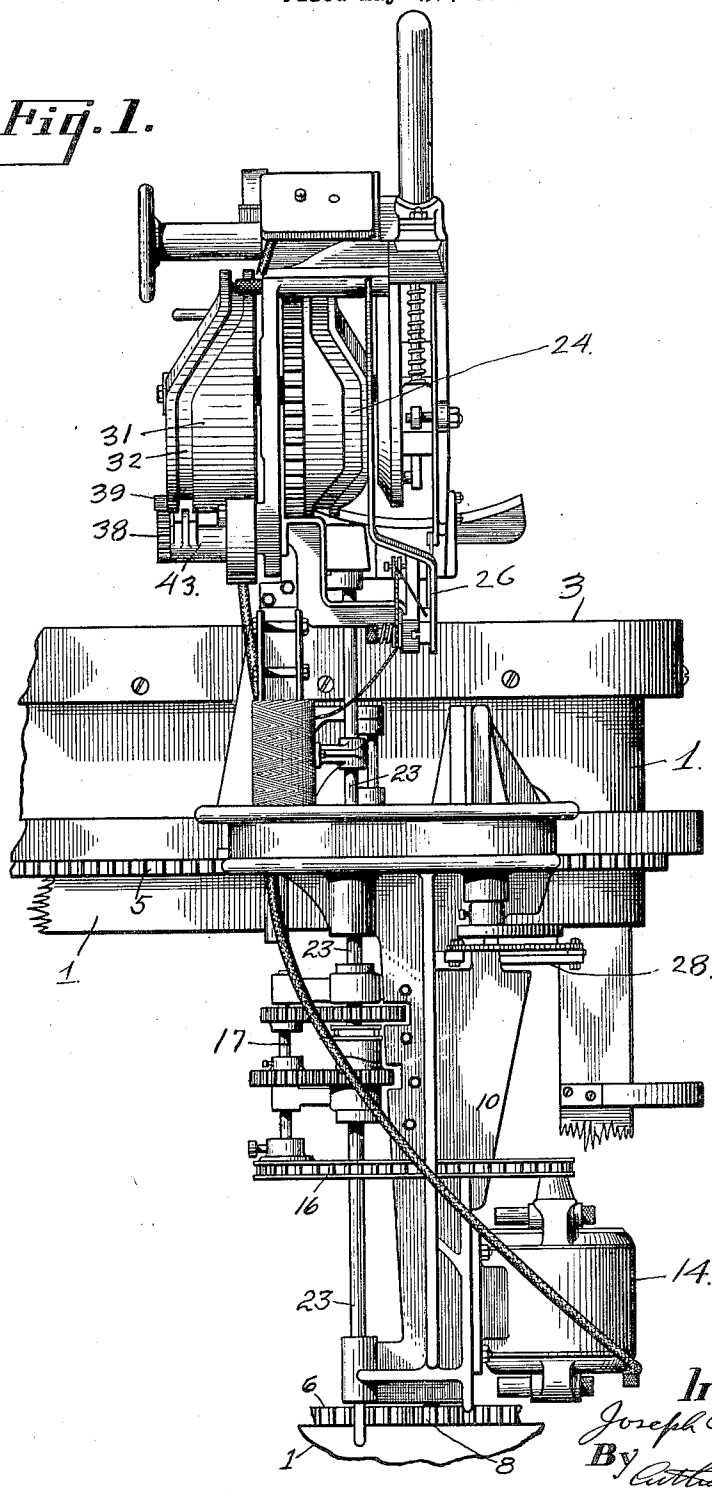
Jan. 29, 1924. 1,481,994

J. W. DROLL

FEEDING AND TAKE-UP DEVICE

Filed May 27, 1920 6 Sheets-Sheet 1

Fig. 1.



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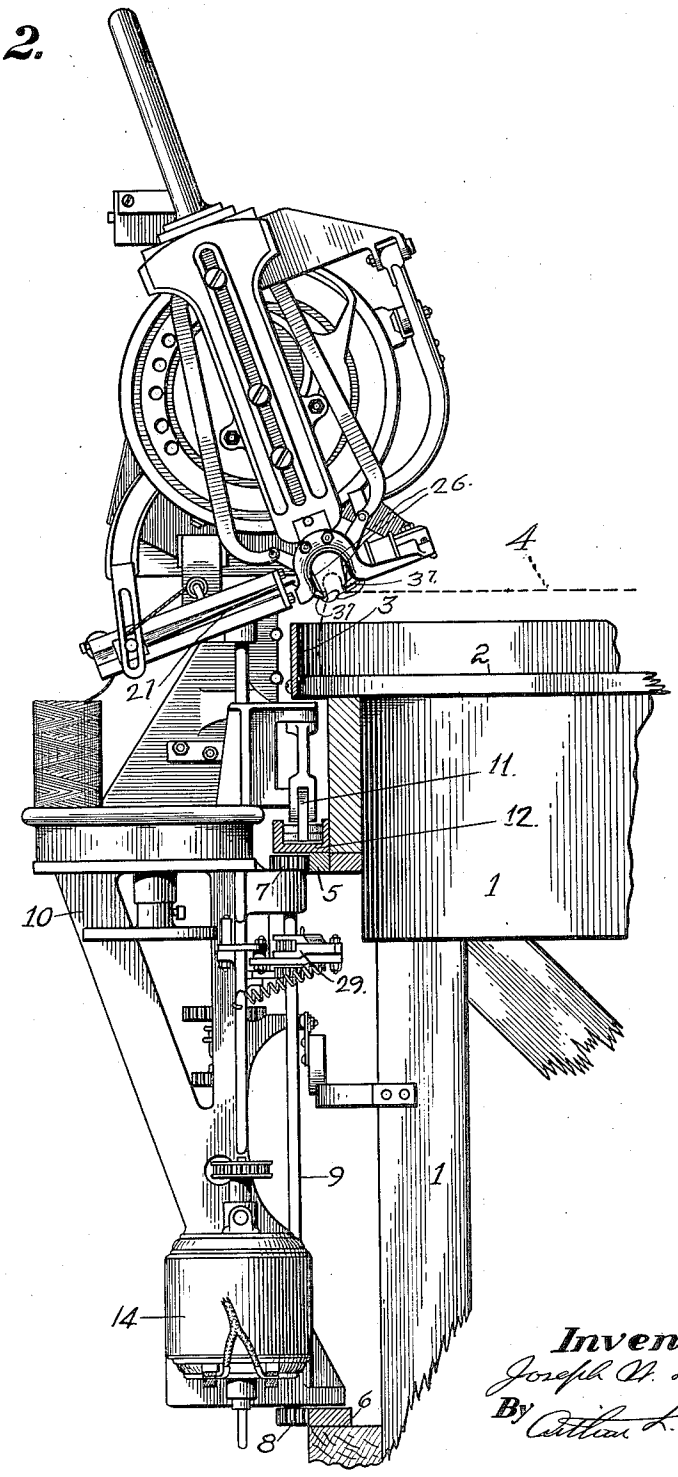
FEEDING AND TAKE-UP DEVICE

Filed May 27, 1920 6 Sheets-Sheet 2

Fig. 2.



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FEEDING AND TAKE-UP DEVICE

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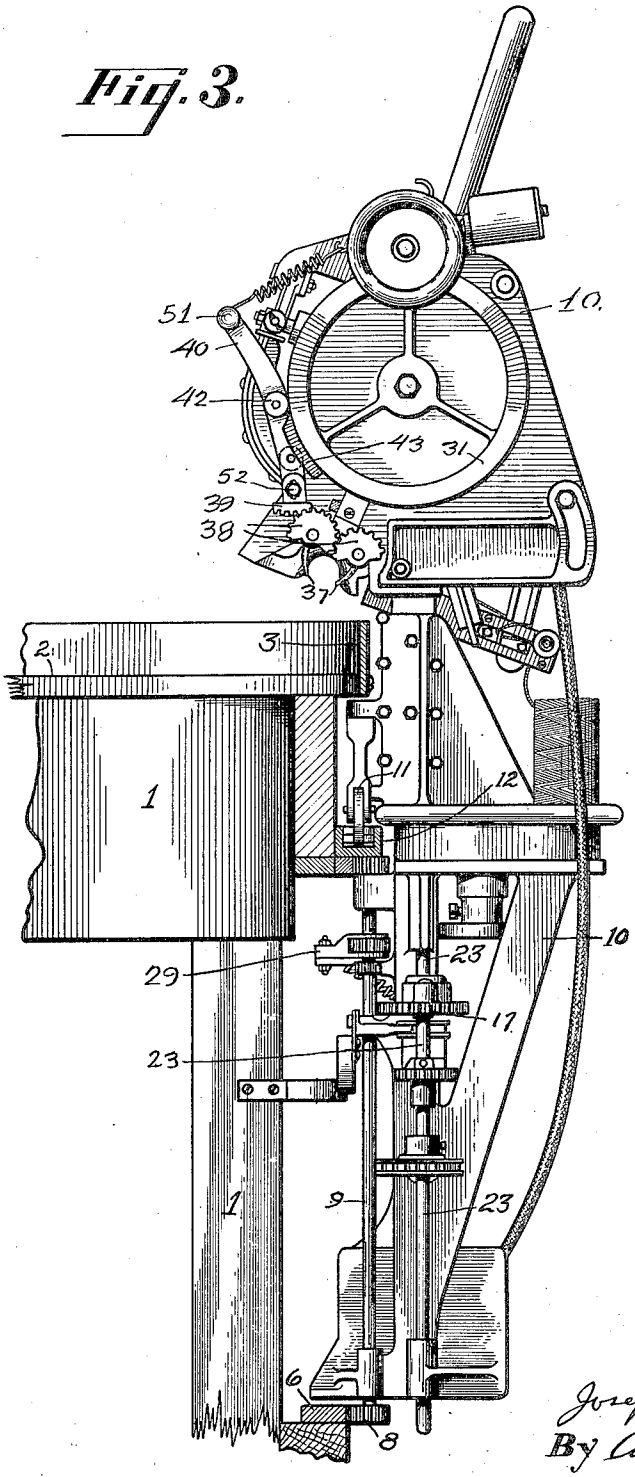
Fig. 3.



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FEEDING AND TAKE-UP DEVICE

Filed May 27, 1920 6 Sheets-Sheet 4

Fig. 3.

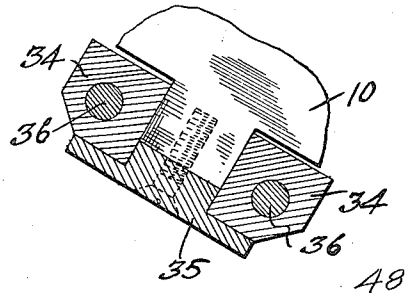

Fig. 4.

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FEEDING AND TAKE-UP DEVICE

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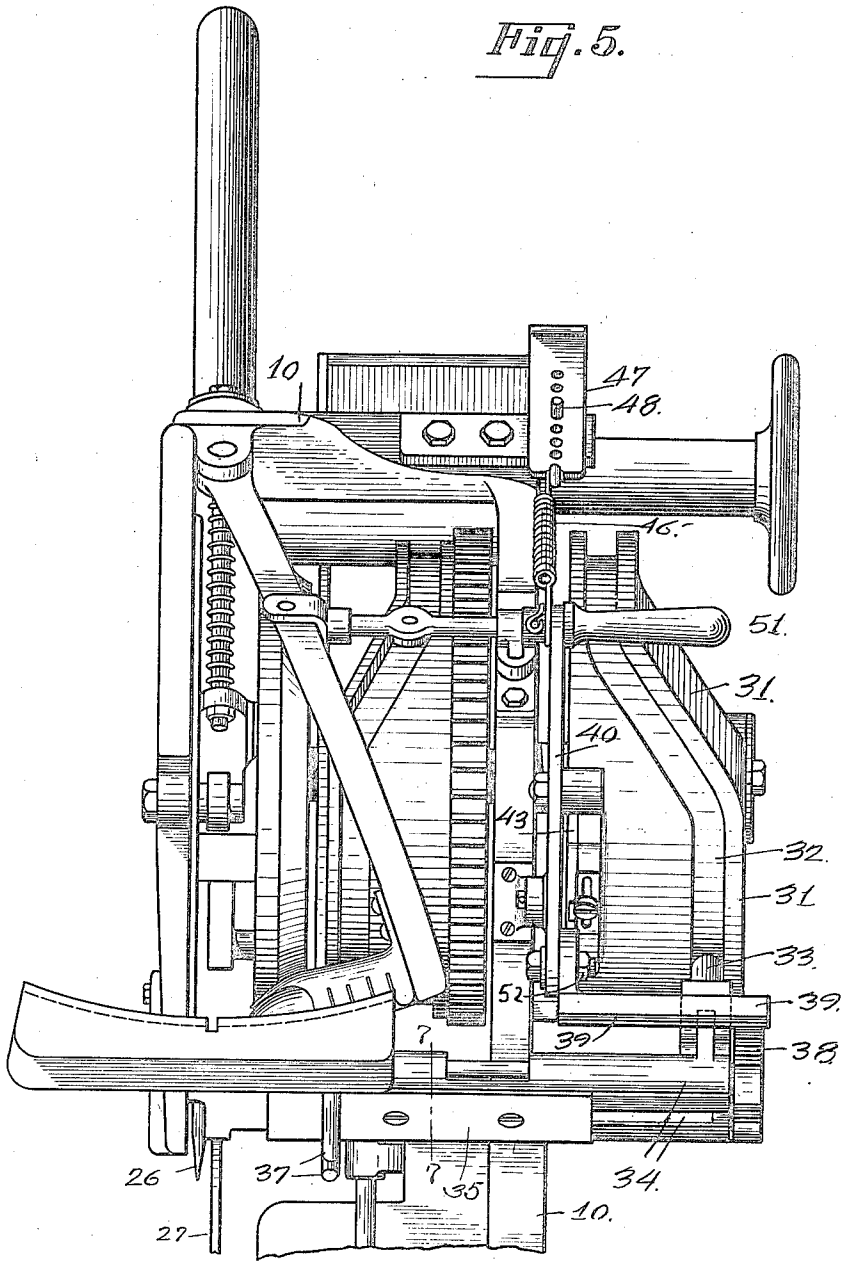
Fig. 5.



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FEEDING AND TAKE-UP DEVICE

Filed May 27, 1920 6 Sheets-Sheet 6

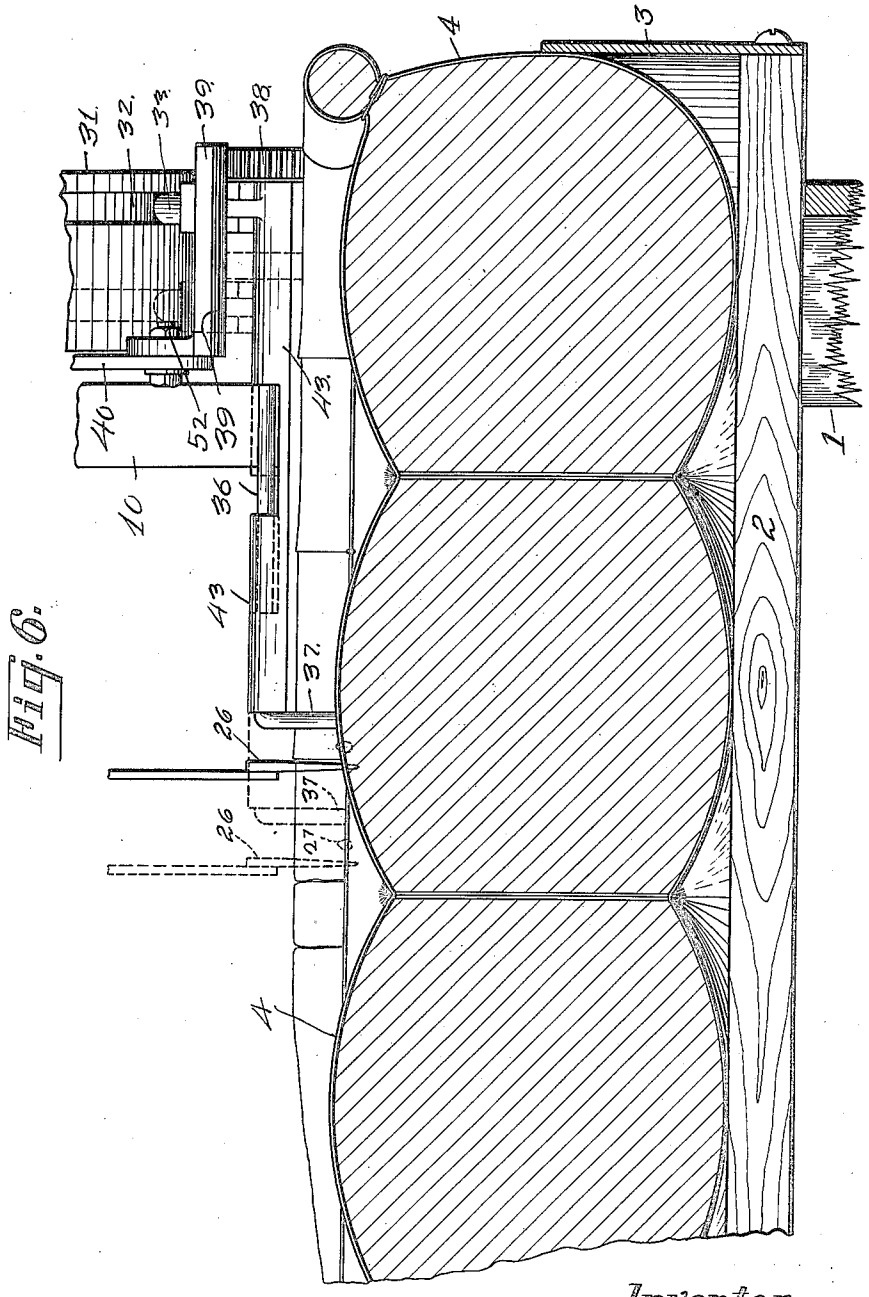

Fig. 6.

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Patented Jan. 29, 1924. 1,481,994

UNITED STATES PATENT OFFICE.

JOSEPH W. DROLL, OF OAKLAND, CALIFORNIA.

FEEDING AND TAKE-UP DEVICE.

Application filed May 27, 1920. Serial No. 384,735.

To all whom it may concern:

Be it known that I, JOSEPH W. DROLL, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented a new and useful Improvement in a Feeding and Take-Up Device, of which the following is a specification.

My invention relates to improvements in feeding and take up devices to be used in connection with mattress roll forming machines of the type disclosed in Patent No. 1,300,140 issued to me on the 8th day of April, 1919, reference to which patent is hereby made.

In the production of mattresses the casing consisting of a rectangular ticking is made longer and wider than the finished mattress. The process of tucking, by means of which the top and bottom surfaces of the mattress are tied together with suitable connections, forms a series of arches or pockets within the ticking which serves to shorten the dimensions of the mattress both laterally and longitudinally.

The mattress roll forming machine hereinabove referred to comprises a pair of packing needles which enter the side and top of a mattress adjacent the corners thereof to pack stuffing of the mattress into said corner to form said roll which is immediately secured permanently by a sewing needle operation in conjunction with a shuttle to form a double lock stitch.

The machine moves forward at regular intervals on the sides of a mattress supporting table upon which said machine is slidably mounted. After each forward movement the packing needles engage the mattress and form the roll and the needle then penetrates said mattress and forms a stitch and the machine is then advanced or moved forward a predetermined distance to again engage the mattress, leaving two threads extending from the site or the last operation to the needle and shuttle in the new position.

As these threads are under tension there is a tendency of the machine to drag the mattress with it during its forward movement.

Also, it has been noted that the forming of the roll does not take up the excess ticking on the edges which ordinarily remains the same length as originally while the center of the mattress has been shortened laterally and longitudinally by the tufting process, whether said process is performed previously or subsequently to the roll forming process.

The present invention has, then, for its primary object, the provision of means for engaging the mattress during the forward movement of the machine between stitches to prevent movement of the mattress, said means moving rearwardly upon the machine at a rate of speed and distance equal to the forward movement of the machine, said means being released and moved forward during the stationary period of the machine and operated, after the packing needles have again engaged the mattress and just previously to the sewing operation, to re-engage the mattress or ticking just previously to the completion of the forward movement of said means to form a plait of comparatively small dimensions at each movement, to take up the slack in the edges of the mattress corresponding to the amount of slack taken up by the tufting process, which plait is then sewed by the sewing needle.

Another object of the present invention is to provide means for adjusting the amount of slack taken up.

A further object of the invention is to provide improved means of the character described which shall be directly connected to the roll forming and sewing mechanism of the roll forming machine whereby the operation of holding the mattress against movement, when the machine moves forward on the table, may be synchronous with said roll forming and sewing mechanism in conjunction with which it acts.

I accomplish these and other objects by means of the improved device disclosed in the drawings forming a part of the present specification wherein like characters of reference are used to designate similar parts throughout the said specification and drawings, and in which—

Fig. 1 is a front elevation of the mattress roll forming machine and a portion of the mattress supporting table, disclosing the actuating mechanism for my improvement attached to said machine;

Fig. 2 is a right hand elevation of Fig. 1 disclosing the manner of engaging the mattress, indicated in dotted lines;

Fig. 3 is a left hand elevation of Fig. 1 disclosing the operating means for my improved attachment;

Fig. 4 is an enlarged broken view of the right hand side of the upper portion of the machine disclosing the attachment and the means for opening and closing the same to engage and disengage the mattress;

Fig. 5 is an enlarged broken view in elevation of the left hand side of Fig. 4 disclosing the forward position of the mattress engaging means; and

Fig. 6 is an enlarged sectional view taken through a portion of a mattress and disclosing the operation of the device.

Fig. 7 is a broken sectional detail taken upon the line 7—7 of Fig. 5.

For a full and clear comprehension of the invention a brief description of the operation and construction of the roll forming machine should be given and is as follows:

A rectangular mattress supporting table 1 is provided with a top 2 upon which rests the mattress to be operated upon, said mattress being indicated in dotted lines in Fig. 2 of the drawings as at 4. The top 2 of the table 1 is provided around the edges thereof with a guard or rail 3. The table 1 is also provided at the edges thereof with upper and lower racks 5 and 6 engaged by pinions 7 and 8 respectively connected to a shaft 9 rotatably mounted within the machine 10 provided with castors 11 which ride in tracks 12 to support said machine.

A suitable motor 14 is connected by means of a chain 16 to a suitable driving transmission, indicated in general by the numeral 17, to drive a driving shaft 23 which in turn operates a grooved cam 24 to which is operatively connected a pair of packing needles 26 and a sewing needle 27.

A lever 28 operates a pawl and ratchet mechanism 29 to intermittently rotate the shaft 9 and thereby advance the machine 10 at regular intervals by means of the pinions 7 and 8 in engaging relation with the racks 5 and 6 respectively.

The cam 24, at the completion of each forward movement of the machine 10 first operates the packing needles 26 to enter the mattress 4 and form a roll on the edge thereof and while said needles 26 are holding the roll so formed the sewing needle 27 is next operated to sew and thereby permanently secure the roll so formed. It is during the period of the engagement of the packing needles 26 and previously to the operation of the sewing needle 27 that one of the important features of the present invention is operated.

Directly connected to the cam 24 is a cam 31 having a groove 32 engaging a lug 33 on a frame 34 slidably mounted within the upper portion or head of the machine 10 by means of a plate 35 screwed or otherwise secured upon the frame of the machine and arranged to act as a bearing for the sliding movement of said frame 34 as shown in Fig. 7 of the drawings.

This frame 34 reciprocates on a line adjacent to the formed roll on the mattress and parallel with the movement of the machine 10, and has rotatably mounted therein a pair of longitudinally disposed and parallel shafts 36 provided at one end with grippers 37, arranged to engage and disengage the formed roll immediately back of the packing needles 26 and sewing needles 27, and meshing toothed segments 38 at the other ends of said shafts 37 one of said segments 38 also meshing with an elongated toothed sector 39 movably mounted upon the lower end of a lever 40 pivotally mounted upon the machine 10 as at 41, and having a roller 42 thereon arranged to be engaged by an adjustable cam block 43 detachably mounted upon the periphery of the cam 31 so that rotation of said cam 31 will cause the groove 32 therein to move the frame 34 and grippers 37 operatively connected thereto backward and forward at regular intervals and synchronous with the operation of the packing needles 26.

Rotation of the cam 31 will also cause the adjustable cam block 43 to oscillate the lever 40 and thereby partially rotate the shafts 36 and sectors 38 thereon opposite directions, to open and close the grippers 37.

The roller 42 of the lever 40 is normally held against the periphery of the cam 31 by means of a spring 46 having one end secured to the upper end of the lever 40 and the other end thereof to be a plate 47 having a plurality of apertures therein to engage a pin 48 on the machine 10.

The upper end of the lever 40 is also provided with a suitable handle 51 by means of which said lever 40 may be operated to open the grippers 37 independently of the movement of the cam 31.

In operation the grippers 37 are in engaging relation with the mattress 4 at the completion of the packing and sewing operation and as the machine 10 is moved forward by means of the rotation of the shaft 9 and the pinions 7 and 8 thereon engaging the racks 5 and 6 respectively, the rotation of the cam 31 causes the groove 32 therein to move the frame 34 with the shafts 36, sectors 38 and grippers 37 rearwardly while the machine 10 moves forward, and at the same speed and distance as said forward movement of said machine so that the grippers 37 remain stationary relatively to the mattress thereby preventing the tension of the threads extending from said mattress to the packing and sewing needles from moving said mattress with said machine.

In other words, the grippers 37 thus engage and feed the mattress 3 into the path

of the packing needles 26 while said machine 10 is moving forward.

At the completion of the forward movement of the machine the adjustable cam block 43 engages the roller 42 of the lever 40 and actuates the elongated sector 39 to partially rotate the segments 38 and the shafts 36 connected thereto to open the gripper 37 and thereby disengage the mattress 4, said block 43 operating to retain said grippers 37 in a disengaging relation to the mattress 4 while the groove 32 of the cam 31 returns the frame 34 and grippers 37 forwardly to a normal position.

But, the cam block 43 is timed to release the lever 40 and close the gripper 37 on the mattress 4 just previously to the completion of said forward movement thereby actuating said grippers 37 to re-engage the ticking of the mattress 4 and move said ticking toward the packing needles 26, which have meanwhile penetrated the mattress, to form a plait which is permanently secured in position by the ensuing operation of the sewing needle 27.

The above described movement is illustrated in Fig. 6 of the drawings, wherein the packing needles 26, disengaged from the mattress 4, move from the full line to the dotted position while the grippers 37 remain in their full line position until the completion of said movement when the cam 31 moves the said grippers 37 to the dotted position, the cam block 43 operating to release the grippers 37 from engagement with the mattress previously to said movement and to actuate said grippers 37 to re-engage the mattress 4 to form the plait as hereinbefore described.

The space between the ends of the grippers 37 may be adjusted to engage the rolls of different diameters, where different grades of ticking are used, by loosening the nut 52 and moving the sector 39 to open or close the grippers 37 and then tightening said nut 52 to retain said sector in such adjusted position.

The block 43 is split so that one portion thereof may be moved longitudinally to the other to decrease or increase the length of time during which the grippers may be held open, by means of which novel arrangement the amount of slack to be taken up may be adjusted.

The sector 39 is elongated to permit a sliding engagement with the toothed segments 38 and permit their opening and closing operation at any point along throughout their line of movement.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. The combination with a table adapted to support a mattress thereon and a mattress roll forming machine arranged to move intermittently around said table to form a roll on the edge of said mattress, of means mounted upon the machine for engaging the mattress to prevent movement of the same while said machine is in motion.

2. The combination with a table adapted to support a mattress thereon and a mattress roll forming machine arranged to move intermittently around said table to form a roll on the edge of said mattress, of means mounted upon said machine and actuated thereby for engaging said mattress to prevent movement thereof while said machine is in motion.

3. The combination with a table adapted to support a mattress thereon and a mattress roll forming machine arranged to move intermittently around the edge of said table and mattress to form a roll on said mattress, of reciprocating means operating alternately with the intermittent movement of the machine and arranged to engage the mattress and prevent movement of the same while said machine is moving forward.

4. The combination with a table adapted to support a mattress thereon and mattress roll forming machine arranged to move intermittently around the edges of said table and mattress thereon to form a roll on said mattress, of reciprocating means slidably mounted on said machine and actuated thereby to engage the mattress and prevent movement of the same while said machine is in motion.

5. The combination with a table adapted to support a mattress thereon and mattress roll forming machine arranged to move intermittently around the edges of said table to form a roll on the edges of said mattress, of reciprocating grippers slidably mounted upon said machine and arranged to engage said mattress; and means operatively connected to the machine for actuating the grippers oppositely to the direction and alternately to the movement of the machine to engage said mattress and thereby prevent movement of said mattress while said machine is in motion.

6. The combination with an intermittently moving mattress roll forming machine of grippers slidably mounted upon said machine and arranged to grip a mattress being operated on by said machine to prevent movement of said mattress while said machine is in motion relatively to the mattress.

7. The combination with an intermittently moving mattress roll forming machine of grippers slidably mounted thereon and arranged to grip a mattress being operated upon by said machine; and means for actuating the grippers to engage and prevent movement of said mattress while said machine is in motion.

8. The combination with an intermittently moving mattress roll forming machine of a pair of grippers slidably mounted thereon and arranged to engage and disengage a mattress being operated on by said machine; and means actuated by said machine for operating the grippers to engage said mattress and prevent movement of the same during a forward movement of the machine.

9. The combination with an intermittently moving mattress roll forming machine of a pair of grippers slidably mounted thereon and arranged to engage and disengage a mattress being operated on by said machine; and means actuated by said machine for operating the grippers to engage said mattress and prevent movement of the same during a forward movement of the machine; and to disengage said mattress and move forward a distance equal to the forward movement of said machine.

10. The combination with an intermittently moving mattress roll forming machine of a pair of grippers slidably mounted thereon and arranged to engage and disengage a mattress being operated on by said machine; means actuated by said machine for operating the grippers to engage said mattress and prevent movement of the same during a forward movement of the machine; to disengage said mattress and move forward a distance equal to the forward movement of said machine; and means for closing the grippers previously to the conclusion of the forward movement whereby said grippers may engage and gather the ticking of the mattress to take up the slack therein.

11. The combination with an intermittently moving mattress roll forming machine of a pair of grippers slidably mounted thereon and arranged to engage and disengage a mattress being operated on by said machine; means actuated by said machine for operating the grippers to engage said mattress and prevent movement of the same during a forward movement of the machine; to disengage said mattress and move forward a distance equal to the forward movement of said machine; means for closing the grippers previously to the conclusion of the forward movement whereby said grippers may engage and gather the ticking of the mattress to take up the slack therein; and means for adjusting the timing of the closing means whereby the amount of slack taken up may be regulated.

12. The combination with an intermittently moving mattress roll forming machine of a pair of grippers slidably mounted thereon and arranged to engage and disengage a mattress being operated upon by said machine; means for closing said grippers to engage a mattress and move said grippers rearwardly upon the machine during movement of said machine and at the same speed as said forward movement of the machine to prevent movement of said mattress.

13. The combination with an intermittently moving mattress roll forming machine of a pair of grippers slidably mounted thereon and arranged to engage and disengage a mattress being operated upon by said machine; means for closing said grippers to engage a mattress and move said grippers rearwardly upon the machine during movement of said machine and at the same speed as said forward movement of the machine to prevent movement of said mattress; and means for disengaging said grippers from the mattress and moving the same forward at the completion of the movement of the machine.

14. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals to engage a mattress and form a roll thereon, of a pair of grippers slidably mounted upon said machine and arranged to engage and disengage said mattress; means for moving the grippers rearwardly upon the machine during the forward movement thereof and for moving said fingers an equal distance forward on said machine at the completion of said forward movement of said machine; and means for actuating the grippers to engage the mattress during such rearward movement and for releasing said grippers at the completion of said rearward movement and during the forward movement.

15. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals to engage a mattress and form a roll thereon, of a pair of grippers slidably mounted upon said machine and arranged to engage and disengage said mattress; means for moving the grippers rearwardly upon the machine during the forward movement thereof and for moving said fingers an equal distance forward on said machine at the completion of said forward movement of said machine; and means for actuating the grippers to engage the mattress during such rearward movement and for releasing said grippers at the completion of said rearward movement and during the forward movement; and for actuating the grippers to re-engage the mattress previously to the completion of the forward movement of said grippers to take up the slack in said mattress at the edges thereof.

16. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals to engage a mattress and form a roll thereon, of a pair of grippers slidably mounted upon said machine and arranged to engage and disengage said mattress; means for moving the grippers

rearwardly upon the machine during the forward movement thereof and for moving said fingers an equal distance forward on said machine at the completion of said forward movement of said machine; and means for actuating the grippers to engage the mattress during such rearward movement and for releasing said grippers at the completion of said rearward movement and during the forward movement; for actuating the grippers to re-engage the mattress previously to the completion of the forward movement of said grippers to take up the slack in said mattress at the edges thereof; and means for adjusting the timing of the engagement of the grippers with the ticking during such forward movement whereby the amount of slack taken up may be adjusted.

17. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals and having packing needles to engage the edge of a mattress to pack stuffing therein, of grippers slidably mounted upon said machine and arranged to engage and disengage said mattress; means for moving the grippers rearwardly on said machine during each forward movement thereof and for moving said grippers forwardly on said machine at the completion of said forward movement of said machine; and means for actuating the packing needles to disengage and the grippers to engage said mattress during such forward movement of the machine and for actuating said packing needles to engage and the grippers to disengage said mattress at the completion of said forward movement of said machine, and to actuate the grippers to again engage the mattress just previously to said forward movement of said grippers to move a portion of the ticking between said engaging grippers and engaging packing needles toward said packing needles to form a plait and thereby take up the slack in said mattress.

18. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals and having packing needles to engage the corners of a mattress to pack stuffing therein, of grippers slidably mounted upon said machine and arranged to engage and disengage said mattress; means for moving the grippers rearwardly on said machine during each forward movement thereof and for moving said grippers forwardly on said machine at the completion of said forward movement of said machine; and means for actuating the packing needles to disengage and the grippers to engage said mattress during such forward movement of the machine and for actuating said packing needles to engage and the grippers to disengage said mattress at the completion of said forward movement of said machine, and to actuate the grippers to again engage the mattress just previously to said forward movement of said grippers to move a portion of the ticking between said engaging grippers and engaging packing needles toward said packing needles to form a plait and thereby take up the slack in said mattress; and means for timing the re-engagement of said grippers with the ticking of the mattress whereby the amount of slack taken up may be regulated.

19. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals, of grippers arranged to engage a mattress to prevent forward movement of the same with the machine.

20. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals, of grippers slidably mounted upon said machine and actuated thereby to engage a mattress to prevent forward movement of the same with the machine.

21. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals and having packing needles arranged to engage a mattress between said intervals of grippers arranged to engage and prevent movement of said mattress during movement of said machine; and means for releasing the grippers from the mattress and moving said grippers forward; and means for actuating the grippers to again engage the mattress before the completion of the forward movement of said grippers to engage the ticking of the mattress and form a plait adjacent the packing needles, to take up slack in the edge of said mattress.

22. The combination with a mattress roll forming machine adapted to move forwardly at regular intervals and having packing needles arranged to engage a mattress between said intervals of grippers arranged to engage and prevent movement of said mattress during movement of said machine; and means for releasing the grippers from the mattress and moving said grippers forward; means for actuating the grippers to again engage the mattress before the completion of the forward movement of said grippers to engage the ticking of the mattress and form a plait adjacent the packing needles, to take up slack in the edge of said mattress; and means for regulating the timing of the re-engagement of the grippers with the mattress whereby the amount of slack which is taken up may be regulated.

In witness whereof I hereunto set my signature.

JOSEPH W. DROLL.