

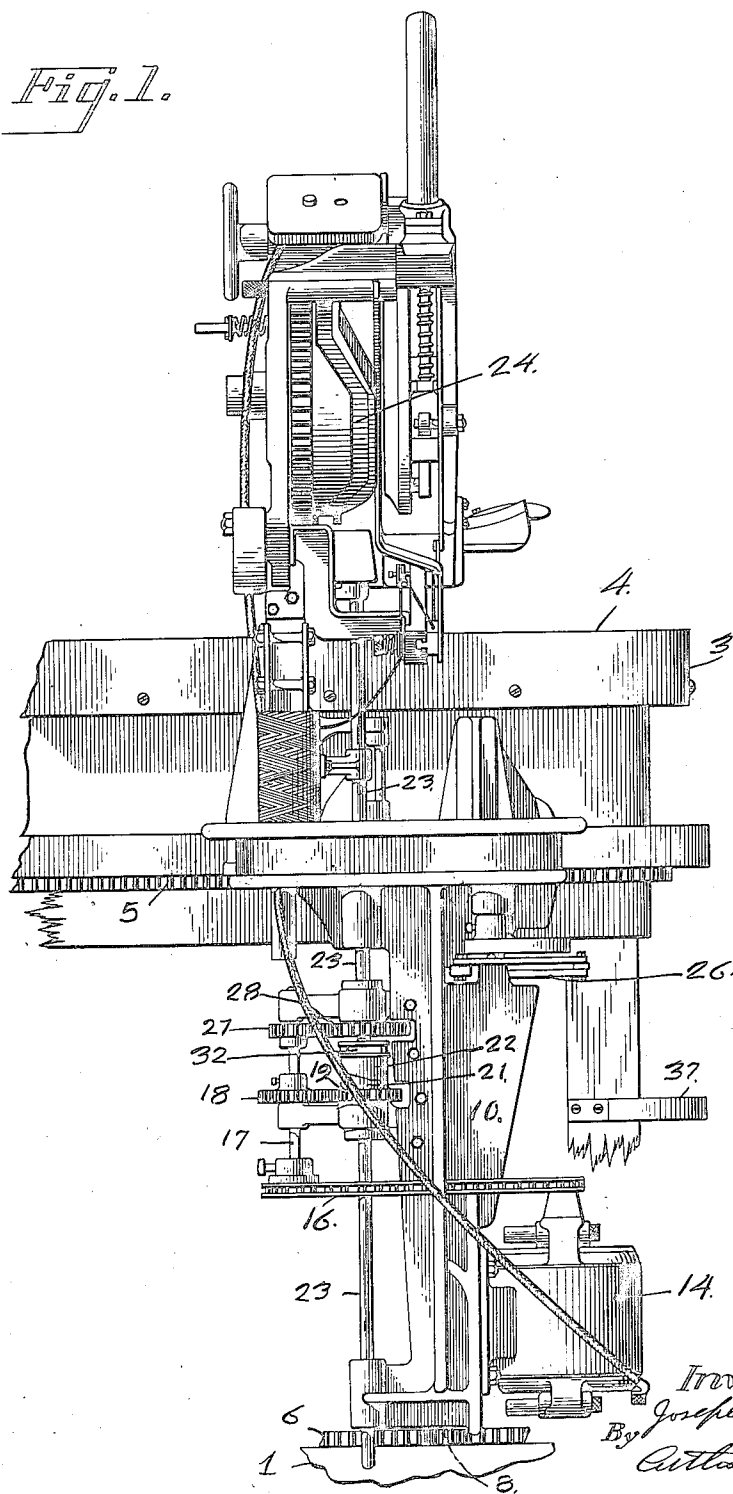
J. W. DROLL.  
 AUTOMATIC VARIABLE SPEED MECHANISM.  
 APPLICATION FILED AUG. 25, 1919.

1,372,871.

Patented Mar. 29, 1921.

6 SHEETS—SHEET 1.

*Fig. 1.*



Inventor  
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 By *Arthur L. Slee*  
 Atty

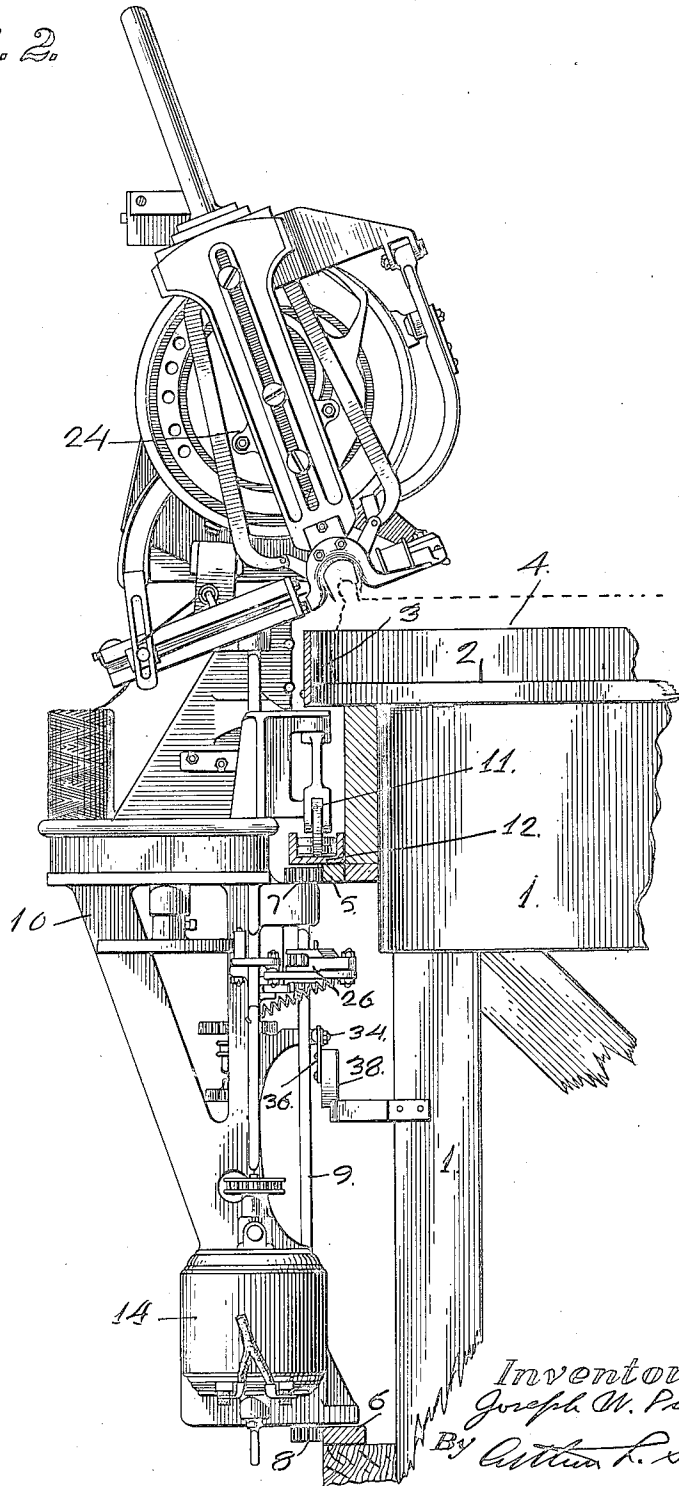
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*Fig. 2.*



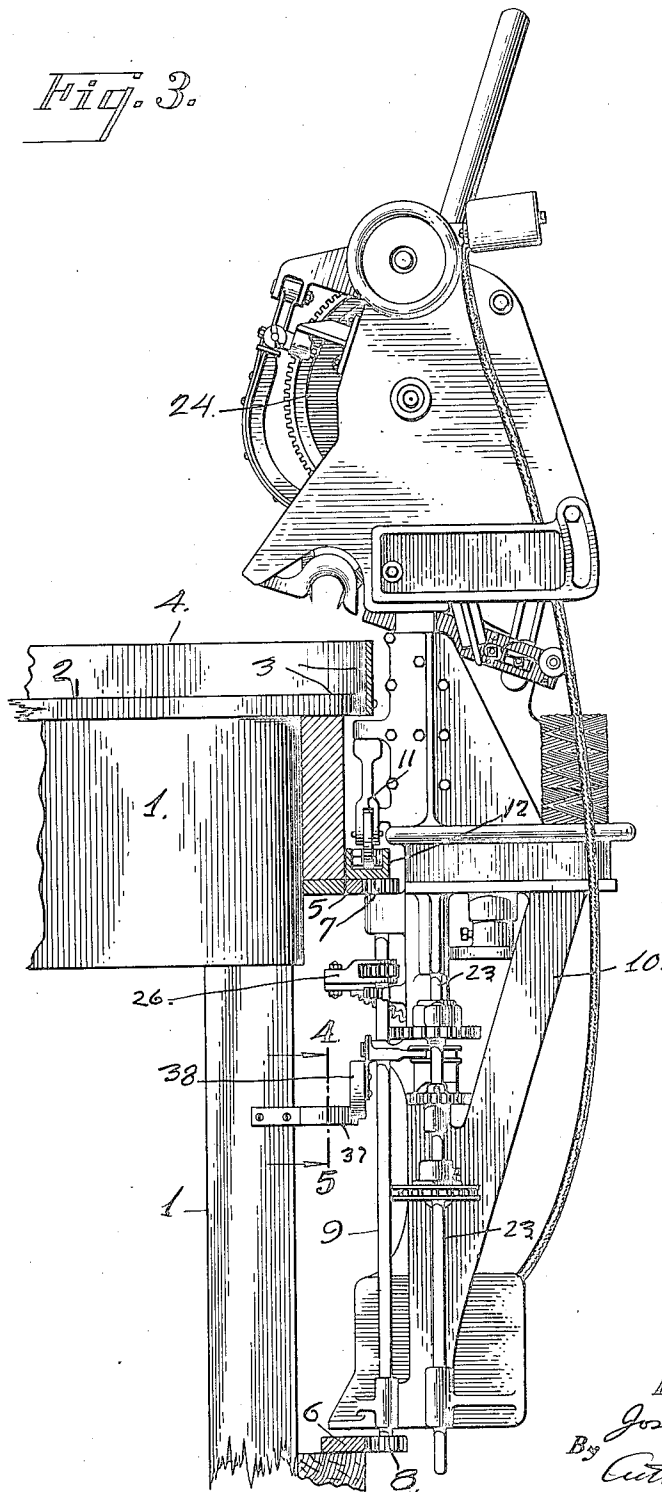
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*Fig. 3.*



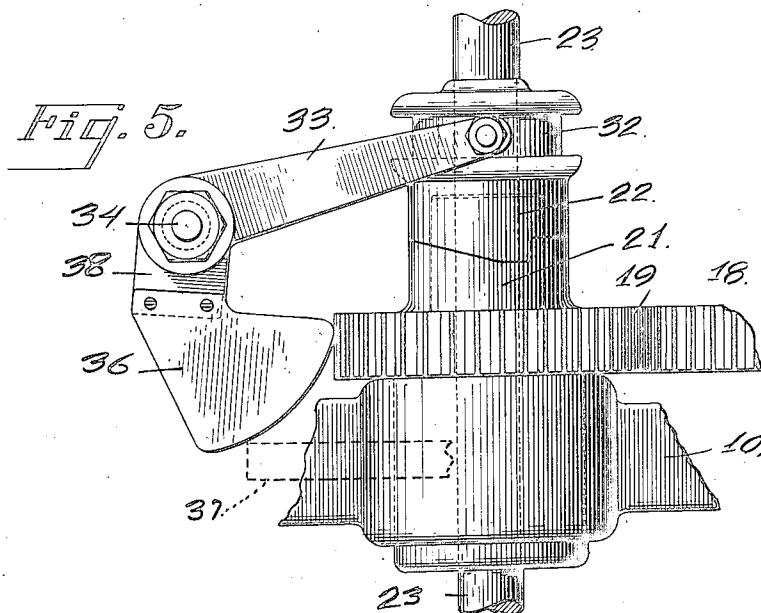
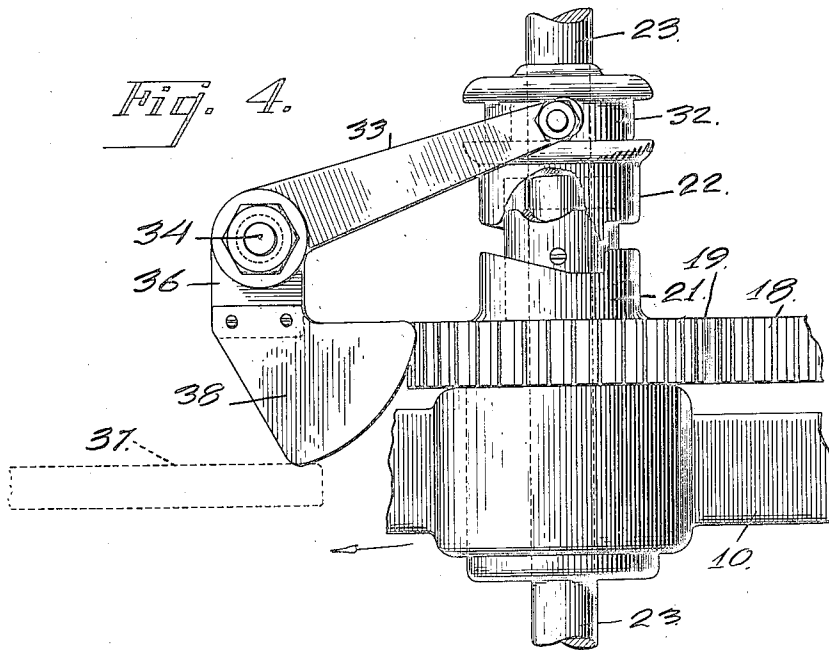
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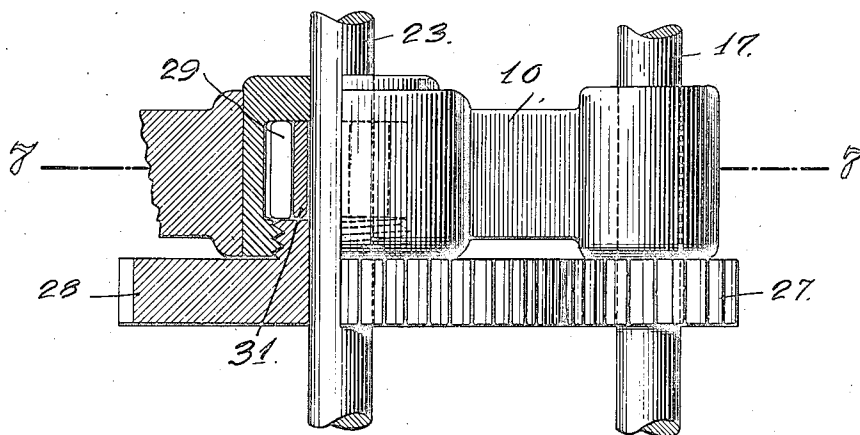
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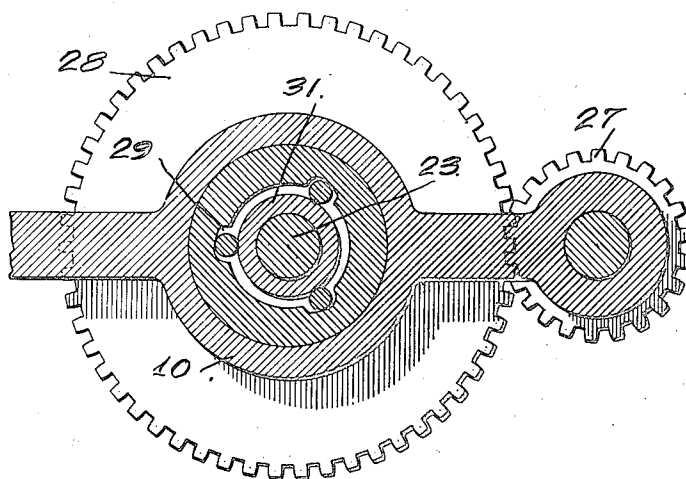
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6 SHEETS—SHEET 5.

*Fig. 6.*



*Fig. 7.*



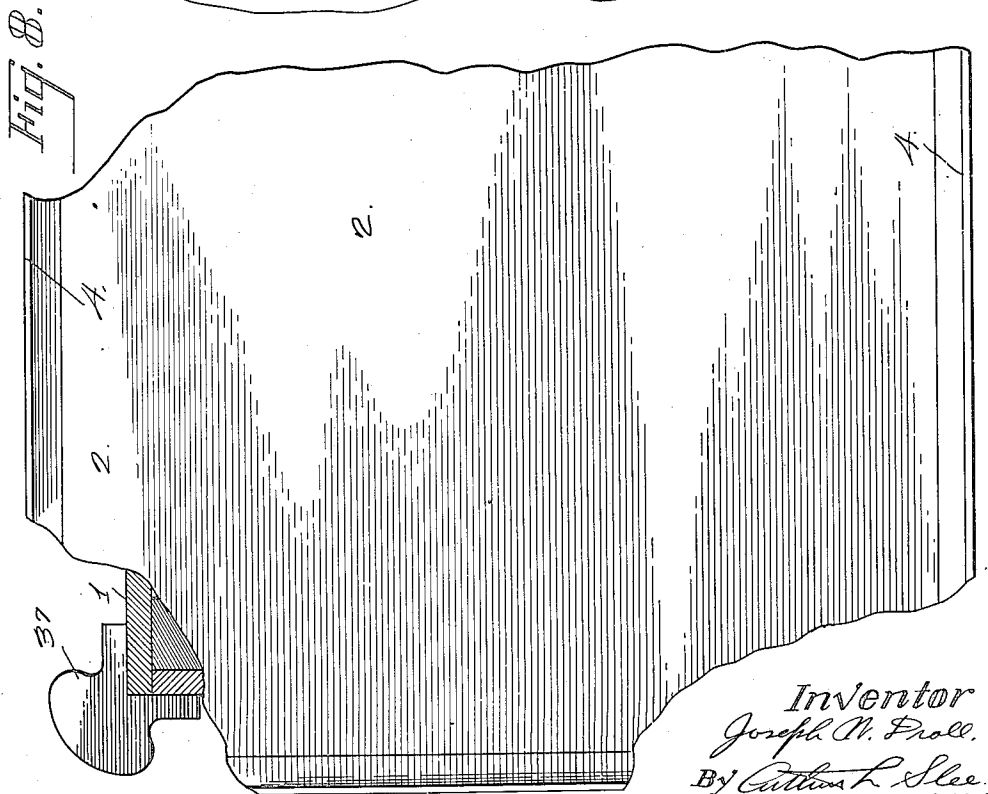
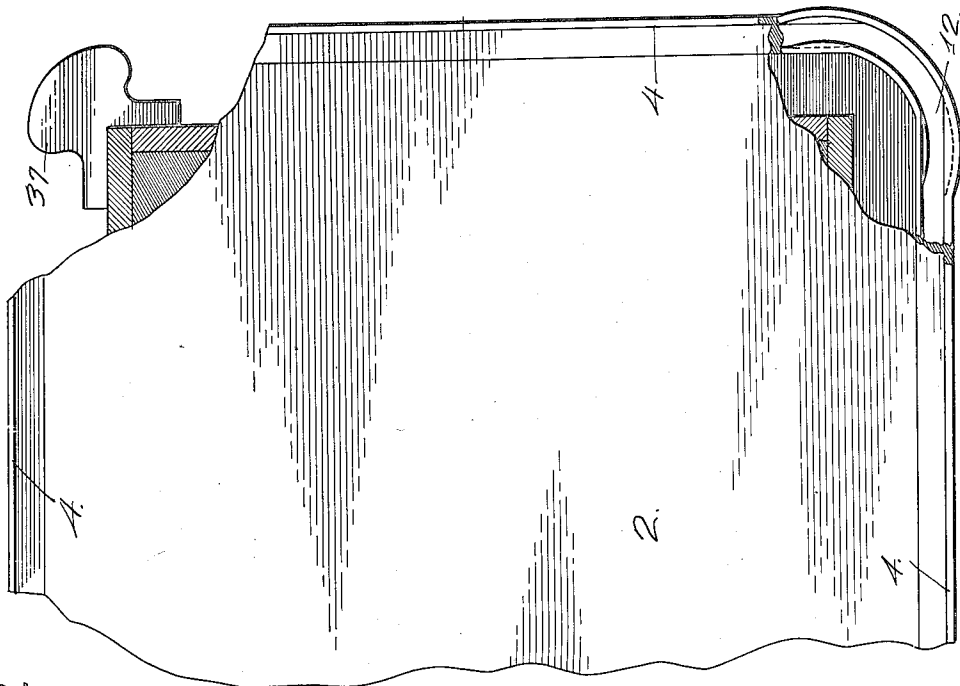
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6 SHEETS—SHEET 6.



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# UNITED STATES PATENT OFFICE.

JOSEPH W. DROLL, OF OAKLAND, CALIFORNIA.

## AUTOMATIC VARIABLE-SPEED MECHANISM.

1,372,871.

Specification of Letters Patent. Patented Mar. 29, 1921.

Application filed August 25, 1919. Serial No. 320,039.

*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 certain new and useful Improvement in Automatic Variable-Speed Mechanism, of which the following is a specification.

My invention relates to improvements in automatic variable speed mechanisms wherein a variable speed mechanism operates in conjunction with means for operating the same at predetermined periods.

The present invention is an improvement on United States Patent No. 1,300,140 issued to me on the 8th day of April, 1919, for mattress roll forming machine, reference to which patent is hereby made, in order that the present improvement may be fully comprehended.

In the mattress roll forming machine referred to a mattress supporting table supports a mattress having the usual rounded corners, to be worked by a mattress roll forming and stitching machine slidably mounted to move around the sides and ends of the table to form a roll on the edge of said mattress, said machine being moved predetermined distances at regular intervals to operate on the mattress.

I have found from experience that while traversing the rounded corners of the table adjacent the rounded corners of the mattress thereon that the machine does not engage the mattress and perform its work as effectively at the same speed as when traversing the straight sides and ends of the table. Therefore, in order to produce rolls on the corners and sides having a uniform compactness and neatness it is necessary to reduce the speed of the machine and also of the operating mechanism thereof while rounding said corners. Also this reduction in speed must be accomplished automatically at a predetermined point.

The primary object of the present invention is to provide improved means for automatically reducing the speed of the operating machine while rounding the corners and for automatically increasing the speed to normal as soon as the rounded corner has been passed.

It is also an object to reduce the working speed of the operating mechanism of the machine while rounding the rounded corners of the table as well as retarding the

forward movement of the machine relatively to the table and the work thereon.

I accomplish these objects by means of the mechanism 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:

Figure 1 is a broken elevation of one corner of the supporting table disclosing the mattress roll forming and stitching machine slidably mounted upon one side thereof and approaching said corner;

Fig. 2 is a broken right hand elevation of the machine and with the table partly in section disclosing the manner in which the machine is slidably mounted upon the table, and the mechanism for operating the variable speed device;

Fig. 3 is a left hand elevation of Fig. 1 disclosing the variable speed mechanism and its controlling device;

Figs. 4 and 5 are enlarged broken detailed views disclosing a portion of the variable speed mechanism in different positions as viewed from the line 4—5 in Fig. 3 of the drawings and in the direction indicated;

Fig. 6 is an enlarged broken detailed view, partly in section, disclosing the low speed members;

Fig. 7 is a sectional view taken on line 7—7 of Fig. 6; in the direction indicated, and

Fig. 8 is a broken plan view of the table disclosing the positions of the trips for automatically shifting the variable speed mechanism.

Referring to the drawings, the numeral 1 is used to designate a mattress supporting table having a top 2 with rounded corners 3 thereon and a vertically disposed flange 4 arranged on all sides of said top 2. Mounted upon the sides and ends of the table 1 and below the top 2 thereof I have provided upper and lower rack bars 5 and 6 engaged by pinions 7 and 8 respectively on the upper and lower ends of a vertically disposed shaft 9 rotatably mounted within a mattress roll forming and stitching machine 19 which is slidably mounted upon the side of the table 1 by means of the pivoted casters 11 which ride in a track 12, said track being preferably formed of an upwardly faced channel, as disclosed in Figs. 2 and 3 of the drawings.

The roll forming and stitching machine comprises, briefly, a frame carrying a suit-

able motor 14 geared by means of a chain drive 16 to a countershaft 17 having a gear 18 thereon meshing with a gear 19, provided with a clutch member 21 to engage a similar  
 5 clutch member 22 slidably feathered to a main driving shaft 23 which operates the packing and sewing mechanism 24 as well as the moving means 26 for moving the machine 10 relatively to the table 1 and the mattress  
 10 thereon, not shown.

The packing and sewing, as well as the moving mechanism, form no part of the present invention and therefore need not be described, except that it should be noted that  
 15 said mechanisms are operated directly from the main driving shaft 23.

The countershaft 17 is also provided with a second gear 27 which meshes with a gear 28 rotatably mounted upon the shaft 23 and  
 20 provided with a ratchet mechanism 29 arranged to engage a collar 31 on the shaft 23 and rotate said shaft when said ratchet mechanism travels at a greater speed than said shaft, and to release said shaft when  
 25 the same rotates at a greater speed than the mechanism 29, the purpose of which will hereinafter be more fully described.

The clutch member 22 feathered upon the main driving shaft 23 is provided with a  
 30 grooved collar 32 which is engaged by the free end of a lever 33 pivotally mounted upon the rear of the machine 10 as at 34 and provided with a depending portion 36 arranged to be engaged by trips 37 stationed  
 35 one at each corner of the table 1.

The gears 18 and 27 of the counter shaft 17 and the gears 19 and 28 together with the clutch members 21 and 22, and the lever 33 and trip 37 constitutes the automatic variable  
 40 speed mechanism.

As the machine 10 is moved intermittently around the sides of the table 1 by the moving mechanism 26, fully described in my co-  
 45 pending application Serial Number 320,038, filed August 25th, 1919, driven directly from the main driving shaft 1, and the roll forming and stitching mechanism engages the edges of a mattress, not shown, and forms and stitches the roll thereon. As the ma-  
 50 chine 10 approaches one of the rounded corners 3 of the table 1 the depending portion 36 of the lever 33 is engaged and actuated by the trip 37 on the corner of said table 1 to raise the grooved collar 32 and thereby dis-  
 55 engage the clutch member 22 feathered on the main drive shaft 23 from the clutch member 21 of the driving gear 19 thereby temporarily releasing the driving power from said main driving shaft 23 which permits  
 60 a decrease of speed of the entire machine and its several mechanisms. When the speed of the shaft 23 decreases to the speed of the gear 28 containing the ratchet clutch 29 said ratchet clutch 29 engages said shaft 23  
 65 and rotates the same at said speed, the clutch

member 22 being meanwhile held from engagement with the clutch member 21 by the continued engagement of the depending portion 36 of the lever 33 by the upper surface of the trip 37 over which the said depending  
 70 portion 36 rides during the period in which the machine 10 is traversing the rounded corner of the table 1.

As soon as said machine 10 has passed the corner the depending portion 36 of the  
 75 lever 33 passes the trip 37 and is then returned to normal position by means of a weight 38 on the depending portion 36 which weight operates to move the clutch member 22 on the main driving shaft 23 into engag-  
 80 ing relation with the clutch member 21 of the gear 19 thereby increasing or returning the speed of the machine and its several mechanisms to normal or high speed to traverse the adjacent straight side portion of  
 85 the table 1.

It should be noted that Figs. 6 and 7 disclose portions of the variable speed transmission, the views being arranged to conform with the views of the cooperating trip-  
 90 ping mechanism disclosed in Figs. 4 and 5.

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

1. The combination with a work support-  
 95 ing table having rounded corners thereon and a machine mounted to move around the sides and corners of the table to engage work thereon, said machine having operating and moving mechanism, of a variable speed  
 100 mechanism mounted upon the machine to transmit movement to said operating and moving mechanism, said variable speed mechanism comprising a main driving  
 105 shaft; a power driven counter shaft; normal and low speed gears mounted upon said counter shaft; a normal speed transmitting gear mounted upon the driving shaft in  
 110 meshing relation with the normal speed gear of the counter shaft; clutching means mounted upon the driving shaft adjacent the normal speed gear adapted to normally impart rotation from said normal speed  
 115 gear to said driving shaft; means for operating said clutching means to release the driving shaft from said normal speed gear while traversing the rounded table corners;  
 120 a low speed gear rotatably mounted upon the driving shaft in meshing relation with the low speed gear of the counter shaft; and means for automatically imparting rotation through said low speed gears to the driving  
 125 shaft when the speed of said driving shaft shall have been reduced to the speed of said low speed gear when said driving shaft is released from the normal speed gear.

2. The combination with a work support-  
 130 ing table having rounded corners thereon and a machine mounted to move around the sides and corners of the table to engage work



thereon, said machine having operating and moving mechanism, of a variable speed mechanism mounted upon the machine to transmit movement to said operating and moving mechanism. said variable speed mechanism comprising a main driving shaft: a power driven counter shaft: normal and low speed gears mounted upon said counter shaft: a normal speed transmitting gear mounted upon the driving shaft in meshing relation with the normal speed gear of the counter shaft: clutching means mounted upon the driving shaft adjacent the normal speed gear adapted to normally impart rotation from said normal speed gear to said driving shaft: means for operating said clutching means to release the driving shaft from said normal speed gear while traversing the rounded table corners: a low speed gear rotatably mounted upon the driving shaft in meshing relation with the low speed gear of the counter shaft: a ratchet operatively mounted adjacent said low speed gear on the driving shaft for automatically engaging said driving shaft and imparting rotation thereto when the speed of said driving shaft shall have been reduced to the speed of said low speed gear when the driving shaft is released from the normal speed gear.

3. The combination with a work supporting table having rounded corners thereon and a machine mounted to move around the sides and corners of the table to engage work thereon, said machine having operating and moving mechanism, of a variable speed mechanism mounted upon the machine to transmit movement to said operating and moving mechanism, said variable speed mechanism comprising a main driving shaft: a power driven counter shaft: normal and low speed gears mounted upon said counter shaft: a normal speed transmitting gear mounted upon the driving shaft in meshing relation with the normal speed gear of the counter shaft: clutching means mounted upon the driving shaft adjacent the normal speed gear adapted to normally impart rotation from said normal speed gear to said driving shaft: means for operating said clutching means to release the driving

shaft from said normal speed gear while traversing the rounded table corners: a low speed gear rotatably mounted upon the driving shaft in meshing relation with the low speed gear of the counter shaft: a ratchet operatively connecting said low speed gear to the driving shaft for automatically engaging said shaft and imparting rotation thereto while released from engagement with the normal speed gear in traversing corners, and for permitting rotation of the driving shaft at normal speed when the normal speed clutch is in engagement.

4. The combination with a work supporting table having rounded corners thereon and a machine mounted to move around the sides and corners of the table to engage work thereon, said machine having operating and moving mechanism of a variable speed mechanism mounted upon the machine to transmit movement to said operating and moving mechanism, said variable speed mechanism comprising a main driving shaft: a power driven counter shaft: normal and low speed gears mounted upon said counter shaft: a normal speed transmitting gear mounted upon the driving shaft in meshing relation with the normal speed gear of the counter shaft: a clutch operatively mounted upon the driving shaft adjacent the normal speed gear adapted to normally impart rotation from said normal speed gear to said driving shaft: a trip mounted at each corner of the table and arranged to operate the clutch to release the driving shaft from the normal speed gear while traversing the rounded table corners: a low speed gear rotatably mounted upon the driving shaft in meshing relation with the low speed gear of the counter shaft: a ratchet operatively connecting said low speed gear to the driving shaft for automatically engaging said shaft and imparting rotation thereto while released from engagement with the normal speed gear in traversing corners, and for permitting rotation of the driving shaft at normal speed when the normal speed clutch is in engagement.

In witness whereof I hereunto set my signature.

JOSEPH W. DROLL.