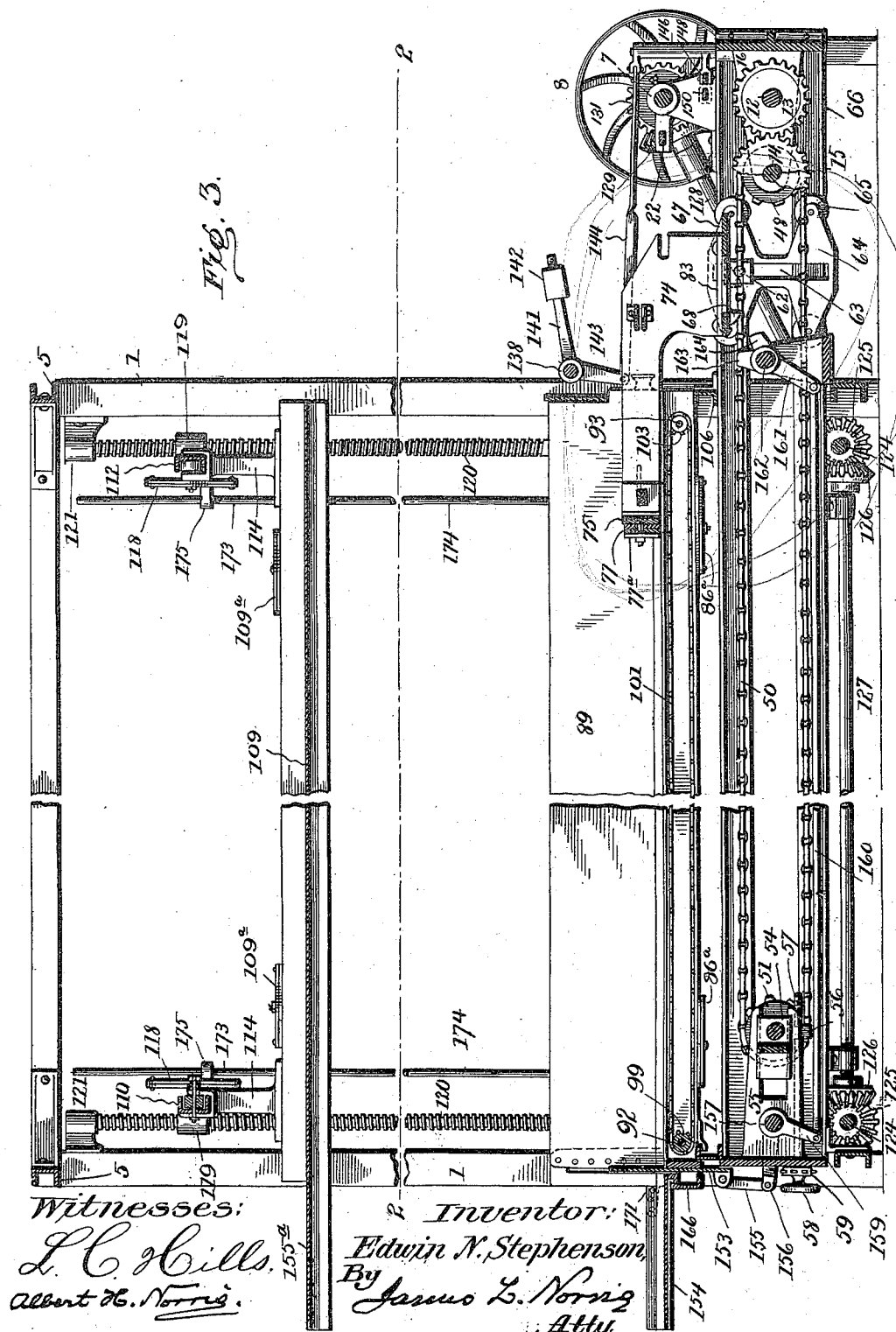
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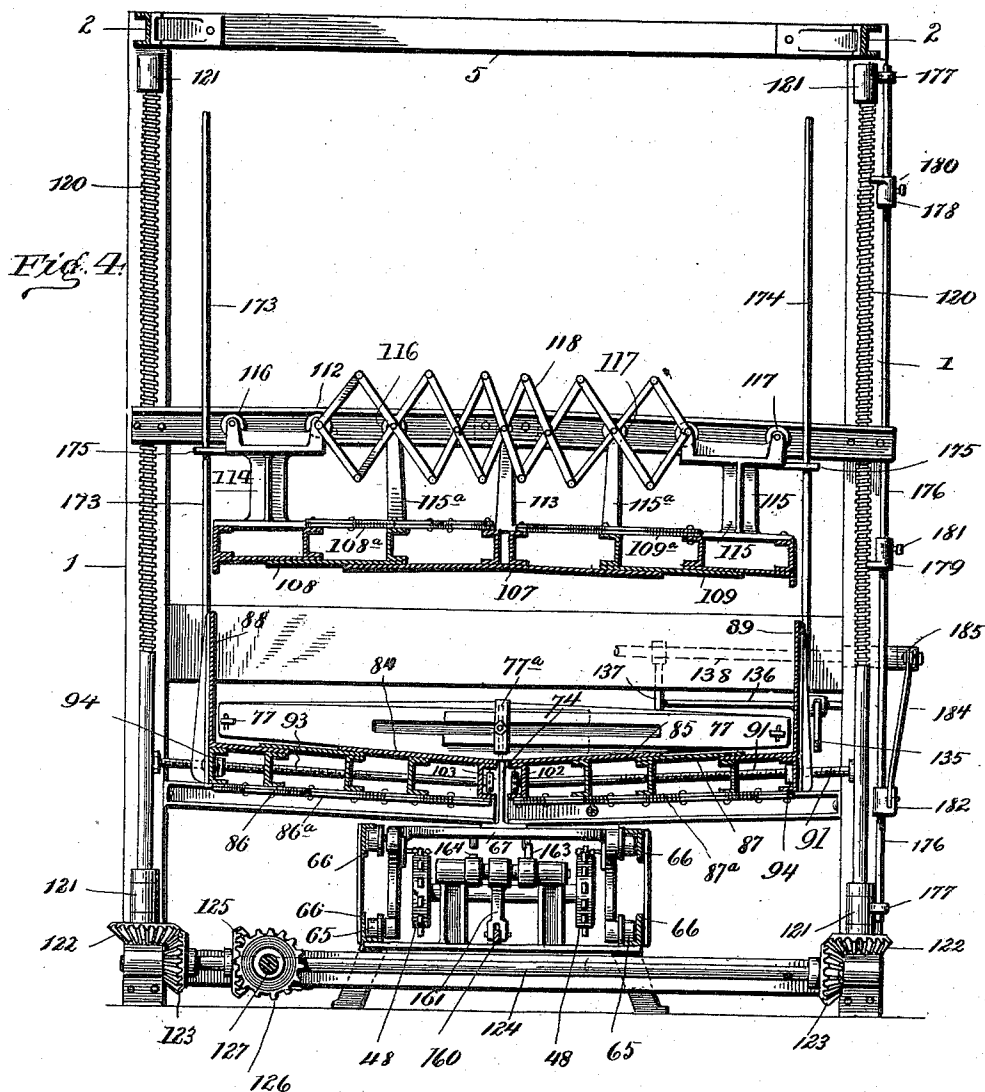
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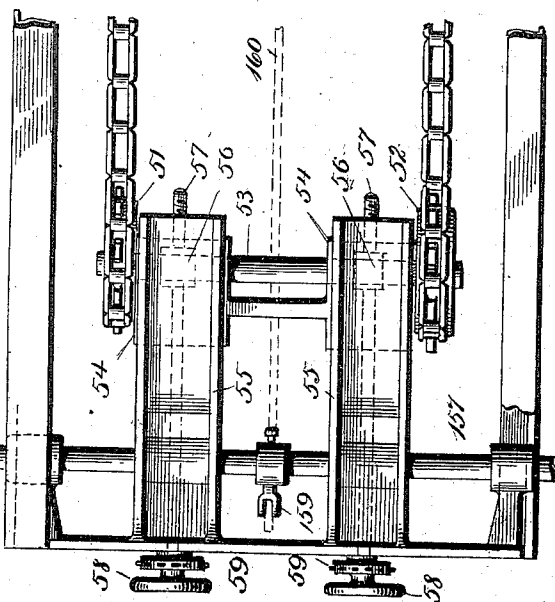
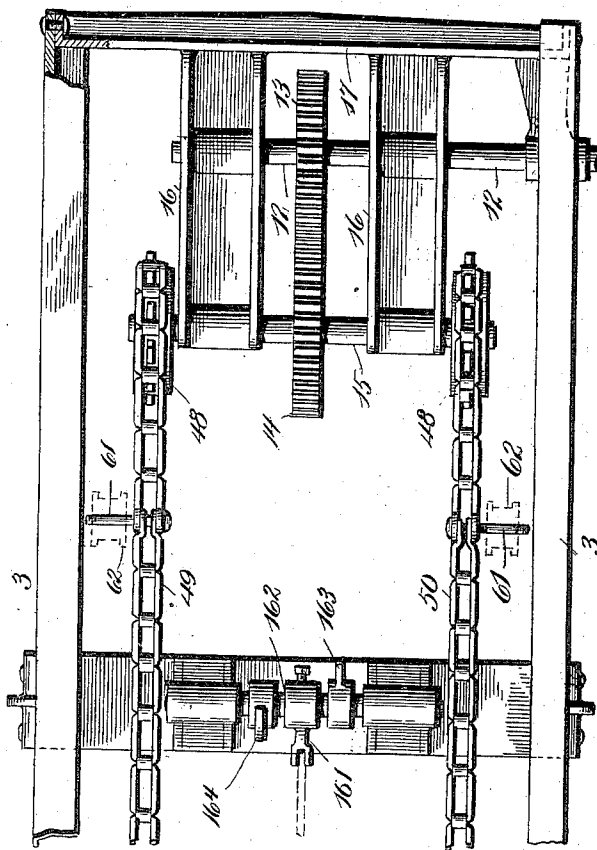
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Fig. 5.



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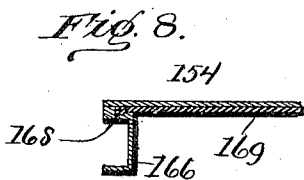
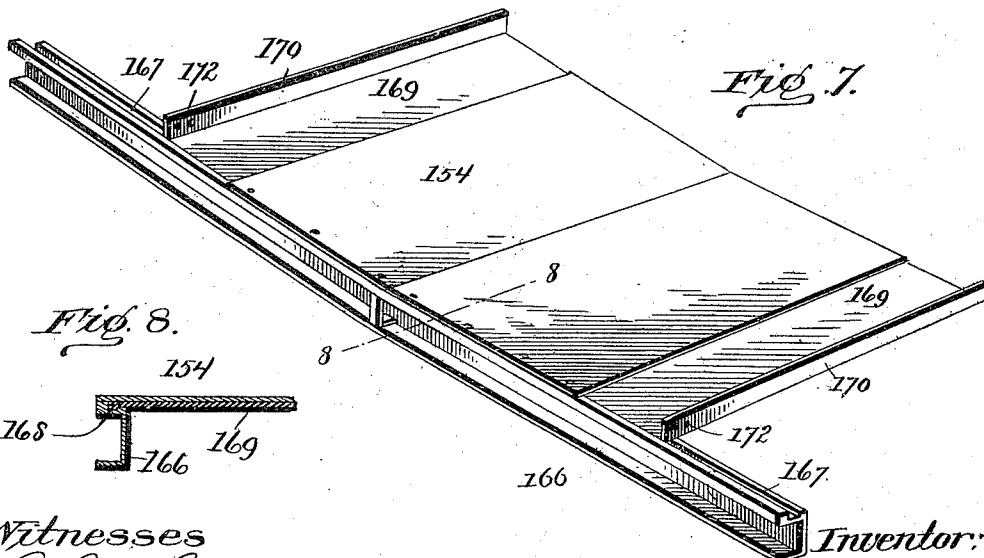
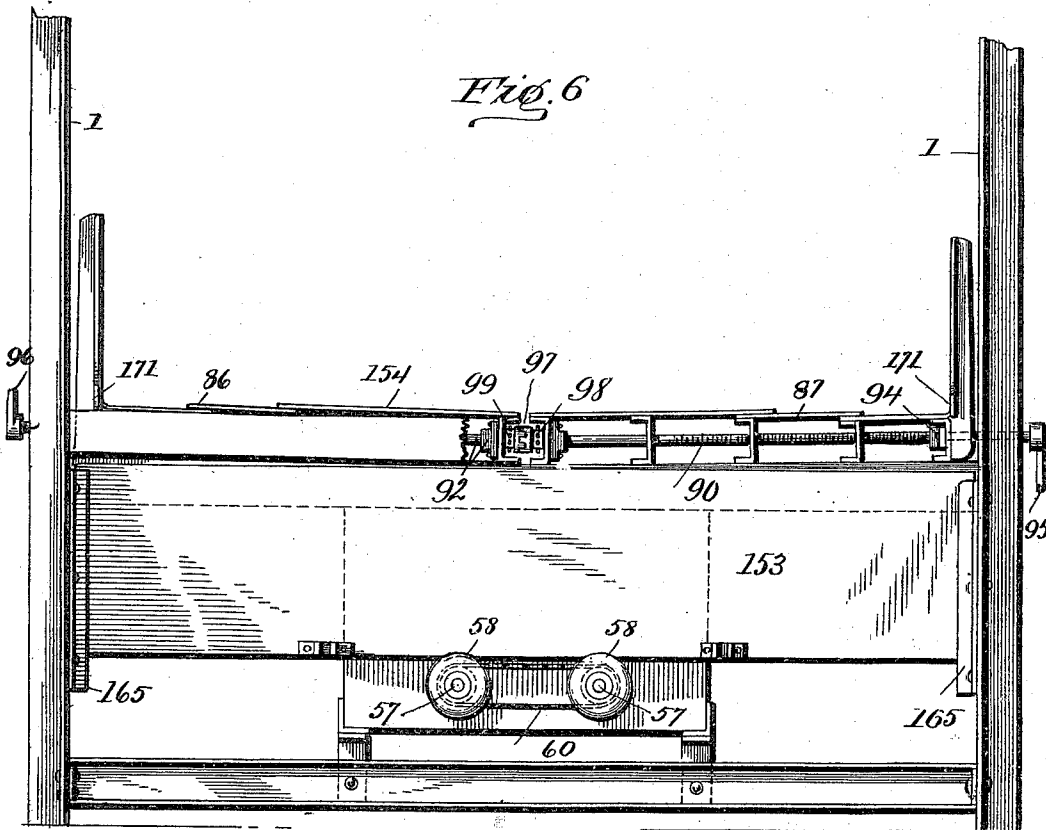
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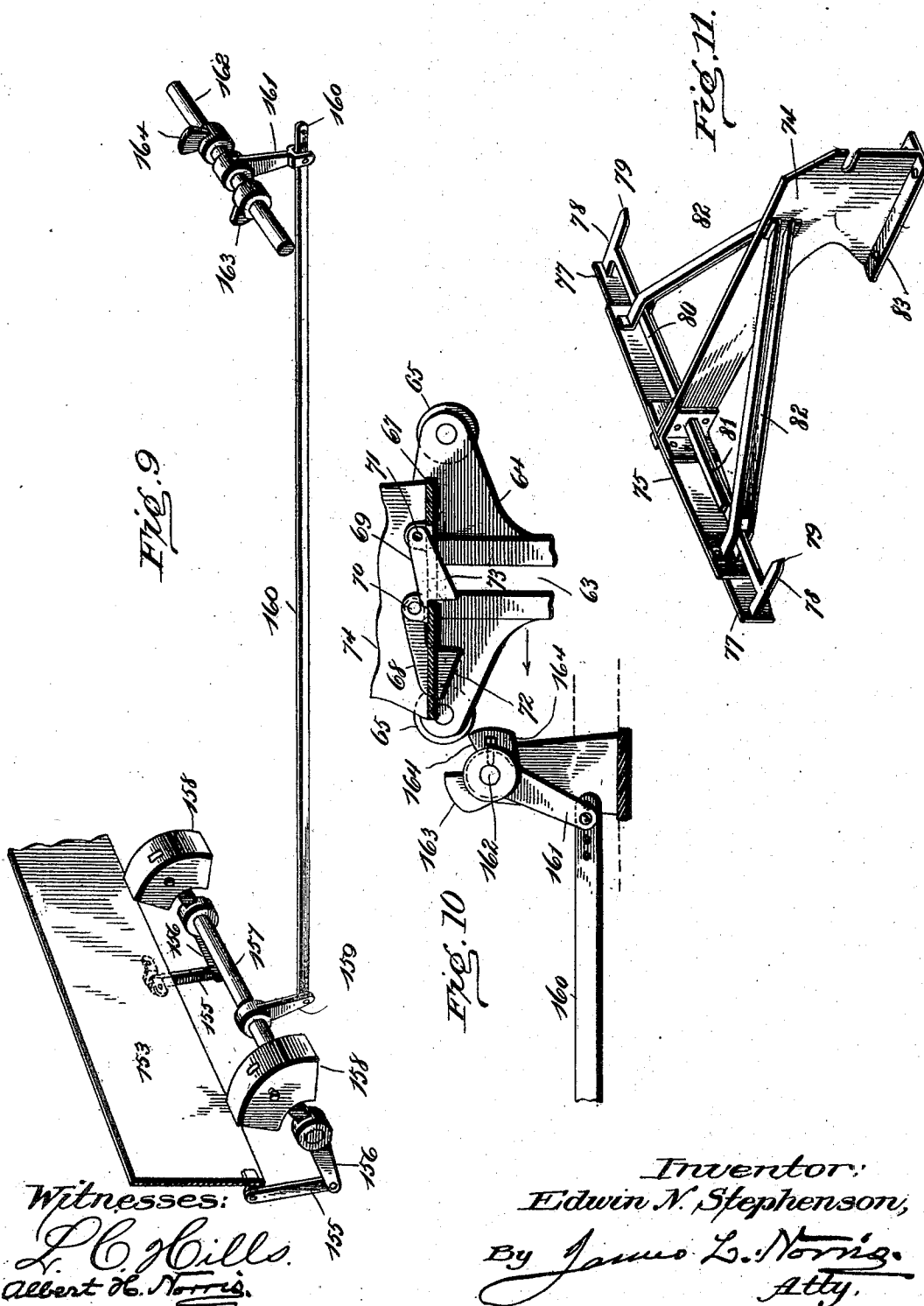
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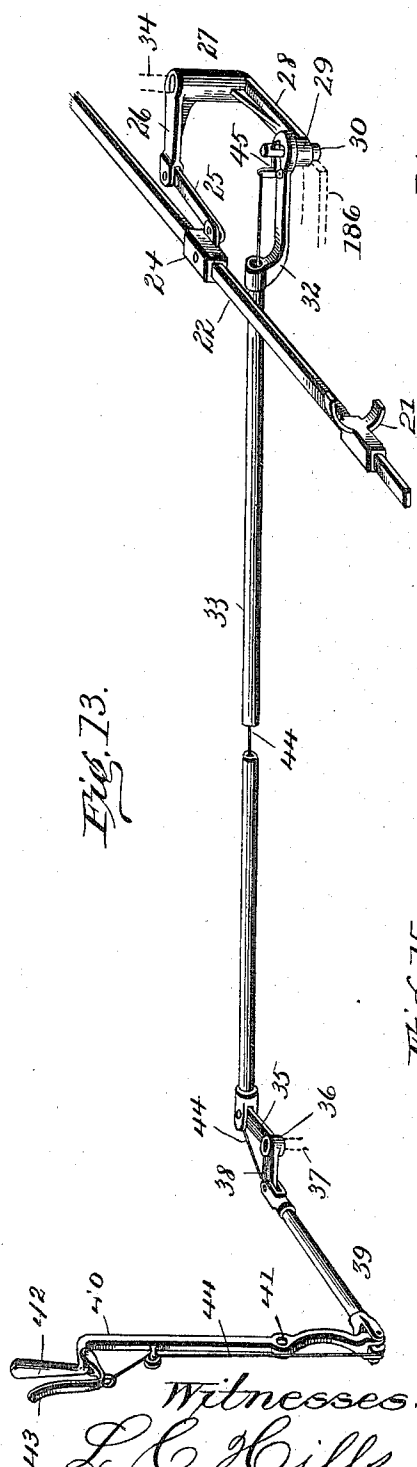


Fig. 13.

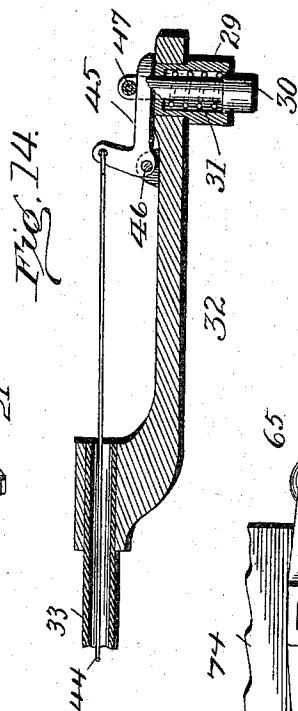


Fig. 14.

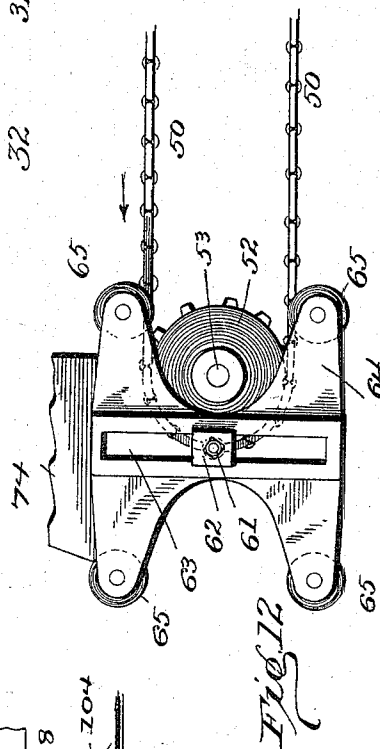
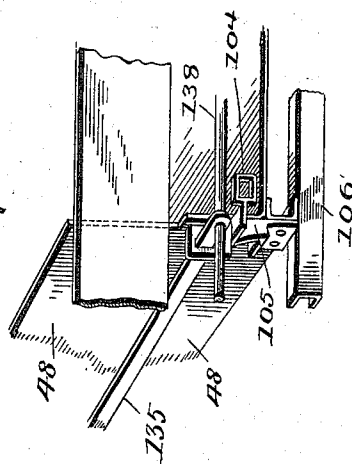


Fig. 12.

Fig. 15.



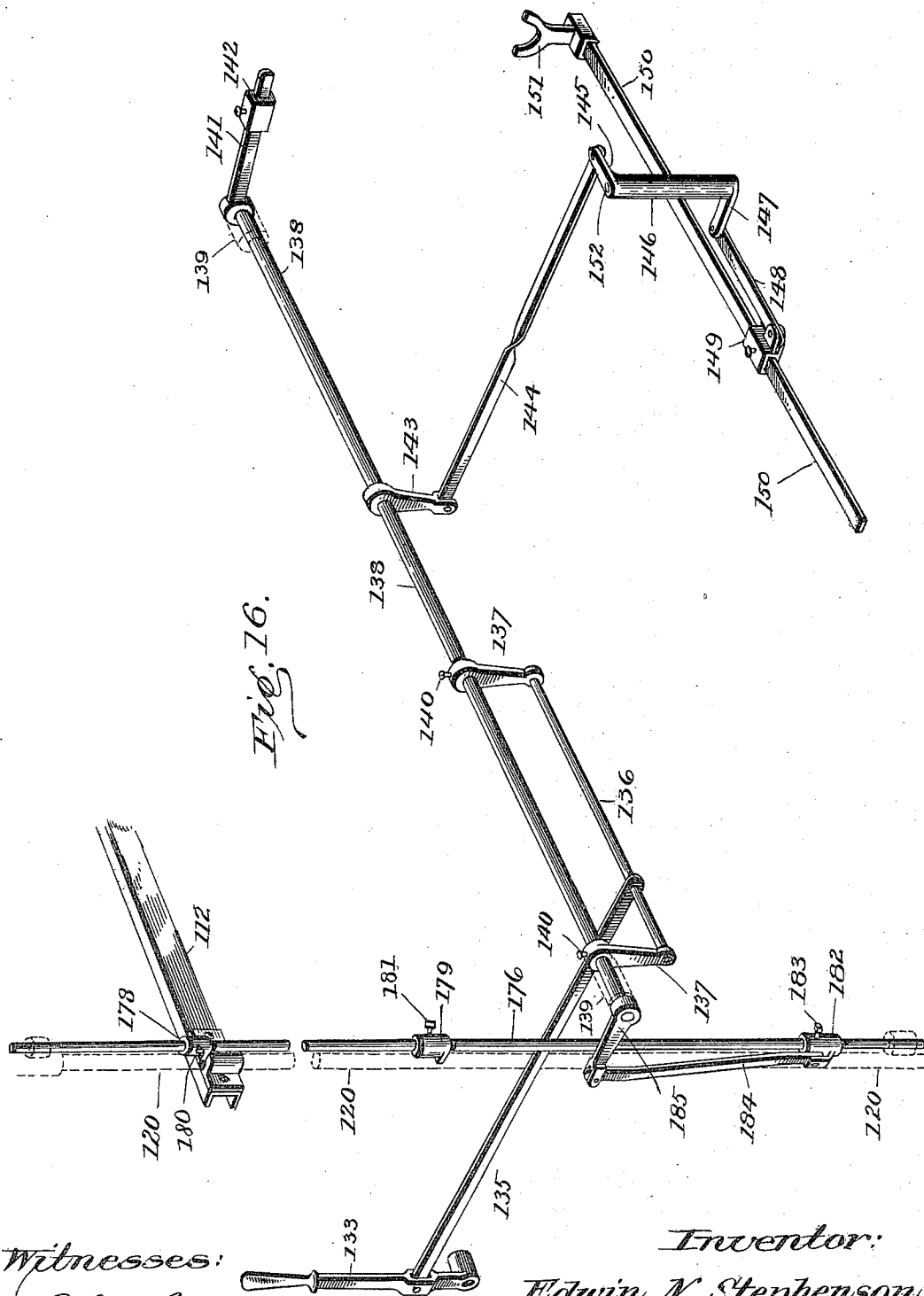
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UNITED STATES PATENT OFFICE,

EDWIN N. STEPHENSON, OF BOSTON, MASSACHUSETTS.

MACHINE FOR STUFFING MATTRESSES.

SPECIFICATION forming part of Letters Patent No. 572,914, dated December 8, 1896.

Application filed May 25, 1896. Serial No. 592,974. (No model.)

To all whom it may concern:

Be it known that I, EDWIN N. STEPHENSON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Machines for Stuffing Mattresses, of which the following is a specification.

This invention relates to that class of mattress-stuffing machines wherein the stuffing material is compressed in a press-box and is subsequently forced therefrom into a ticking applied to a discharge-spout leading from the press-box.

The chief objects of the present invention are to improve and simplify prior machines of the character alluded to; to produce a stronger and more compact structure and one which can be practicably worked in a comparatively small space; to avoid the use of a hinged press-box cover and provide a cover which is retained in an approximately horizontal plane as it is raised and lowered, whereby the height of the machine is reduced and it can be worked in a room having a comparatively low ceiling; to provide mechanism which can travel always in one direction and operate to move the compressing plunger-head back and forth relatively to the press-box, whereby the use of a rack requiring a long range of movement from one end of the machine is avoided and the space necessary to work such rack is unnecessary; to provide a new and improved press-box and cover which will produce mattresses possessing a greater depth or thickness at their central portions than at their side portions, so that they have the appearance and possess the conditions of a mattress stuffed by hand, with the advantages of a machine-stuffed mattress; to provide new and improved means for raising and lowering the cover and controlling the movements of the same; to provide means for automatically stopping the motion of the press-box cover either as it descends or ascends; to provide means whereby mattresses which vary more or less in depth or thickness can be practicably produced; to provide new and improved means for actuating the plunger-head and causing it to uniformly compress the stuffing material longitudinally in the press-box; to provide new and improved

means for starting and stopping the machine at the will of the attendant or operator; to provide novel means for varying the width of the press-box, the cover, and the plunger-head and enabling these parts, if desired, to be simultaneously adjusted transversely of the machine to render the latter susceptible of practicably producing mattresses which vary more or less in width; to provide new and improved means whereby the carriage which carries the plunger-head operates at the limit of its back stroke, or when retracted, to automatically stop the mechanism by which the carriage is moved back and forth; to provide new and improved trip mechanism for reversing the motion of the plunger-head; to avoid the use of the overhead driving mechanism described in my patent hereinbefore referred to, and to generally improve mattress-stuffing machines, whereby a better product is obtained and the mattresses present the appearance of being stuffed by hand, while during the stuffing process there is no danger of bursting or tearing the ticking or textile material into which the stuffing is introduced.

The objects of my invention are accomplished in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of a mattress-stuffing machine embodying my invention, portions being broken away to shorten the figure and enable the parts to be better illustrated. Fig. 2 is a horizontal sectional view taken on the line 2 2, Fig. 3. Fig. 3 is a horizontal sectional view taken on the line 3 3, Fig. 2. Fig. 4 is a transverse sectional view taken on the line 4 4, Fig. 2. Fig. 5 is a detail broken plan view of a portion of the base of the machine to more fully illustrate the chain mechanism by which the carriage of the plunger-head is actuated, the parts in this figure being on a larger scale than in the other figures. Fig. 6 is a detail broken end elevation of a portion of the front end of the machine, omitting the lower adjustable platform or shelf upon which the stuffing rests as it is inserted into the ticking. Fig. 7 is a detail perspective view looking at the inner end portion of the platform or shelf by which the stuffing is supported as it is introduced

into the ticking. Fig. 8 is a detail sectional view taken on the line 8 8, Fig. 7, to show the connection of the adjustable sections of the platform with the transverse beam by which the platform is supported at the front end of the machine. Fig. 9 is a detail perspective view of a portion of the vertically-movable end gate which closes and opens the front end of the press-box, showing portions of the automatic gate-operating mechanism hereinafter explained. Fig. 10 is a detail sectional view showing a portion of the gate mechanism illustrated in Fig. 9 and a portion of the carriage with which the plunger is connected for the purpose of more fully illustrating the devices by which the end gate of the box is operated. Fig. 11 is a detail perspective view of the plunger-head and the shank by which it is connected with the traveling carriage. Fig. 12 is a detail side elevation of the plunger-head carriage, showing the position it occupies at the forward end of its stroke, and as the parts are moving to reverse the direction of travel of the carriage. Fig. 13 is a detail perspective view of the lever mechanism for starting and stopping the carriage of the plunger while the main drive-shaft continues to rotate. Fig. 14 is a detail sectional view of the rear end portion of the lever mechanism illustrated in Fig. 13, the parts being on a larger scale to more clearly illustrate the spring-pin, which is operated by the plunger-head carriage, as hereinafter explained, to shift the clutch of the starting and stopping lever mechanism. Fig. 15 is a detail perspective view of one corner portion of the press-box to show the devices for engaging one end of the plunger-head, so that when the press-box is adjusted laterally the plunger-head is also adjusted laterally, as required for the adjustment of the parts to manufacture mattresses which vary in width; and Fig. 16 is a detail perspective view of the lever mechanism by which the movements of the press-box cover are controlled, and the cover can be raised or lowered at the will of the attendant or operator and automatically stopped in its ascent and descent.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein it will be observed that substantially the entire main frame is composed of angle-irons, which I find very advantageous over an ordinary wooden structure. As shown in the drawings, the main frame comprises perpendicular angle-iron corner-posts 1, connected at their upper ends through the medium of longitudinal angle-iron beams 2 and at the lower ends by longitudinal angle-iron beams or girders 3 and 4, which at one end are extended in rear of the machine to provide a base of support for the driving mechanism and other parts hereinafter referred to. The corner-posts 1 may also be connected by transverse angle-iron beams or girders 5,

Fig. 3, all parts being suitably tied and bolted or riveted together to secure a rigid framework which is suitable for the purpose in hand.

The rearward extension of the longitudinal beam or girder 3 is provided with suitable bearings or pillow-blocks 6, in which a main driving-shaft 7 is journaled. This shaft may be driven by any suitable power, but preferably it is provided at one end with a pulley 8, adapted to be belted or otherwise connected with an engine of any desired type.

The drive-shaft at the end portion opposite the pulley is provided with a pinion 9, Fig. 2, which meshes into a spur gear-wheel 10, secured to one end of a counter-shaft 12, which is journaled in suitable bearings on the longitudinal extensions of the beam or girder 4. The counter-shaft 12 is provided centrally between its ends with a pinion 13, meshing into a pinion 14, secured centrally between the ends of a chain-belt-operating shaft 15, journaled in bearings provided on arms 16, which extend forward from a transverse beam or girder 17, which rigidly connects the rear extremities of the longitudinal beams or girders 3 and 4.

The pinion 9 is adapted to be thrown into and out of operative connection with the main driving-shaft 7 through the medium of a suitable clutch, which, as shown in Fig. 2, is composed of two sections 18 and 19, one of which is secured to the pinion and is loose on the shaft, while the other is compelled to rotate with the shaft, but can be moved, as is usual, in clutches for the purpose of throwing the pinion into and out of operative connection with the driving-shaft, so that the rotation of the spur-gear 10 can be controlled. The clutch is operated at the will of the attendant or operator, as I will now explain.

The clutch-section 19 is provided with an annular groove 20, with which a clutch-shifting fork 21, Figs. 2 and 13, engages. The fork 21 is secured to a transverse-slidable fork-operating bar 22, movable in suitable supports 23, Fig. 2. The bar 22 is provided with a block 24, to which is pivoted one end of a link 25, the other end of which is pivoted to one arm, 26, of a bell-crank lever 27, having its other arm, 28, provided with a socket or tubular extremity 29, in which is arranged a vertically-movable spring-pressed pin 30, normally pressed outwardly or downwardly by the spring 31. The upper end of the socket 29 is journaled in the rear end of an arm or casting 32, connected with the rear end of a longitudinal tube or connecting-rod 33. The bell-crank lever 27 is pivoted at its angle through the medium of a vertical pivot or stud 34, so that when this bell-crank lever is turned on its pivotal point the fork-operating bar 22 will be shifted transversely in one or the other direction. The front end of the tube or connecting-rod 33 is pivoted to one arm, 35, of a bell-crank lever 36, mounted on a suitable pivot or stud 37, Figs. 1 and 13. The other arm, 38, of the bell-crank lever 36 is connected

by a tube or connecting-rod 39 with the lower end of a clutch-operating lever 40, pivoted intermediate its extremities, as at 41, to one of the corner-posts 1, as best seen in Fig. 1.

5 The lever 40 is provided with a suitable handle 42, by which it may be grasped by the hand of the attendant or operator, and in juxtaposition to this handle is pivoted a finger-piece 43, connected by a cord, chain, wire, or
10 other suitable cable 44 with a pin-raising lever 45, pivoted to the arm or casting 32 in juxtaposition to the socket 29. The lever 45 is preferably in the form of a bell-crank lever pivoted at its angle, as at 46, Fig. 14, and hav-
15 ing one arm attached to the cord, chain, or other cable 44, and its long arm extending through a slot 47 in the upper end of the spring-pressed pin 30 in such manner that this pin may be retracted after it has been
20 struck by the plunger-head carriage to automatically unclutch the pinion 9 from the spur gear-wheel 10, as will be hereinafter described at the proper point with reference to the operation of the plunger-head carriage.

25 The cord, chain, wire, or other cable 44 is shown as traversing the tubes 33 and 39, but obviously if these parts are solid connecting-rods the cord, chain, or wire can pass along the exterior thereof, it only being necessary
30 to provide suitable guides for guiding the cord, chain, or wire when it is drawn or pulled by operating the finger-piece 43 to retract the spring-pressed pin 30 into the socket 29.

It will be obvious from the foregoing that
35 by pulling the upper end of the clutch-lever 40 outwardly the fork 21 will be moved in the direction required to disengage the two clutch-sections 18 and 19, whereby the rotation of the spur gear-wheel 10 will be stopped,
40 while the main drive-shaft 7 continues to rotate. The spur gear-wheel 10 and counter-shaft 12 serve to operate the chain-actuating shaft 15, as before explained, and this shaft imparts motion to the chain or chains by
45 which the carriage of the plunger-head, hereinafter explained, is caused to move back and forth. Consequently, as will hereinafter appear, the clutch-lever 40 controls the motion of the devices which transmit motion to the
50 plunger-head carriage, and therefore the lever indirectly controls the movement of the plunger-head.

The chain-belt-actuating shaft 15 is provided at its ends with sprocket-wheels 48, with
55 which engage, respectively, two endless chain belts 49 and 50, Fig. 5. These chain belts also pass around and engage sprocket-wheels 51 and 52, secured to the ends of a shaft 53, journaled in sliding boxes 54 at the front end
60 portion of the machine. The sliding boxes 54 are movable back and forth on horizontally-arranged arms or supports 55, and the two boxes are provided with screw-threaded nuts 56, with which screws 57 engage. The
65 screws 57 are provided at their outer ends with suitable handles or hand-wheels 58 and with sprocket-wheels 59, connected by a chain

belt 60, Fig. 6, the construction being such that by rotating either one of the handles or hand-wheels 58 its screw 57 will be rotated 70 and a corresponding motion will be imparted to the other screw through the medium of the chain belt, so that both screws will rotate in unison and thereby adjust the sliding boxes 54 for the purpose of tightening or loosening 75 the chain belts 49 and 50, according to the conditions required.

The two chain belts are provided with laterally-projecting pins or studs 61, entering orifices in switch boxes or blocks 62, which 80 engage and are slidable in vertical slots 63, formed in the sides of a carriage 64. This carriage is adapted to travel back and forth and may be of any construction suitable for the purpose in hand; but preferably it is pro- 85 vided at its sides with roller-bearings 65, adapted to travel upon suitable tracks or rails 66, as best seen in Fig. 4. The tracks or rails are preferably parts of the longitudinal angle-iron beams or girders 3 and 4, but they 90 may be constructed in any manner suitable for the purpose.

The carriage illustrated in the drawings is composed of metallic side plates containing the vertical slots 63 and connected at their 95 top portion by a horizontal plate 67, as best seen in Fig. 10, which is provided with two pivoted dogs or pawls 68 and 69. The pivots 70 and 71 of the dogs or pawls are arranged at the upper side of the plate 67, and the act- 100 ing ends of the dogs or pawls project through slots in this plate. The acting end of the pawl 68 is provided with a beveled face 72, while the acting end of the pawl 69 is provided with a beveled face 73, for a purpose 105 hereinafter explained. The plate 67 of the carriage serves for the attachment of the shank 74 of the plunger-head 75, which works back and forth in the press-box, hereinafter explained. 110

The shank 74 is preferably in the form of a vertical plate, and it is adapted to enter and traverse a longitudinal slot 76, formed along the median line of the press-box, as best seen in Fig. 2, whereby the plunger-head can travel 115 above the bottom of the press-box, while the carriage can travel below the bottom thereof.

The plunger-head is laterally extensible and retractable, and to accomplish this the plunger-head comprises laterally-movable 120 plates 77, having rearwardly-projecting fingers 78, provided with beveled or pointed extremities 79, as best seen in Figs. 2 and 11. The fingers 78 are provided, respectively, with transversely-arranged overlapping plates 80 125 and 81, which can slide one upon the other when the plates 77 are extended or retracted in a lateral direction for the purpose of varying the length of the plunger-head transversely. The transversely-movable plates 77 130 of the plunger-head overlap one another at the front face thereof, and preferably the overlapping ends of these plates 77 are slotted and extend under a confining-head 77^a, as

best seen in Fig. 4, whereby the two plates are maintained in proper relative position and are accurately guided in their movement.

The main body of the plunger-head is connected with the rear portion of the shank or vertical plate 74 through the medium of suitable braces 82.

The shank or plate 74 is constructed with a broad foot-piece 83, by which it can be very firmly and securely bolted, riveted, or otherwise secured to the top plate 67 of the plunger-head carriage.

During the time that the chain-belt-actuating shaft 15 is rotated by its gear connections with the main driving-shaft the two chain belts 49 and 50 are caused to continuously travel in one direction, and, assuming that the carriage lies at the rear end of the machine, it will be obvious that the traversing motion of the chain belts, through the medium of the pins 61, engaging the boxes or blocks 62, will move the carriage forward, and when the latter reaches the limit of its forward movement and the boxes or blocks 62 switch or travel around the sprocket-wheels 51 and 52, Figs. 3, 5, and 12, the boxes or blocks will descend along the vertical slots 63 in the side plates of the carriage-frame until the boxes or blocks are carried rearward by the lower stretches of the chain belts, whereupon the carriage will commence its return movement and it will be restored to the rear end of the machine. When the carriage reaches the rear end of the machine and the boxes or blocks 62 switch or rise upward around the sprocket-wheels 48, these boxes or blocks will ascend the slots 63 in the side plates of the carriage-frame and the parts will be restored to the normal position for a repetition of the operation just explained. Obviously, therefore, the plunger-head carriage and the plunger-head are moved back and forth by a chain-belt mechanism which always moves in one direction in contradistinction to a rack-bar which reciprocates for the purpose of reciprocating the plunger-head.

The press-box of the present machine is preferably composed of channel-irons and metal plates, as will be readily understood by reference to the sectional parts, Fig. 4. The press-box comprises two longitudinal main sections 84 and 85, provided with laterally-adjustable sections 86 and 87, having up-right or vertical side walls 88 and 89. The sections 86 and 87 are each preferably composed of two parts movable relatively to one another, whereby the press-box is made up of six sections; but I do not confine myself to this particular number of sections. The sections 86 and 87 carry the side walls 88 and 89 and are adjustable laterally for the purpose of increasing or diminishing the width of the press-box and enabling the machine to be utilized for manufacturing mattresses which vary in width. The sections 86 and 87 are connected with the stationary sections 84 and

85 through the medium of sets of lazy-tongs 86^a and 87^a. These tongs are located at the front and rear end portions of the box, so that the adjustable or movable box-sections will move smoothly and uniformly toward and from the longitudinal center or median line of the box. The lazy-tongs 86^a and 87^a are pivotally connected with the lower sides of the longitudinal channel-irons forming a part of the bottom of the press-box, as will be clearly understood by reference to Fig. 4.

The sections 86 and 87 of the press-box are moved laterally through the medium of right and left hand screw-threaded shafts 90, 91, 92, and 93. (Best seen in Figs. 2 and 4.) These shafts engage suitable screw-threaded nuts mounted or provided on the press-box sections 86 and 87, as, for example, at the points 94, Fig. 2. The right and left hand screw-threaded shafts 90 and 92 are provided at their outer ends with suitable cranks or other handles 95 and 96, and at the center of the front end of the machine the two screw-threaded shafts 90 and 92 are coupled together through the medium of a universal joint, as at 97, so that it is possible for these two screw-threaded shafts to lie in reverse inclined planes, as will be understood by reference to Fig. 4, so that the bottom wall of the press-box may be made sloping or downwardly inclined from the sides to the longitudinal center, as shown in Fig. 4, in the manner and for the purpose hereinafter more fully explained.

The inner end portions of the right and left hand screw-threaded shafts 90 and 92 are provided with sprocket-wheels 98 and 99, geared, respectively, by chain belts 100 and 101 with sprocket-wheels 102 and 103 on the inner ends of the right and left hand screw-threaded shafts 91 and 93. These shafts 91 and 93 are journaled at their outer ends in bearings carried by the corner-posts 1.

It will be obvious that when the crank-handle 95 or the crank-handle 96 is rotated the two right and left hand screw-threaded shafts 90 and 92 will be simultaneously rotated, and motion will be transmitted to the right and left hand screw-threaded shafts 91 and 93 through the medium of the chain belts 100 and 101, whereby the sections 86 and 87 of the press-box will be adjusted or shifted laterally, either inwardly or outwardly, according to the direction in which the screw-threaded shafts are rotated, for the purpose of increasing or diminishing the width of the press-box, so that mattresses of varying width can be practicably manufactured.

When the width of the press-box is varied, it is also necessary to vary the width or length transversely of the plunger-head, and this is accomplished in the following manner: As before stated, the laterally-movable plates 77 of the plunger-head are provided with beveled or pointed fingers 78. These fingers are adapted, on the back stroke of the plunger-head, to enter eyes or loops, as at 104, Fig.

15, each of which extends inwardly from a bracket 105, secured to the rear end of one of the side walls, as at 48, of the press-box. The brackets 105 are adapted at their lower ends to ride and slide upon a transverse supporting beam or girder 106. The fingers 78 should be engaged with the eyes or loops 104 prior to the time that the right and left hand screw-threaded shafts are operated to move or shift the press-box sections in a lateral direction, and obviously, therefore, when the press-box sections are moved or shifted laterally they will at the same time move or shift the plates 77 of the plunger-head in a lateral direction to the required extent. By this part of my invention I provide novel and simple means whereby the lateral adjustment of the press-box automatically adjusts the plunger-head in a lateral direction.

The purpose of dividing the right and left hand screw-threaded shafts 91 and 93 is to provide such arrangement as will permit the shank of the plunger-head to traverse the space between the inner ends of the shafts 91 and 93, as is necessary with the parts constructed and arranged as shown in the drawings.

The cover or lid which is used to press the stuffing material into the press-box is arranged to be raised and lowered and to be maintained in a substantially horizontal plane during all of its movements. The cover is adapted to enter the press-box, and, as best seen in Fig. 4, the cover comprises a main central section 107 and laterally-movable side sections 108 and 109, each of which is or may be made of two parts movable relatively to each other like the press-box, so that the cover is in fact composed of five sections; but I do not confine myself to any particular number of sections.

The cover is preferably composed of metal plates secured to the under sides of longitudinal channel-irons. The central section 107 is suspended from the front and rear transverse beams 110 and 112, which are preferably U-shaped in cross-section, as will be seen by reference to Fig. 3. The devices for suspending the main section 107 are composed of front and rear centrally-arranged hangers 113, secured in a fixed position to the central portions of the beams 110 and 112 and also attached to the said section 107. The laterally-adjustable sections 108 and 109 are attached to hangers 114 and 115, and, if desired, to supplemental hangers 115^a, provided at their upper ends with roller-bearings 116 and 117, adapted to roll upon the lower flanges of the U-shaped beams 110 and 112.

The hangers 114 and 115 are connected at the front and rear ends of the machine by lazy-tongs 118, and the construction is such that the cover of the press-box can be conveniently adjusted in a lateral direction to widen or narrow the same to suit the conditions required. When the press-box is adjusted laterally, a reverse movement of the

parts will diminish the width of the cover, and, obviously, if the cover lies in the press-box the contraction of the latter in the manner hereinbefore explained will correspondingly contract the width of the cover.

The side sections 108 and 109 of the cover or lid are connected with the central beam or with the hanger 113 through the medium of two sets of lazy-tongs 108^a and 109^a, which are arranged near the front and rear ends of the cover, so that the movable sections may be moved smoothly and uniformly, either inward or outward, to diminish or increase the width of the cover.

The ends of the transverse cover-carrying beams 110 and 112 are provided with screw-threaded nuts, as at 119, which respectively engage four perpendicular screw-threaded shafts 120, located at the corners of the machine and mounted in suitable bearings, as at 121, provided on the angle-iron corner-posts. The screw-threaded shafts should be nicely journaled, so that they can be readily rotated whenever required, and the threads of the several shafts must extend in the proper directions, so that when the shafts are simultaneously rotated the front and rear cover-carrying beams will be simultaneously raised or lowered. If the shafts be turned in one direction, the cover will be lowered into the press-box to press the stuffing material to the required extent. If the screw-shafts be rotated in the reverse direction, the cover will be raised out of the press-box, and in all the movements of the cover it is maintained in an approximately horizontal plane, so that when pressing the stuffing material a uniform pressure is exerted throughout the press-box.

As before stated, the bottom wall of the press-box is made sloping or downwardly inclined from the side walls 88 and 89 to the center or median line of the box. The press-box cover is correspondingly constructed; that is to say, it slopes or inclines in an upward direction from its longitudinal side edges to its center or median line, the construction being such that when the cover is in the press-box and is operating to press the stuffing material the greatest depth of stuffing material will lie along the longitudinal central portion, and consequently I am enabled to produce mattresses having the stuffing material of an increased depth or thickness along the longitudinal central portion, as compared to the depth or thickness along the longitudinal side portions. This gives the mattress the appearance of having been stuffed by hand, which is very desirable and important.

The perpendicular screw-threaded shafts 120 are simultaneously rotated in the following manner: The lower ends of the screw-threaded shafts are provided with miter-gears 122, engaging miter-gears 123 on horizontal cross-shafts 124, journaled, respectively, in suitable bearings in the base of the

machine at the front and rear end portions thereof. The cross-shafts 124 are provided with miter-gears 125, engaging miter-gears 126 on a longitudinal shaft 127, Fig. 2. The miter-gear 125 on the shaft 124 at the rear end of the machine engages a miter-gear 127^a on the lower end of an inclined shaft 128, which at its upper end is provided with a bevel-gear 129, engaging miter-gears 130 and 131, loosely mounted on the main driving-shaft 7. A clutch-section 132, having clutch-teeth or clutch devices at each end, is located between the miter-gears 130 and 131, and this clutch-section 132 is adapted to be shifted along the main drive-shaft 7, but is compelled to rotate therewith in such manner that by moving the clutch-section in one direction it will clutch into engagement with the miter-gear 130 and turn the gear-wheel 129 in one direction, while by moving the clutch-section in the opposite direction it will clutch into engagement with the miter-gear 131 and rotate the gear-wheel 129 in the reverse direction. Obviously, therefore, the direction of motion of the transmitting-shaft 128 is controlled, and all four perpendicular screw-threaded shafts 120 can be rotated in one or the other direction, accordingly as the press-box cover is to be raised or lowered.

The raising and lowering of the press-box cover is under the control of the attendant or operator through the medium of a clutch-controlling lever 133, (best seen in Fig. 1,) as I will now explain in detail. This lever is pivoted at its lower end to the side wall 88 of the press-box, and at its upper end is provided with a suitable handle 134, while intermediate its ends it is pivoted to the front extremity of a connecting rod or link 135, having its rear extremity constructed with an eye or opening through which passes a horizontal cylindrical rod 136, Fig. 16, in such manner that when the side wall 88 of the press-box is shifted laterally to vary the width of the box the rear end of the connecting rod or link 135 can slide on the rod 136. This rod 136 connects the ends of two cranks 137, Fig. 16, which are rigidly secured to a transverse rock-shaft 138, journaled in suitable bearings 139, Fig. 2, attached to the corner-posts at the rear end of the main frame. The cranks are preferably secured to the rock-shaft through the medium of set bolts or screws 140, so that they can be adjusted to the required position on the rock-shaft and then rigidly secured to the latter. The rock-shaft is also provided at one end with a weighted arm 141, provided with an adjustable counterbalance-weight 142, and near the center of this rock-shaft is rigidly secured a crank-arm 143, which is pivoted to the front extremity of a connecting rod or link 144. The rear end of the connecting rod or link 144 is pivoted to one arm, 145, of a bell-crank lever 146, the other arm, 147, of this lever being pivoted to one end of a link 148, having its other end pivoted to an adjustable box 149 on a transversely-slidable bar 150,

which is provided at one extremity with an upwardly-projecting clutch-operating fork 151. The bell-crank lever 146 is mounted on a vertical pivot or stud 152, Figs. 2 and 16, and obviously by turning this lever the bar 150 can be moved back and forth. The fork 151 of the bar 150 engages an annular groove in the clutch-section 132, and consequently when the bar 150 is slid in one direction the clutch-section 132 engages the miter-gear 130, while if the bar 150 be moved in the opposite direction the clutch-section 132 engages the miter-gear 131. In Fig. 1 the clutch-section 132 is in the central or intermediate position, so that the clutch-section is free from engagement with both miter-gears 130 and 131, and consequently the power-transmitting shaft 128 remains motionless, because the miter-gears referred to are loosely mounted on the main driving-shaft. If the clutch-lever 133 be moved to the left, or to the position marked "Down," Fig. 1, the connections between this lever and the slide-bar 150 will be operated in such manner as to move said slide-bar in the direction required to shift the clutch-section 132 into engagement with the miter-gear 131, so that the power-transmitting shaft 128 is instantly rotated, and through the medium of the system of gearing hereinbefore explained the perpendicular screw-threaded shafts will be rotated in the direction required to lower the press-box cover and cause it to enter the press-box for pressing the stuffing material which has previously been placed therein in the box.

If the lever 133 be shifted to the right, or to the position marked "Up," Fig. 1, a reverse motion of the parts takes place, the clutch-section 132 is shifted out of engagement with the miter-gear 131 and into engagement with the miter-gear 130, and a reverse rotary motion is imparted to the power-transmitting shaft 128, thereby rotating the screw-threaded shafts in the opposite direction or in the direction required to lift or raise the press-box cover.

The operatively-connected mechanisms hereinbefore described, controlled by the hand-levers 40 and 133, enable the attendant or operator to govern the machine; that is, to start and stop the gearing which transmits motion to the plunger-head carriage and to raise or lower or stop the press-box cover at any point in its travel.

The front end of the press-box is adapted to be opened and closed through the medium of a vertically-movable gate 153, which is automatically operated at the proper times to open and close the end of the press-box. When the stuffing material is introduced into the press-box, the cover is lowered to press the material downwardly and the plunger-head is advanced to compress the stuffing material longitudinally, the front end portion of the press-box is closed by the gate, and the latter constitutes an abutment to resist the initial longitudinal pressure of the plunger-

head, so that the entire operation of the stuffing material is accomplished inside the press-box, thereby securing the desired density of the material and placing the pressure strains upon the walls of the box and box-cover instead of upon the ticking or other material into which the stuffing material is eventually delivered. The gate 153 is automatically opened after the plunger-head has advanced a predetermined distance to compress the stuffing material longitudinally, so that the subsequent advance motion of the plunger-head may force the compressed stuffing material out through the open front end of the press-box into the ticking, which is engaged with a platform or shelf, as at 154, and with a front extension, as at 155^a, Fig. 3, of the press-box cover while the latter is held down in the press-box. After the compressed stuffing material has been ejected from the press-box into the ticking and another mass of material is to be compressed the gate 153 is automatically raised to close the front end of the press-box.

The automatic operation of the gate 153 is accomplished in the manner and by the means which I will now describe in detail.

Referring more particularly to Figs. 3, 9, and 10, the gate 153 is pivoted at its lower edge to the upper ends of short links 155, which at their lower ends are pivoted to crank-arms 156, extending from a rock-shaft 157, which is journaled in suitable bearings provided in the arms or supports 55, Fig. 5, or on other parts of the main frame. The rock-shaft is preferably provided with counter-balance-weights 158, which tend to balance the gate in its rising and falling motions, and the rock-shaft is also provided with a crank-arm 159, pivotally connected to the front extremity of a connecting rod or link 160, having its rear extremity adjustably pivoted in any suitable manner to the forked extremity of a crank-arm 161, rigidly secured to a short transverse rock-shaft 162, which is journaled in suitable bearings at the rear end of the machine, preferably at a point slightly in rear of the press-box. The rock-shaft is provided with two projecting tappets 163 and 164, arranged or projecting substantially at right angles to each other, so that when one stands approximately perpendicular the other will stand approximately horizontal, as best seen in Fig. 9. These tappets are arranged, respectively, in coincidence or alinement with the two dogs or pawls 68 and 69, hereinbefore described as pivoted on the plate 67, which forms a part of the carriage to which the shank of the plunger-head is attached. The two dogs or pawls 68 and 69 are pivoted out of alinement on the plate 67, Fig. 10, and the tappet 163 is adapted to be operated by the dog or pawl 69, while the tappet 164 is adapted to be operated by the dog or pawl 68. Obviously the carriage of the plunger-head can move forward a certain distance before the acting end of the dog 69 strikes the tappet

163. When this occurs, the forward motion of the carriage, through the medium of the dog or pawl 69, pushes the tappet 163 forward, and thereby turns the rock-shaft 162 in the direction required to pull the connecting rod or link 160 rearwardly. This operation turns the rock-shaft 157, Fig. 9, in the direction required to lower the crank-arms 156, thereby pulling the gate 153 downward. Thus it will be seen that the plunger-head can make its advance stroke for the initial longitudinal compression of the stuffing material before the dog or pawl 69 acts against the tappet 163, and consequently the gate remains lifted or in its closed position until the desired longitudinal compression of the stuffing material is effected. After the carriage has made its forward stroke and is returning to its normal position at the rear end of the machine the dog or pawl 68 will engage the tappet 164, thereby turning the rock-shaft 162 in a direction the reverse of that in which it was turned by the action of the dog or pawl 69 on the tappet 163. Therefore the connecting rod or link 160 will be pushed forward, and the rock-shaft 157 will be turned in the direction required to raise the crank-arms 156 and elevate or close the gate 153. The ends of the gate are guided through the medium of any suitable guides, as at 165, Fig. 6.

The improved mechanism described and shown for automatically opening and closing the gate is simple and effective and is regarded as very advantageous and satisfactory in practical operation. The coöperating parts work in harmony and greatly relieve the attendant or workman from care in the operation of compressing the stuffing material and the introduction of the compressed material into the ticking or other fabric which is to constitute the covering of the completed mattress.

The platform or shelf 154 is preferably composed of metal plates riveted or otherwise attached to a transverse channel-iron beam or girder 166, Fig. 7, which is attached at its ends to the two front corner-posts, Fig. 2. The beam or girder 166 is provided at its upper side with longitudinal grooves or guide-ways 167, with which engage ribs 168, Fig. 8, provided on the ends of laterally-adjustable plates or sections 169, forming a part of the platform or shelf 154. The outer edges of the plates or sections 169 are provided with upturned flanges 170, which are bolted, riveted, or otherwise connected with the upright brackets or castings which brace and support the side walls 88 and 89 of the press-box. The preferred manner of attaching the flanges 170 to the upright brackets or castings is to provide the latter with ears, as at 171, Fig. 6, which are designed to be secured to the perforated end portions 172 of the flanges 170, as will be obvious, the construction being such that when the side walls of the press-box are adjusted the side sections 169 of the platform or shelf 154 are correspondingly adjusted. By this means the width of the plat-

form or shelf is increased or diminished, accordingly as the width of the press-box is increased or diminished.

The platform or shelf 154, in connection with the front extensions 155 of the cover, when the latter lies in the press-box, constitute the chute by which the compressed stuffing material is pushed into the ticking. The platform or shelf and the extension of the cover slope from their sides to their centers or median lines substantially as described with reference to the sloping of the bottom of the press-box and the acting face of the cover, so that the body of stuffing material, shaped with a thickened longitudinal central portion, will properly move from the press-box through the delivery-chute to the ticking. The front extensions 155 of the cover are laterally adjusted in the same manner and by the same means as hereinbefore described with reference to the cover itself. In other words, the extensions 155 are simply longitudinal extensions of the cover, and consequently when the movable sections of the cover are extended or retracted the said front extensions are correspondingly extended or retracted.

The cover is designed to be guided vertically and into and out of the press-box through the medium of perpendicular guide-rods 173 and 174, which are secured at their lower ends to the side walls of the press-box and extend through eyes 175, projecting laterally from the hangers 114 and 115. These guide-rods 173 and 174, by their connection with the hangers 114 and 115, also serve to widen the press-box cover when the press-box is increased in width, for obviously if the side walls 88 and 89 of the press-box are adjusted in a lateral direction a corresponding motion will be imparted to the hangers 114 and 115 and the side sections of the press-box cover will be similarly adjusted in a lateral direction. If the press-box cover lies within the press-box when the latter is contracted in width, the sides of the press-box will act against the sides of the cover and correspondingly contract the width thereof.

The longitudinal channel-iron beams, sheathed with metal plates in the manner described and shown, produce a strong, substantial, and effective press-box and cover and enable these parts to successfully resist all pressures and strains, abnormally or otherwise.

The suspension of the press-box cover from the transverse front and rear angle-iron beams, through the medium of a plurality of rigid hangers, provides a strong and substantial structure which will secure the desired compression of the stuffing material without danger of any part of the cover being crushed or unduly strained. The roller-bearings 116 and 117 enable the side sections of the cover to be easily adjusted laterally, while the required pressure can be exerted through the hangers on the cover to press the material in the press-box.

It is sometimes desirable to vary the depth or thickness of the compressed stuffing material to secure mattresses which vary in depth or thickness, and to accomplish this the descent of the press-box cover should be stopped when the material has been compressed to the extent required for the thickness of the mattress to be produced. This is accomplished by automatically shifting the clutch-section 132 out of engagement with the miter-gear 131, so that the clutch-section will lie centrally between the miter-gears 130 and 131, while the cover will stand motionless in the press-box and hold the stuffing material under the desired compression until it is condensed longitudinally and subsequently pushed out of the press-box into the ticking.

To automatically shift the clutch-section 132 for the purpose stated, a vertically-sliding rod 176 is mounted in suitable bearings 177, as best seen in Figs. 4 and 16. The vertical rod 176 is provided with upper and lower collars 178 and 179, located, respectively, above and below the end of the transverse cover-carrying beam 112. The collars 178 and 179 are rigidly secured to the rod 176, through the medium of set bolts or screws 180 and 181, so that when the collars have been adjusted to the required positions on the rod they can be rigidly clamped thereto. The vertical rod 176 is also provided with an adjustable collar 182, adapted to be secured in the required position on the rod through the medium of a set bolt or screw 183. The collar 182 is pivoted to the lower end of a link 184, which has its upper end pivoted to the extremity of a crank-arm 185, secured to one end of the rock-shaft 138, Fig. 16, in such manner that when the vertical rod 176 is raised or lowered the crank-arm will be also raised or lowered and the rock-shaft 138 will be turned in its bearings for the purpose of operating the clutch-shifting fork 151. It being assumed that the collars 178 and 179 have been adjusted to the required position on the vertical rod 176 for the proper depth or thickness of mattress to be produced, when the press-box cover has descended the necessary distance in the press-box the end of the transverse cover-carrying beam 112 will strike the lower collar 179 and thereby depress the vertical rod 176, which will lower the crank-arm 185, turn the rock-shaft 138, and shift the clutch-fork 151 in the direction required to disengage the clutch-section 132 from the miter-gear 131 and place the clutch-section intermediate between the two miter-gears 130 and 131. Conversely, when the screw-threaded shafts 120 are rotated in the direction required to elevate the press-box cover, when the latter has reached the desired height, the end of the transverse cover-carrying beam 112 will strike the upper collar 178 and thereby raise the vertical rod 176 to elevate the crank-arm 185 and turn the rock-shaft 138 in the direction required to shift the clutch-section 132 out of operative connection with the

miter-gear 130, so that the clutch-section will lie centrally between the miter-gears 130 and 131. It will of course be understood that the clutch-section 132 may be positively shifted into engagement with one or the other miter-gear 130 or 131 to raise or lower the press-box cover through the medium of the controlling clutch-lever 133, as hereinbefore explained.

As hereinbefore described, the plunger-head carriage is moved back and forth on the rails or tracks by which it is supported and guided. The carriage is started on its forward stroke by operating the clutch-controlling lever 40, as hereinbefore referred to and as will be described in detail hereinafter. When the plunger-head carriage reaches the limit, or approximately the limit, of its back stroke, it is desirable that the mechanism which propels the carriage be instantly or almost instantly stopped. This is automatically accomplished by providing any part of the carriage with a rearwardly-projecting clutch-operating arm 186, which is indicated by dotted lines in Figs. 1 and 13 and in full lines, Fig. 2. This arm 186 is designed to come in contact with the spring-pressed pin 30, Figs. 13 and 14, when the carriage reaches the limit of its back stroke, or nearly so. The pressure of the arm 186 on the pin 30 swings the bell-crank lever 27 and shifts the slide-bar 22 in the direction required to disengage the clutch-sections 18 and 19. Consequently the spur-gear 10 will cease rotating, and obviously the mechanism which propels the plunger-head carriage is instantly or almost instantly stopped. When this occurs, the arm 186 of the carriage lies against and in the path of the spring-pressed pin 30, and therefore when the mechanism which propels the carriage is to be started it is essential to withdraw the spring-pin 30 from the path of the arm 186, so that the bell-crank lever 27 can be moved by the clutch-controlling lever 40 in the direction required to engage the two clutch-sections 18 and 19 with each other. The withdrawal of the spring-pin 30 from engagement with the arm 186 is readily accomplished by simply operating the finger-piece 43, which draws or pulls the cord, wire, or other cable 44, operates the bell-crank lever 45, and raises the spring-pin 30 against the tension of the spring by which it is projected.

Where the bottom wall of the press-box and the face of the press-box cover slope or incline from their side edge portions to their longitudinal central portions for producing compressed bodies or masses of stuffing material which vary more or less in depth or thickness, it is preferable to construct the upper and lower edges of the plunger-head of a corresponding form or shape, as shown in Fig. 4, so that the plunger-head will approximately conform to the cross-sectional shape imparted to the compressed material by the action of the press-box and cover.

It is believed that the precise details of the operation of my improved machine will be readily understood from the foregoing explanations, and therefore I will only concisely set forth the general working of the parts.

Assuming that the plunger-head carriage is at the rear of the machine, or at the limit of its back stroke, and the press-box cover is elevated, the desired quantity of stuffing material is properly filled into the press-box and the attendant or operator shifts the hand-lever 133 to the left, or to the position marked "Down," Fig. 1, which causes the clutch-fork 151 to move the clutch-section 132 into engagement with the miter-gear 131, whereupon motion will be transmitted to the four perpendicular screw-shafts and the press-box cover will descend into the press-box to compress the material the required degree. It is possible to stop the descent of the press-box cover by shifting the clutch-lever 133 to the intermediate position represented in Fig. 1; but it is preferable to automatically stop the descent of the press-box cover when the required compression of the stuffing material is effected through the medium of the beam or girder 112 striking the lowermost collar 179 on the vertically-sliding rod 176, which, as before explained, disengages the clutch-section 132 from the miter-gear 131 and places this clutch-section centrally between the two miter-gears 130 and 131. While the stuffing material is held under compression in the press-box, the attendant or operator raises the spring-pin 30 and pushes the upper end of the hand-lever 40 inwardly, thereby shifting the rotating clutch-section 19, which is driven by the draft or power shaft 7 into engagement with the clutch-section 18. This causes the pinion 9 to be thrown into operative connection with the drive or power shaft, and rotary motion is imparted to the spur gear-wheel 10, whereby the endless chain belts 49 and 50 are caused to move and the plunger-head carriage commences its advance stroke. The plunger-head moves forward a predetermined distance—say about twenty-four inches—to compress the stuffing material longitudinally in the press-box, and then the gate 153, which is in its elevated or closed position at the front end of the press-box, is automatically lowered or opened by the dog or pawl 69, Fig. 10, of the plunger-head carriage striking the tappet 163, which turns the rock-shaft 162, moves the connecting rod or link 160 rearward, and pulls the gate 153 downward. The ticking is placed over the delivery-chute formed by the extensions 154 and 155, and the plunger-head carriage, continuing its forward motion, pushes the compressed stuffing material out of the press-box through the delivery-chute into the ticking. When the carriage reaches the limit of its forward stroke, the switching or shifting boxes or blocks 62 will be carried around the sprocket-wheels 52, Fig. 12, and caused to descend in the vertical slots 63 of the end plates 64 of the carriage, thereby

throwing these switching or shifting boxes or blocks from the upper to the lower end portions of the slots, so that the lower stretches of the chain belts will reverse the motion of the carriage and pull it rearward to the limit of its back stroke, when the rearwardly-projecting arm 186 of the carriage will act upon the spring-pin 30, Fig. 13, and turn the bell-crank lever 27 in the direction required to shift the clutch-section 19 out of engagement with the clutch-section 18 and the carriage will be stopped.

It will of course be understood that the motion of the endless chain belts 49 and 50 will cause the switching or shifting boxes or blocks 62 to pass upward around the sprocket-wheels 48 to the upper ends of the slots 63, so that the uppermost stretches of the endless belts can cause the carriage to advance or move forward to impart the forward stroke to the plunger-head. As the carriage moves rearward the dog or pawl 69, by its incline 73, will freely ride over the tappet 163, and the dog or pawl 68 will engage the tappet 164, thereby turning the rock-shaft 162 in the direction required to elevate and close the gate 153, which closing of the gate is automatically effected in a very simple manner. The incline 72 enables the dog 68 to ride over tappet 164.

For the purpose of causing the press-box cover to rise for a repetition of the operation hereinbefore explained the hand-lever 133 is shifted to the right, or to the position marked "Up," Fig. 1, which causes the clutch-section 132 to engage the miter-gear 130, whereupon the perpendicular screw-shafts will be rotated in the direction required to elevate the press-box cover. When the cover reaches the desired height, the beam or girder 112 strikes the uppermost collar 178 on the vertically-movable rod 176 and shifts the clutch-section 132 to its intermediate or central position, so that the ascent of the press-box cover is instantly stopped. It will be obvious that by adjusting the upper and lower collars 178 and 179 on the vertically-movable rod 176 the press-box plunger can be stopped at different heights. For instance, it can be caused to enter the press-box to a greater or less extent before automatically stopping its descent, and it can be elevated to a greater or less extent before automatically stopping its ascent.

The preferred order of procedure in expanding or contracting the press-box, the plunger-head, and the press-box cover is when the cover and the plunger lie in the press-box with the fingers 78 in engagement with the eyes or loops 104. When the parts are in the position just explained, it is only necessary to rotate either one of the crank-handles 95 and 96 for the purpose of turning the right and left hand screws 90 and 92, which transmit motion to the right and left hand screws 91 and 93, thereby causing the movable side sections of the press-box to move inward or

outward, and as they move inward or outward they will correspondingly move the movable sections of the plunger-head and the cover inward and outward, whereby the parts are simultaneously extended or contracted to suit the conditions required, according to the width or size of the mattress which is to be produced.

The improved press-box cover and plunger-head render it possible to produce mattresses possessing the appearance and conditions of a mattress stuffed by hand, with all the advantages possessed by a machine-stuffed mattress.

The means for regulating the dimensions of the press-box and the cover through the medium of right and left hand screws and lazy-tongs, as described and shown, is desirable and useful and enables the parts to be very conveniently and quickly adjusted.

The provision of a plunger made to move backward and forward through the medium of chain-belt mechanism, as explained, is very desirable in that the machine is made very compact and effective in operation.

Having thus described my invention, what I claim is—

1. In a mattress-stuffing machine, a press-box having its bottom wall sloping or inclined downwardly from its side edge portions toward its longitudinal central portion, substantially as described.

2. In a mattress-stuffing machine, the combination with a press-box, of a press-box cover having its acting face sloping or inclined upwardly from its side edge portions toward its longitudinal central portion, substantially as described.

3. In a mattress-stuffing machine, the combination with a press-box having its bottom wall sloping or inclined downwardly from its side edge portions toward its longitudinal central portion, of a press-box cover having its acting face sloping or inclined upwardly from its side edge portions toward its longitudinal central portion, substantially as described.

4. In a mattress-stuffing machine, the combination with a press-box, and a press-box cover, sloping or inclined from their side edge portions toward their longitudinal central portions, of a plunger-head having its upper and lower edges sloping or inclined in opposite directions toward the middle of its length, substantially as described.

5. The combination in a mattress-stuffing machine, of a press-box, a plunger-head movable in the press-box, a carriage movable beneath the press-box and connected with the plunger-head, a chain-belt mechanism, switching or shifting devices connecting the carriage with the chain-belt mechanism for reversing the travel of the carriage at the limit of its forward and backward strokes, a rising-and-falling cover movable into and out of the press-box and operatively-connected mechanisms connected with the said cover and with the said chain-belt mechanism, for

raising and lowering the cover and imparting motion to the chain-belt mechanism, substantially as described.

6. The combination of a press-box having
5 a longitudinal slot in its bottom wall, and a
plunger-head movable in said press-box, of
horizontal rails or tracks arranged horizon-
tally beneath the press-box, a carriage trav-
eling on said rails or tracks under the press-
10 box, a shank connecting the carriage with the
plunger-head and traversing the longitudi-
nal slot in the bottom wall of the press-box
as the carriage moves, a chain-belt mechan-
ism located beneath the press-box and car-
15 riage and provided with devices which oper-
ate to move the carriage forward and then
reverse its direction of travel, a gate for open-
ing and closing one end of the press-box, and
lever-and-tappet mechanism acted upon by
20 the carriage as it moves backward and forward
to positively open and also close the
gate, substantially as described.

7. The combination with a press-box, and a
25 plunger-head movable therein, of a carriage
movable beneath the press-box and connected
with the plunger-head, an endless traveling
belt, connections between the belt and car-
riage, a power-driven mechanism for impart-
ing motion to the belt, a clutch for throwing
30 the endless belt into and out of operative con-
nection with the power-driven mechanism, a
clutch-actuating lever automatically oper-
ated by the action of the carriage to move
the clutch and thereby disengage the power-
35 driven mechanism from operative connection
with the belt to stop the motion of the latter,
a gate for opening and closing one end of the
press-box, and lever-and-tappet mechanism
acted upon by the carriage as it moves back-
40 ward and forward to positively open and also
close the gate, substantially as described.

8. The combination with the press-box, and
a plunger-head movable therein, of a carriage
45 traveling back and forth beneath the press-
box, an endless chain belt located under the
press-box and provided with devices which
connect with the carriage and operate to move
it back and forth, a power-driven shaft, gear-
ing connecting the power-driven shaft with
50 the belt, a clutch for throwing the power-
driven shaft into and out of operative con-
nection with the gearing which actuates the belt, a
lever connected with the clutch and actuated
by the direct action of the carriage for moving
55 the clutch to throw the power-driven shaft out
of operative connection with said gearing, a
gate for opening and closing one end of the
press-box, and lever-and-tappet mechanism
acted upon by the carriage as it moves back-
60 ward and forward to positively open and also
close the gate, substantially as described.

9. The combination with a press-box hav-
ing a longitudinal slot in its bottom wall, and
65 a plunger-head movable in the press-box, of
rails or tracks arranged horizontally beneath
the press-box, a carriage having wheels trav-

eling on the rails or tracks, a shank connected
with the plunger-head and the carriage and
traversing the longitudinal slot in the bottom
wall of the press-box as the carriage moves
70 beneath the latter, endless traveling belts
extending under the press-box, switching or
shifting devices connecting the belts with the
carriage and operating to move the latter for-
ward and then reverse its direction of travel,
75 a power-driven shaft geared to the belts for
imparting motion thereto, a clutch for throw-
ing the belt-operating gearing into and out of
operative connection with the power-driven
shaft, a clutch-lever connected with said
80 clutch and automatically operated by the car-
riage at the limit of its movement in one
direction to move the clutch and throw the
power-driven shaft out of operative connec-
tion with said gearing, a gate for opening and
85 closing one end of the press-box, and lever-
and-tappet mechanism acted upon by the car-
riage as it moves backward and forward to
positively open and also close the gate, sub-
stantially as described.

10. The combination with a press-box, and
90 a plunger-head movable therein, of a carriage
traveling back and forth beneath the bottom
wall of the press-box and connected with the
plunger-head, a gate arranged to open and
95 close one end of the press-box, and tappet-and-
lever mechanism acted upon by the carriage
as it moves backward and also as it moves
forward to positively open and also close the
gate, substantially as described.

11. The combination with a press-box, and
a plunger-head movable therein, of a gate
arranged to close one end of the press-box, a
carriage traveling beneath the bottom wall
105 of the press-box and with which the plunger-
head is connected, an endless traveling belt
provided with devices which connect it with
the carriage and operate to move the latter for-
ward and then reverse its direction of travel
while the belt moves in one direction, and
110 mechanism automatically operated by the
carriage as it moves forward and backward
to positively open and also close the gate, sub-
stantially as described.

12. The combination with a press-box, and
115 a plunger-head movable therein, of a gate ar-
ranged to open or close one end of the press-
box, a rock-shaft connected with the gate, a
rock-shaft provided with tappets, a connec-
tion between the said rock-shafts, and a trav-
120 eling carriage connected with the plunger-
head and provided with devices for operating
the said tappets as the carriage moves for-
ward and backward to automatically open
and close the gate, substantially as described.

13. The combination with a press-box, and
a plunger-head movable therein, of a carriage
movable back and forth beneath the press-
box and connected with the plunger-head, an
endless belt for moving the carriage back-
130 ward and forward, tappet-and-lever mechan-
ism automatically operated by the carriage

in both its backward and forward movement to positively open and close the gate, substantially as described.

14. The combination with a press-box, and
5 a plunger-head movable therein, of a traveling carriage connected with the plunger-head, an endless belt extending under the press-box and provided with devices which connect it with the carriage and operate to move the
10 latter forward and then reverse its direction of travel while the belt moves in one direction, means for imparting motion to said belt, and tappet-and-lever mechanism automatically operated by the carriage in both its forward and backward movement to positively
15 open and close the gate, substantially as described.

15. The combination with a press-box, and a plunger-head movable therein, of a carriage
20 traveling beneath the bottom wall of the press-box and connected with the plunger-head, an endless belt connected with the carriage for moving the same forward and backward, a gate arranged to open and close one end of
25 the press-box, a rock-shaft connected with the said gate, a rock-shaft provided with tappets, a connection between said rock-shafts, and devices mounted on the carriage and arranged to operate said tappets as the carriage
30 moves forward and backward to automatically open and close the gate, substantially as described.

16. The combination with a press-box, and a plunger-head movable therein, of a traveling
35 carriage connected with the plunger-head, means for moving the carriage backward and forward, a gate arranged to open and close one end of the press-box, a rock-shaft connected with said gate, a rock-shaft provided
40 with tappets, a connection between said rock-shafts, and dogs or pawls mounted on the carriage and arranged, respectively, to automatically operate said tappets to open and close said gate, substantially as described.

17. The combination with a press-box, and a plunger-head movable therein, of rails or
45 tracks extending under the press-box, a carriage traveling on said rails or tracks beneath the bottom wall of the press-box, means for moving the carriage backward and forward,
50 a gate arranged to open and close one end of the press-box, a rock-shaft provided with tappets, connections between the tappet-carrying rock-shaft and the said gate, and devices
55 mounted on the carriage for operating said tappets as the carriage moves backward and forward to automatically and positively both open and close the gate, substantially as described.

18. The combination with a press-box, and a plunger-head movable therein, of a carriage
60 traveling beneath the press-box and provided with vertically-slotted portions and dogs or pawls, endless traveling belts extending under the press-box, shifting boxes or blocks
65 connecting the belts with the slotted portions

of the carriage and operating to move the carriage forward and then reverse its direction of travel, mechanism for imparting motion to the belts, a gate arranged to open and
70 close one end of the press-box, and a tappet mechanism connected with the gate and actuated by the dogs or pawls of the carriage as it moves forward and backward to automatically and positively open and close the gate,
75 substantially as described.

19. The combination with a press-box, and a plunger-head movable therein, of a carriage
80 traveling back and forth beneath the press-box and connected with the plunger-head, mechanism for moving the carriage backward and forward, a gate arranged to open and close one end of the press-box, a counterbalance-weighted rock-shaft connected with said
85 gate, a tappet-carrying shaft connected with the counterbalance-weighted rock-shaft, and dogs or pawls mounted on the carriage and arranged to strike the tappets of the tappet-carrying shaft as the carriage moves backward and forward to open and close the gate,
90 substantially as described.

20. The combination in a mattress-stuffing machine, of a press-box divided longitudinally into lateral sections, each comprising a plurality of extensible and contractible parts,
95 two sets of right and left hand screw-threaded shafts, independent gearing at the inner ends of the said sets of screw-threaded shafts, and a coupling connecting the inner ends of two of said shafts, substantially as described. 100

21. The combination with an expansible and contractible press-box, a cover movable
105 into and out of the press-box, and an expansible and contractible cover, of means for expanding and contracting the press-box, and connections between said press-box and said cover, whereby the cover is expanded and contracted simultaneously with the press-box,
substantially as described.

22. The combination with an expansible
110 and contractible press-box, and an expansible and contractible cover cooperating therewith, of right and left hand screw-threaded shafts for expanding and contracting the press-box, and connections between the movable sections
115 of the press-box and the movable sections of the cover, whereby the latter is expanded and contracted by the action of the movable sections of the press-box, substantially as described. 120

23. The combination with an extensible and contractible press-box, of vertically-movable cover-supports, a press-box cover
125 having laterally-movable side sections, and hangers connected with said side sections and provided with roller-bearings mounted on said supports, substantially as described.

24. The combination with an extensible and contractible press-box, and vertically-movable cover-supports, of a cover having
130 laterally-movable sections, hangers attached to said sections and movable back and forth

on said cover-supports, and connections between said hangers, substantially as described.

25. The combination with an expansible and contractible press-box, and vertically-movable cover-carrying beams or girders, of a cover having laterally-adjustable side sections, hangers attached to said side sections and provided with bearings engaging said beams or girders, lazy-tongs connecting said hangers, and lazy-tongs connecting the laterally-movable sections of the cover with the main body portion thereof, substantially as described.

26. The combination with an expansible and contractible press-box, and vertically-movable cover-supports, of a cover having laterally-movable side sections, hangers attached to said side sections and movable back and forth on said cover-supports, and guide-rods engaging the press-box and said hangers, whereby the expansion or contraction of the press-box causes the hangers to move on the said supports, substantially as described.

27. The combination with an expansible and contractible press-box, and an expansible and contractible cover movable into and out of the box, of guide-rods engaging the press-box and connected with the cover-supports, whereby the press-box and cover are simultaneously adjusted, substantially as described.

28. The combination with an expansible and contractible press-box, and an expansible and contractible cover movable bodily in a vertical plane and held substantially horizontal in its movements, of connections between the cover and press-box, whereby the cover is guided and widened or narrowed when the press-box is widened or narrowed, substantially as described.

29. The combination with the laterally-adjustable press-box of a mattress-stuffing machine, of vertical screw-threaded shafts geared together at the base of the machine, horizontally-arranged transverse beams or girders having nuts engaging the shafts, a laterally-adjustable press-box cover, hangers suspending the cover from said beams or girders and laterally adjustable thereupon, power-driven mechanism for rotating the screw-threaded shafts in one direction, means for reversing the motion of said shafts, and means for stopping the shafts whenever required, substantially as described.

30. The combination with an expansible and contractible press-box, and an expansible and contractible plunger-head movable therein, of devices for connecting the plunger-head with the press-box, so that the adjustment of the latter effects the adjustment of the plunger-head, and means for expanding and contracting the press-box, substantially as described.

31. The combination with a press-box hav-

ing laterally-movable side sections provided with eyes or loops, of an extensible and contractible plunger-head having devices for engaging said eyes or loops, and means for expanding or contracting the press-box, whereby the plunger-head is at the same time expanded or contracted, substantially as described.

32. The combination with a press-box, and a traveling carriage provided with a plunger-head, of driving mechanism for actuating the carriage, a clutch for throwing the driving mechanism into and out of operative connection with said carriage, and a clutch-operating mechanism provided with a movable pin which is adapted to be acted upon by part of the carriage for automatically shifting the clutch, and means for withdrawing said pin to enable the clutch to be operated manually, substantially as described.

33. The combination with a press-box, and a traveling carriage provided with a plunger-head to move in the press-box, of driving mechanism for actuating said carriage, a clutch for throwing the driving mechanism into and out of operative connection with the carriage, a clutch-operating mechanism provided with a spring-pressed pin arranged to be acted upon by a part of said carriage when it reaches the limit of its back stroke to automatically shift the clutch and stop the motion of the carriage, and means for retracting said pin, so that the clutch can be operated to throw the driving mechanism into operative connection with said carriage for starting the same, substantially as described.

34. The combination in a mattress-stuffing machine, of a laterally-adjustable press-box, vertical screw-threaded shafts geared together, horizontally-arranged beams or girders provided with screw-nuts engaging said screw-threaded shafts, a laterally-adjustable press-box cover, hangers suspending the cover from said beams or girders and adjustable thereupon, power-driven mechanism geared to the screw-threaded shafts for raising and lowering the beams or girders and the press-box cover, a clutch for throwing the power-driven mechanism into and out of operative connection with the screw-threaded shafts, and mechanism operated by the horizontally-arranged cover-carrying beams or girders to actuate the clutch and thereby throw the power-driven mechanism out of operative connection with the screw-threaded shafts whenever it is desired to stop the ascent or descent of the press-box cover, substantially as described.

35. The combination with a press-box having an opening and closing gate at one end, and a plunger movable in the press-box, of a traveling carriage provided with dogs or pawls and connected with the plunger, means for moving the carriage back and forth, a rock-shaft provided with tappets which are acted

upon by the dogs or pawls of the carriage as
the latter moves forward and backward, and
connections between the rock-shaft and the
gate, whereby the gate is positively raised
5 and also lowered by the action of the dogs or
pawls of the carriage upon the tappets of the
rock-shaft, substantially as described.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

EDWIN N. STEPHENSON.

Witnesses:

M. E. ALEXANDER,
J. E. BOYNTON.