

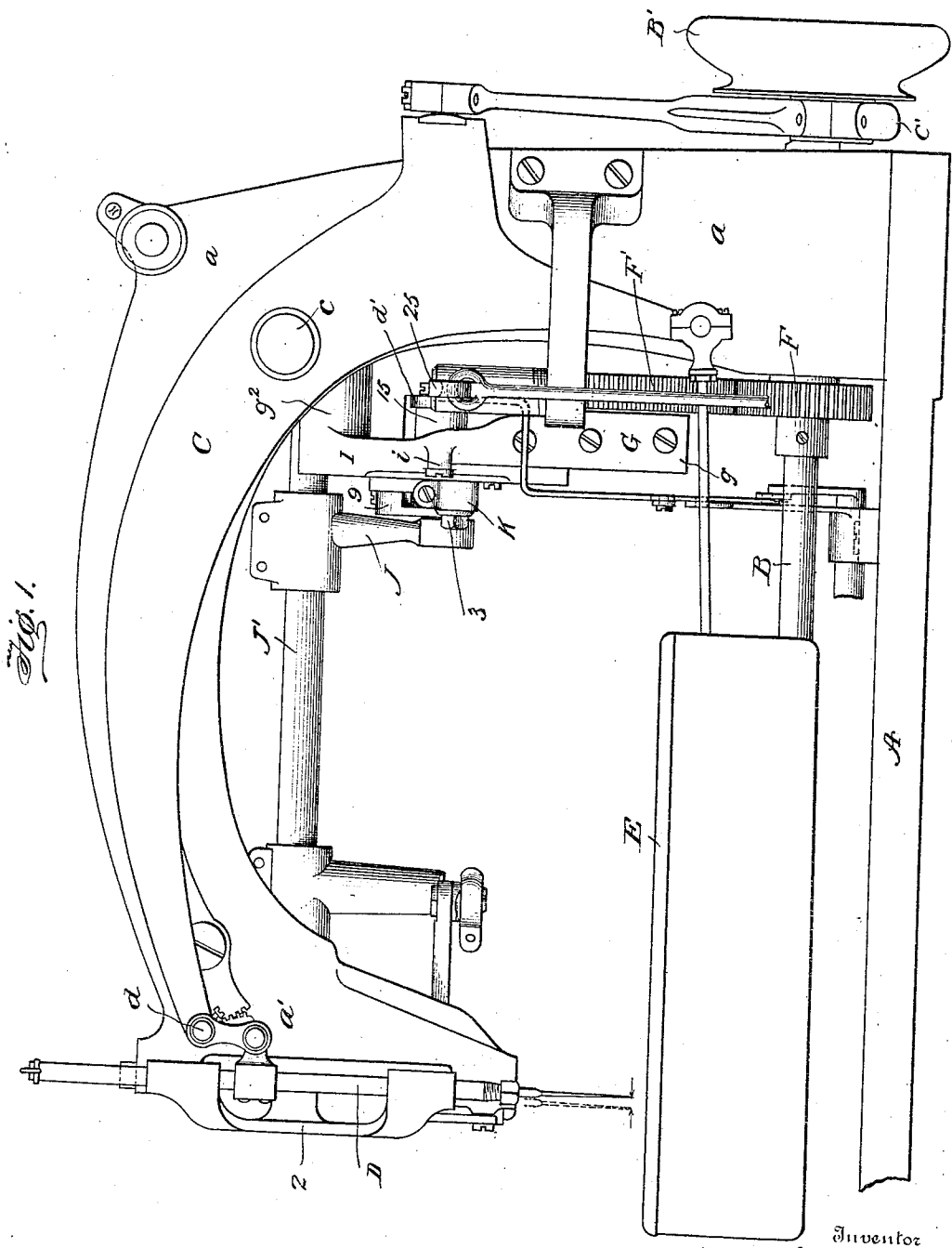
No. 890,582.

PATENTED JUNE 9, 1908.

R. G. WOODWARD.
SEWING MACHINE.

APPLICATION FILED DEC. 3, 1902. RENEWED MAR. 5, 1908.

4 SHEETS—SHEET 1.



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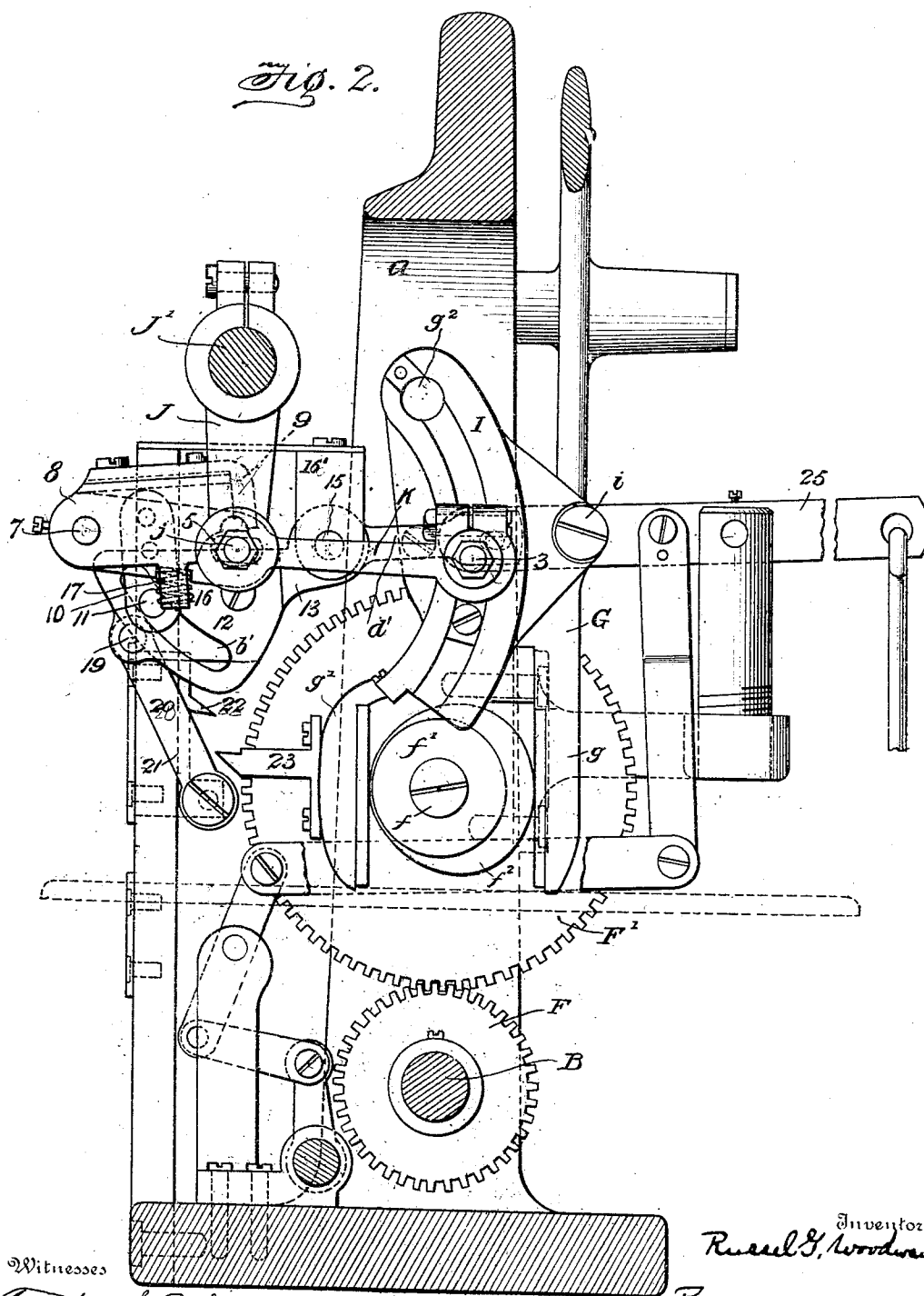
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4 SHEETS--SHEET 2.



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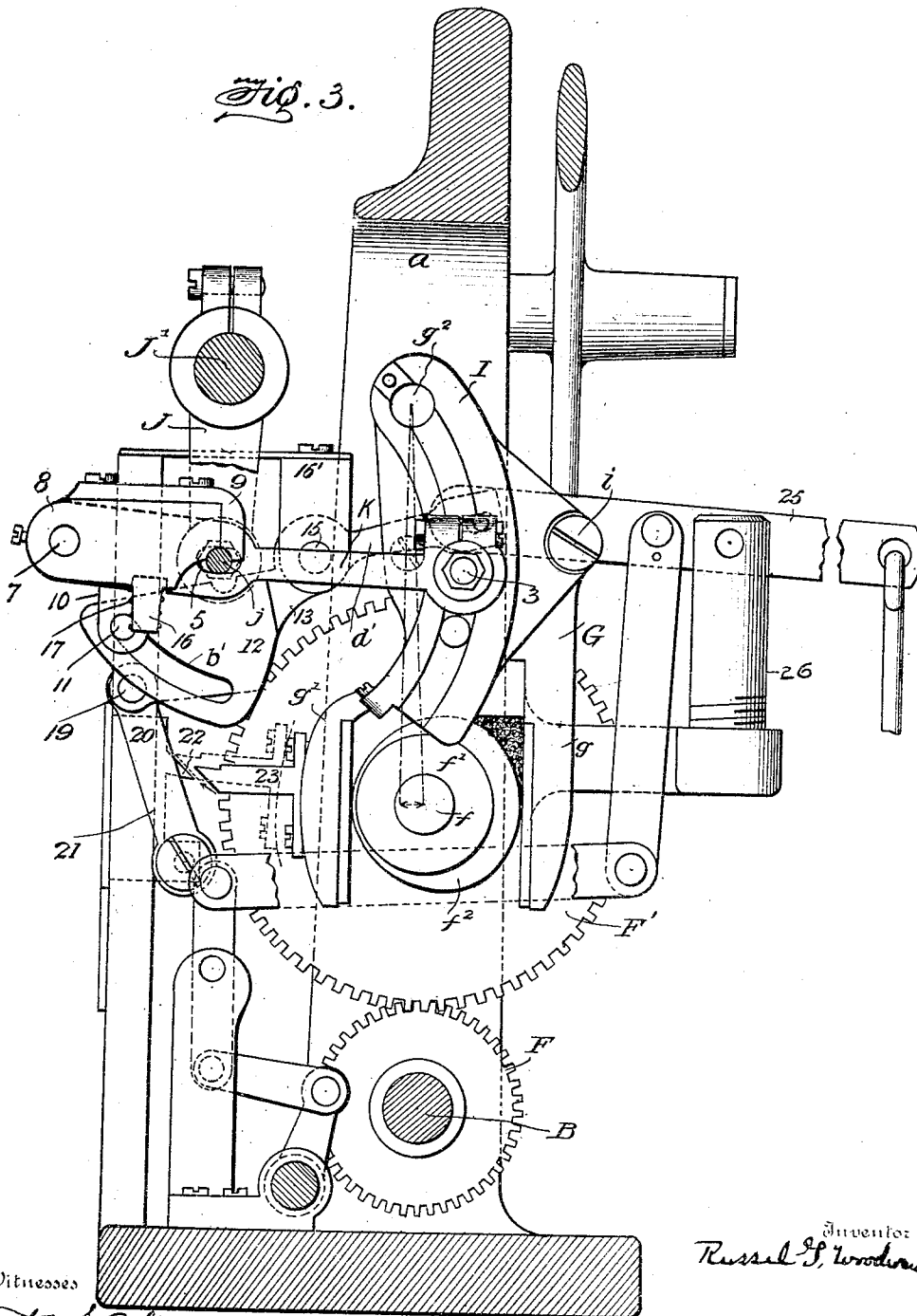
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4 SHEETS—SHEET 3.



Witnesses

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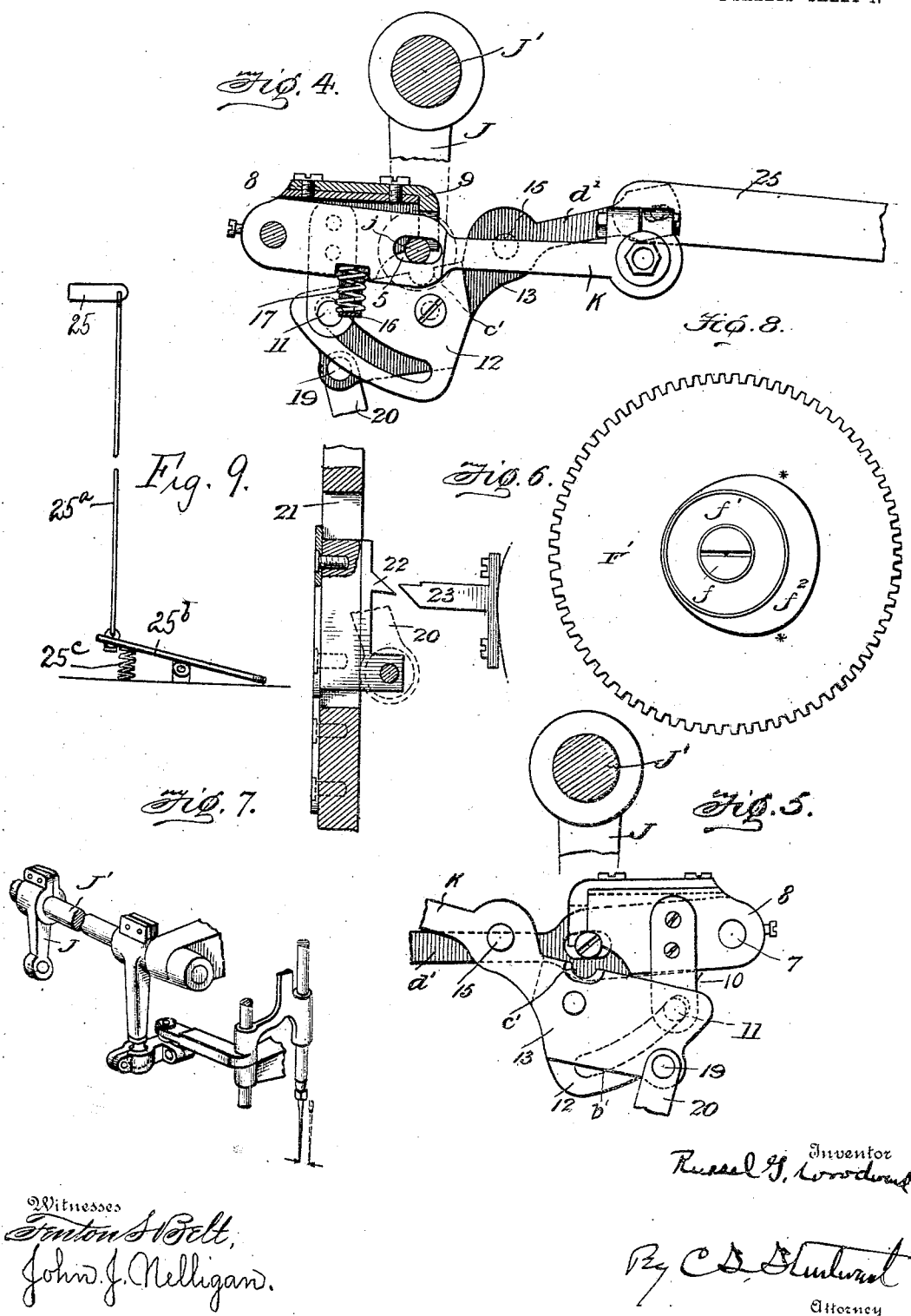
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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SEWING-MACHINE.

No. 890,582.

Specification of Letters Patent.

Patented June 9, 1908.

Application filed December 3, 1902, Serial No. 133,734. Renewed March 5, 1908. Serial No. 419,392.

To all whom it may concern:

Be it known that I, RUSSEL G. WOODWARD, a citizen of the United States, residing at Waukegan, in the county of Lake, State of Illinois, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a description, reference being had to the accompanying drawing, and to the letters and figures of reference marked thereon.

My invention relates to certain improvements in sewing machines, and has for its principal object to construct a machine capable of forming both straight-away and zig zag or over-edge stitches, in which the character of the stitch may be changed at the will of the operator.

In Letters Patent granted to me on the 23rd day of February, 1904, No. 753,187, I have shown, described and claimed a machine of a similar type, and the present invention consists in certain features of construction and arrangement of operating parts, whereby the change from zig zag to straight-away stitching and vice versa, can only be accomplished while the needle is descending, and about to enter the goods, this being accomplished on the left hand stitch when the zig zag mechanism is at work. This machine, as well as the machine illustrated in the aforesaid patent, was designed principally for use in connection with the closing of the uppers of shoes at the rear portion, the object being to first sew the two superposed edges of the uppers together a short distance by a line of straight-away sewing, and then by a line of zig zag stitches, so that when the pieces of leather are spread out flat there will be no ridge upon the inside of the shoe, except at the very top of the rear part. The said strip is then applied in the usual manner over the upper and counter of the shoe. The seam adapted to be sewed on this machine, forms the subject matter of another application filed October 30 1902, Serial No. 129,383.

In addition to the general object of the invention above stated, further objects are to so construct and arrange the mechanism for changing the character of the stitch as to render it in great measure self-adjusting, so that any premature movement of that portion of the stitch-forming mechanism adjusted may be prevented, the movement at either change being so governed by the mechanism

as to at all times produce a perfect stitch at the changing point.

Other objects are to so construct the apparatus that the change of stitch may be made by the operator by a single movement, without stopping the machine; to provide for the positive operation of the parts, and for the adjustment of the various parts of the mechanism, and the renewal of adjustment of those portions subject to the greater wear.

The features of the invention made by me having been set forth in the former patent, the present invention comprises, in a somewhat restricted sense, certain improvements therein, adapted to bring the machine to a greater degree of perfection, both in construction and mode of operation, or perhaps in one sense, the invention may be stated to consist in combining with an overseaming machine adapted to have a zig zag movement imparted to the needle, mechanism for imparting such movement, with means for throwing the same into and out of operation at the will of the operator, said means including locking devices which alternately act at the will of the operator, to hold in engagement or release from engagement the zig zag needle mechanism from its operative connections with the driving shaft.

Furthermore, the invention consists in combining with the usual zig zag mechanism of a sewing machine, with a driving shaft for operating it, of connections between the driving shaft and the zig zag mechanism, including two locking devices operable at the will of the operator, one of which locks the zig zag mechanism to the connections between it and the driving shaft, and the other of which, as said first locking device is thrown out of action, operated to clutch the zig zag mechanism and prevent any accidental swinging of the needle bar gate or frame.

The above statements of the features included in the present invention relate particularly to the application thereof to a machine of the special type referred to, but it will be understood that so far as the feature of throwing into and out of operation a mechanism or member is concerned, the invention may be applicable to other uses, where it is desired to suspend at desired intervals and at the will of the operator, the action of some part of the machine, as for example, a ruffling blade, trimmer, feeding device, etc., or the same shifting mechanism might be ar-

ranged to be automatically operated at certain predetermined intervals to cause a member to be thrown into or out of action.

The invention therefore is not limited solely to the application to the particular machine illustrated, but may be said in a broad sense, to consist of a sewing machine having a moving member whose action it is desired to suspend at intervals, of means for causing said suspension or operation, including locking devices for holding in engagement or out of engagement, the said member and its operative connections.

Furthermore, the invention consists in the various details of construction and arrangements of parts as hereinafter described and referred to in the appended claims.

The invention is illustrated in the accompanying drawings, in which

Figure 1 represents a side elevation of a sewing machine embodying my invention; Fig. 2 is a cross section of the machine, showing the parts in position when the foot lever is in normal position, and the machine is adapted to sew straight-away stitches; Fig. 3 is a similar view, showing the parts in the relation they occupy when the lever is thrown down and the machine is making zig zag stitches; Fig. 4 is a detached detail view, partly in section, of the device for locking the zig zag operating rock shaft in either operative or inoperative position; Fig. 5 is a rear view of Fig. 4; Fig. 6 is a detail view showing the construction of the cam actuated lock for holding the zig zag needle mechanism when straight-away stitches are being sewed; Fig. 7 is a detail perspective view, illustrating the connection between the rock shaft and the needle bar. Fig. 8 is a full view of the cam and the gear-wheel. Fig. 9 is a detail showing the treadle for operating the lever for controlling the stitching.

In these drawings, A represents the base of the machine, from which rises an arm *a*, carrying at its head, *a'*, the usual parts of the machine, such as the presser bar, which it is not deemed necessary to here illustrate.

B represents the main shaft, which at its rear end carries the belt wheel B'.

The machine is of the well known Union Special Overseaming Machine type, and the parts just referred to, as well as the needle lever C, journaled on the stud *c* operated by the eccentric *c'* on the main shaft, to give vertical reciprocating movement to the needle bar D and the link connection *d* between the forward end of the needle bar and the needle bar stud, are all of the construction usual in Union Special machines.

E represents the cloth plate, under which are the looper and feeder mechanisms usually existent in machines of this type, and all operated from the main shaft B in the usual manner. On said shaft B is secured a pinion F, the teeth of which intermesh with those of

the gear wheel F', mounted to turn freely on a stud shaft *f*, secured in the arm *a*. The outer end of the shaft is provided with an enlarged circular head *f'*, forming a guide and support for an eccentric or cam *f*², secured to and rotating with the gear wheel F'. The eccentric or cam *f*² is of the shape shown more clearly in Fig. 8, that is, three cornered, and rotates between and in working contact with the two arms *g*, *g'* of a frame G hung on a pivot stud *g*², carried by the arm *a*, the movements of the eccentric being transmitted to said arms, and effecting an oscillating movement thereof. To the frame G is secured by screws *i*, a segment I having a curved slot *i* therein, the center of which is at times slightly eccentric to the center of a pivot pin *j*, carried by the lower end of an arm J, depending from and rigidly secured to a rock shaft J', from which movement is imparted to the swinging needle bar gate or frame 2, by the usual connections, which are illustrated in detail in Fig. 7.

K represents a bar or link having on its outer end a head embracing a stud 3, which is adjustable up and down in the curved slot 1, to vary the amount of throw of the rock shaft J'. This bar or link K has a longitudinal slot 5, through which passes the pivot pin *j*, the outer end of said bar or link K having pivoted thereto on the pin 7, a pivoted frame 8, which has at its forward end slotted side forks 9 embracing the pivot pin *j* on the arm J. When these forks embrace the pivot pin *j*, the swinging of the segment I imparts oscillation to the rock shaft J'.

Projecting downwardly from this pivoted frame 8 is a plate or lug 10, having on its lower end a pin 11 adapted to fit in a curved slot *b'* on a plate 12, screwed to the plate 13, which is pivoted upon a stud 15, secured to a bracket 16' on the machine frame. The slot *b'* is formed substantially about the pin *j* as a center, and is slightly wider than the diameter of the pin 11, in order to permit freedom of movement of said pin 11 in said slot *b'*, when the stud 3 is adjusted to different points in the length of the curved slot 1. The plate 13, and the plate 12 are recessed as at *c'*, so that when thrown in their upward position they engage the pivot pin *j* on the rock shaft arm J, and thus hold the rock shaft from oscillation when the pivoted frame 8 is out of engagement therewith. The pivoted frame 8 is normally spring pressed upwardly by means of the spring 17 seated in the yoke 16, forming a part of the frame 8, and said spring at its upper end bears upon the under side of the bar K. The plate 13 is pivoted at 19 to the link 20 pivoted at its lower end on the vertically sliding block 21, having on its inner side the projection 22, which coöperates with a projection 23 on the frame G, and prevent movement of the part 22, except when the cam or eccentric

f^2 is in a certain position, this being timed so that the cam will only assume this position as the needle is just about to enter the goods in its descent.

As above stated, by adjusting the stud 3 up or down the curved slot 1, the amount of lateral throw of the needle is varied. In adjusting this the pivoted frame 8 is also adjusted and it is necessary also to adjust automatically the plates 12 and 13, which engage the pin j on the under side. This is done by the curved slot b' , which when the stud 3 in the slotted segment is thrown up to the top, throws the pin 11, in the curved slot, toward the front of the machine, thus adjusting the cut-out portion of the frame 8 to meet the pin j which gives the movement to the rock shaft. The plate 13 has a rearward projection d' connected to the lever 25, which is pivoted to a bracket 26 on the machine frame and is connected to a treadle 25^b by a rod 25^a . The treadle is normally spring pressed upwardly by a spring 25^b leaving the plates 12 and 13 in engagement with the pivot pin j , so that the machine will sew straight-away, but when the lever 25 is pulled downwardly, then the parts are shifted to cause the pivoted frame 8 to engage the pivot pin j , and then oscillatory movement will be imparted to the rock shaft, and, therefore, the zig zag movement to the needle.

Assuming the parts to be in the position shown in Fig. 2, the pin j is locked in the recesses c' in the plates 12 and 13, so that no swinging of the needle bar gate or frame can take place, the pivoted member or frame 8 is out of engagement with the pin j , and the usual straight-away sewing is accomplished on the machine.

The bar K by reason of the slot 5 therein slides back and forth with respect to the pin j . To shift to zig zag sewing, the operator pulls down upon the lever 25 which tilts the cam plates 12 and 13, moving down the slide 21 and forcing the pivoted frame 8 into engagement with the pin j ; when the frame 8 is locked to the pin j then the reciprocatory motion of the bar K is transmitted to the arm J, thus oscillating the rock shaft J' , and through it imparting lateral movement to the needle. It will be understood that the pivoted frame 8, cannot be forced entirely into engagement with the pin j , until cam f^2 has pulled the projection 23, out of line with projection 22, which happens when the needle is on its descent and about to enter the goods. The purpose of the above arrangement is obvious. It is necessary that the needle should be positioned in line with the straight-away stitch when the vibrations thereof are rendered ineffective, so that in the continued reciprocation of the needle the stitches will be properly placed within the fabric. If, therefore, the needle is making the overedge stitch, that is, reciprocating

beyond the edge of the fabric, and the vibrating mechanism should be thrown out, the needle would have to be moved laterally, and if below the fabric the same would be sprung or broken. By my improvement, wherein a stop prevents the throwing out except when the needle point is above the plane of the upper surface of the fabric, or in line for the straight-away stitching, the above objection is avoided. It will also be noted that the stop prevents the throwing in of the vibrations when stitching straight-away except when the parts are properly positioned. The width of the zig zag line of stitching may be regulated by adjustment of bolt or stud 3 in curved slot 1.

In practice it has been found desirable to use a cam f^2 of the shape shown. This three cornered cam gives the necessary time for the change from one style of stitching to the other, as the fork is at rest between the points on the eccentric marked with stars. All the switching of the mechanism takes place while the eccentric moves from one star to the other.

It will be noticed that on this machine the needle punctures in the material will be all in a defined line; that is, all the needle punctures both straight-away and upon one side of the zig zag, are in a straight line, which is absolutely necessary when the seam has to be opened out. It would not do to have the line of straight-away stitches in a line with the center of the zig zag stitches, as an abrupt spot in the back of the shoe would result. This can only be accomplished by having all the lateral movements of the needle bar take place while the needle is above the throat plate of the machine.

The system of levers shown in certain figures of the drawing between the lever 25, and the feed rocker is for the purpose of regulating automatically the length of the zig zag stitches to correspond to the length of the straight-away stitches. This mechanism, while a part of the machine, does not form a part of the subject matter of this application, it being the invention of Lansing Onderdonk, and forming the subject matter of an application filed by him November 4, 1902, Serial No. 130,038.

It will be understood that various minor modifications and changes in the construction of the parts of this machine may be made, without departing from the spirit of the invention.

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

1. A sewing machine, including in combination an implement, means for operating said implement comprising means for vibrating said implement, means for controlling said vibrating means whereby the same is rendered inactive, and means for locking said

implement against vibration when said vibrating means is inactive; substantially as described.

2. A sewing machine including in combination an implement, means for operating said implement comprising a driving shaft, means operated from said driving shaft for vibrating said implement, means for connecting and disconnecting said vibrating means from said driving shaft, and means for locking said implement against vibration when said vibrating means is disconnected; substantially as described.

3. A sewing machine including in combination an implement, means for operating said implement comprising a driving shaft, means operated from said driving shaft for vibrating said implement including a vibrating element, means for connecting and disconnecting said vibrating means to said vibrating element, and means for locking said implement against vibration when disconnected from said vibrating element; substantially as described.

4. A sewing machine including in combination an implement, means for operating said implement, comprising a driving shaft, an element continuously operated from said driving shaft, means for vibrating said implement, means under the control of the operator for connecting and disconnecting said vibrating means to said continuously operated element, and means for locking said implement against vibration when said vibrating means is disconnected; substantially as described.

5. A sewing machine including in combination an implement, means for operating said implement, comprising a driving shaft, an element continuously oscillated from said driving shaft, means for vibrating said implement, means under the control of the operator for connecting and disconnecting said vibrating means to said continuously oscillated element, and means for locking said implement against vibration when said vibrating means is disconnected; substantially as described.

6. In a sewing machine, a needle bar, means for reciprocating the needle bar, said needle bar being mounted for lateral movement, mechanism for effecting such movement, and means for rendering such mechanism idle or active and for locking the needle bar from lateral movement when said mechanism is idle; substantially as described.

7. In a sewing machine, stitch-forming mechanism including a vertically reciprocating and laterally vibrating needle bar, means for vertically reciprocating said needle bar, means for laterally vibrating it, means under the control of the operator for rendering idle or active the needle vibrating means, and a locking device for holding the needle bar from vibratory movement during idle move-

ment of said vibrating means; substantially as described.

8. In a sewing machine, stitch-forming mechanism including a vertically reciprocating and laterally vibrating needle bar, means for vertically reciprocating said needle bar, means for laterally vibrating it, a lever under the control of the operator for rendering the needle vibrating means idle or active, and a locking device for holding the needle bar from vibratory movement during idle movement of the vibrating means; substantially as described.

9. In a sewing machine, stitch-forming mechanism including a vertically reciprocating and laterally vibrating needle bar, means for vertically reciprocating said needle bar, means for laterally vibrating it, means under the control of the operator for rendering the needle-vibrating means idle or active; a locking device for holding the needle bar from vibratory movement during idle movement of the vibrating means, and means for preventing change from idle to active movement of said vibrating mechanism except at a predetermined point in the descent of the needle bar; substantially as described.

10. In a sewing machine, stitch-forming mechanism adapted to make either straight away or overseaming stitches, means under the control of the operator for controlling the stitch-forming mechanism, so that either straight-away or overseaming stitches are formed, said means including a locking device for holding the stitch-forming mechanism in position for the formation of straight away stitches; substantially as described.

11. A sewing machine including a needle bar, means for reciprocating said needle bar, means for controlling said needle bar whereby overseaming stitches are formed, a driving shaft and a locking device for connecting said needle bar controlling means to said driving shaft, means for connecting and disconnecting said locking device, and a locking device for engaging said needle bar controlling means as the first named locking device is disconnected for preventing movements of said needle bar controlling means; substantially as described.

12. In a sewing machine adapted to make either straight-away or zig zag stitches, including a reciprocating needle bar, and a laterally swinging gate or frame supporting the same, a driving shaft, connections between the driving shaft and the needle bar gate or frame, for swinging the latter laterally, and means for engaging or disengaging said connections at the will of the operator, said means including a locking device for holding the needle bar gate or frame from swinging when straight-away sewing is being done on the machine; substantially as described.

13. In a sewing machine adapted for straight-away or overseaming sewing, the

combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a pivoted segment, means for oscillating the same, a link or bar having connections with said segment, whereby it is reciprocated, connections between the link or bar and the needle bar, including a locking frame carried by said link or bar, with means for controlling it to cause it to engage or release the needle bar vibrating mechanism; and positively acting means for holding said needle from vibrating when released from its vibrating means, substantially as described.

14. In a sewing machine adapted for straight-away or overseaming sewing, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a pivoted segment, means for oscillating the same, a link or bar having connections with said segment, whereby it is reciprocated, and connections between the link or bar and the needle bar, including a locking frame, with means for controlling it to cause the needle bar to vibrate or remain in a constant vertical plane, and a second locking frame or member moving with the first, to engage or release said needle bar vibrating mechanism, acting when the first locking device is inactive; substantially as described.

15. In a sewing machine adapted for straight-away and zig zag sewing, the combination with the needle bar, of an operating means, mechanism for transmitting movement from the operating mechanism to the needle bar to vibrate the latter, means for disconnecting such transmitting mechanism to allow idle movement of the operating means, and a locking means for holding the needle bar from vibratory movement when said transmitting mechanism is disconnected; substantially as described.

16. In a sewing machine adapted for straight-away or zig zag sewing, the combination of the needle bar and its operating mechanism, means for transmitting lateral vibratory movement to said needle bar, including a reciprocating member, with means for operating it, and a locking device under the control of the operator, for locking the needle bar vibrating mechanism to the reciprocating member, and a second locking device movable with the first for locking the needle vibrating mechanism from movement when the first locking device is inactive; substantially as described.

17. In a sewing machine adapted for straight-away or zig zag stitching, a driving shaft, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a vibrating member operatively connected to the needle bar, a segment oscillated by said

driving shaft, a link connected to said segment, means under the control of the operator for connecting and disconnecting said link to said vibrating member, and means for locking said needle from vibration when disconnected from said vibrating means.

18. In a sewing machine adapted for straight-away or zig zag stitching, a driving shaft, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a vibrating member operatively connected to the needle bar, a segment oscillated by said driving shaft, a link connected to said segment, and means under the control of the operator for connecting and disconnecting said link to said vibrating member, and means operated by said segment for preventing said connecting and disconnecting with the vibrating member, except at certain points in the revolution of the driving shaft.

19. In a sewing machine adapted for straight-away or zig zag stitching, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a reciprocating bar or member, and means for operating it, connections between the reciprocating bar or member and the needle bar vibrating mechanism, including a rock shaft, a pin carried thereby, said reciprocating bar or member having sliding engagement with said pin, and means for locking the bar or member to the pin, and for releasing the locking means, all under the control of the operator; substantially as described.

20. In a sewing machine adapted for straight-away or zig zag stitching, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar comprising a reciprocating bar or member, and means for operating it, connections between the reciprocating bar or member, and the needle bar vibrating mechanism, including a rock shaft, a pin carried thereby, said reciprocating bar or member having sliding engagement with said pin, and means for locking the bar or member to the pin; and for releasing the locking means, all under the control of the operator, and means for engaging the pin when the locking means between the bar and pin are released; substantially as described.

21. In a sewing machine adapted for straight-away or zig zag stitching, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar comprising a reciprocating bar or member provided with a slot, and means for operating said bar or member, a rock shaft for vibrating the needle bar, a pin carried by said rock shaft and passing through said slot, and means for locking the reciprocating bar or member to said pin and means

for preventing the operation of the locking means except at certain periods in the movement of the needle bar; substantially as described.

22. In a sewing machine adapted for straight-away or zig zag sewing, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar comprising a reciprocating bar or member provided with a slot, and means for operating said bar or member, a rock shaft for vibrating the needle bar, a pin carried by said rock shaft and passing through said slot, and means for locking the reciprocating bar or member to said pin, said means comprising a frame pivoted to the reciprocating bar or member, and adapted to engage the pin; substantially as described.

23. In a sewing machine adapted for straight-away or zig zag stitching; the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar comprising a reciprocating bar or member provided with a slot, and means for operating said bar or member, a rock shaft for vibrating the needle bar, a pin carried by said rock shaft and passing through said slot, and means for locking the reciprocating bar or member to said pin, said means comprising a frame pivoted to the reciprocating bar or member, and adapted to engage the pin, and a locking device pivoted to the machine frame and adapted to engage said pin when the other pivoted frame is out of engagement therewith; substantially as described.

24. In a sewing machine adapted for straight-away or zig zag stitching, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar comprising a reciprocating bar or member provided with a slot, and means for operating said bar or member, a rock shaft for vibrating the needle bar, a pin carried by said rock shaft and passing through said slot, and means for locking the reciprocating bar or member to said pin; means for engaging the pin when the other locking device is inactive, and connections between the two whereby they alternately engage the pin at the will of the operator; substantially as described.

25. In a sewing machine adapted for straight-away or zig zag stitching, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a reciprocating bar or member, and a rocking shaft carrying a pin, means for locking said rock shaft pin to the reciprocating bar or member, including a pivoted frame, a pivoted plate adapted to engage said pin when the pivoted frame is released, a reciprocating slide movable as said pivoted plate is moved, a stop carried by a movable part of the machine adapted to prevent movement of said slide, and a slot and

pin connection between the two pivoted locking devices; substantially as described.

26. In a sewing machine adapted for straight-away or zig zag stitching, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a reciprocating bar or member, and a rocking shaft carrying a pin, means for locking said rock shaft pin to the reciprocating bar or member, including a pivoted frame, a pivoted plate adapted to engage said pin when the pivoted frame is released, a reciprocating slide movable as said pivoted plate is moved, and a slot and pin connection between the two pivoted locking devices, and a stop carried by a movable part of the machine, adapted to prevent movement of said slide, except at predetermined points; substantially as described.

27. In a sewing machine adapted for straight-away or zig zag stitching, a driving shaft, the combination of the needle bar and means for reciprocating it vertically, means for vibrating it laterally including a vibrating member, connections between the vibrating member and the driving shaft, means for throwing said connections into and out of operation, and controlled by the operator, and a stop carried by a moving part of the machine mechanism for preventing complete movement of said controlling means, except at predetermined points; substantially as described.

28. In a sewing machine adapted for straight-away or zig zag stitching, a driving shaft, the combination of the needle bar and means for reciprocating it vertically, means for vibrating it laterally, including a vibrating member, a pivoted segment, connections between the vibrating member and the pivoted segment, and between the latter and the driving shaft, means for throwing said connections into and out of operation, and controlled by the operator, said means including a reciprocating slide, and a stop, carried by the pivoted segment for preventing the movement of the slide, except at predetermined points; substantially as described.

29. In a sewing machine, including a laterally vibrating needle, and means for operating it, means for adjusting the extent of vibratory movement of the needle, a movable member for operatively connecting and disconnecting the connections between the operating means and the needle, and means for automatically adjusting said movable member as the needle throw is changed; substantially as described.

30. In a sewing machine adapted for straight-away or zig zag sewing, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a reciprocating member, and means for operating it, means for adjusting the throw thereof and locking de-

vices adjustable as the throw of the reciprocating member is adjusted; as and for the purpose set forth.

31. In a sewing machine adapted for straight-away or zig zag sewing, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar, comprising a reciprocating member, with means for operating it, and a locking device under the control of the operator for locking the needle vibrating mechanism from movement when out of connection with the reciprocating member, means for adjusting the throw of the reciprocating member, and simultaneously adjusting the position of the locking device; substantially as described.

32. In a sewing machine adapted for straight-away or zig zag stitching, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar comprising a reciprocating bar or member, and means for operating it, connections between the reciprocating bar or member, and the needle bar vibrating mechanism, including a rock shaft, a pin carried thereby, said reciprocating bar or member having sliding engagement with said pin, and means for locking the bar or member to the pin, and for releasing the locking means, all under the control of the operator, means for engaging the pin when the locking means between the bar and pin are released, means for adjusting the throw of the reciprocating member, and simultaneously adjusting the position of the locking devices; substantially as described.

33. In a sewing machine adapted for straight-away or zig zag stitching, the combination of the needle bar and its operating mechanism, means for laterally vibrating said needle bar comprising a reciprocating bar or member provided with a slot, and means for operating said bar or member, a rock shaft for vibrating the needle bar, a pin carried by said rock shaft and passing through said slot, means for locking the reciprocating bar or member to said pin, said means comprising a frame pivoted to the reciprocating bar or member, and adapted to engage the pin, and a second locking device pivoted to the machine frame and adapted to engage said pin when the other frame pivoted to the reciprocating bar is out of engagement therewith, means for adjusting the throw of the member engaging the pin, and automatically adjusting the first locking means to engage the pin; substantially as described.

34. In a sewing machine, the combination with a needle bar and its operating mechanism, of means for laterally vibrating the needle bar, a pair of alternately operative locking devices, one of which forms a part of the vibrating mechanism, and is movable to

operative and inoperative positions, and the other serving to hold the needle bar from vibratory movement when the first locking device is inoperative, means for adjusting the extent of lateral vibration of the needle bar and for simultaneously adjusting the position of the first locking device; substantially as described.

35. In a sewing machine, the combination with a needle bar and its operating mechanism, of means for laterally vibrating the needle bar, a pair of alternately operative locking devices, one of which forms a part of the vibrating mechanism and is movable to operative and inoperative positions and the other serving to hold the needle bar from vibratory movement when the first locking device is inoperative, means for adjusting the extent of lateral vibration of the needle bar, and a pin and slot connection between said locking devices to permit simultaneous adjustment of both; substantially as described.

36. A sewing machine, including in combination an implement, means for operating said implement comprising means for vibrating said implement, means for controlling said vibrating means whereby the same is rendered inactive, means for locking said implement against vibration when said vibrating means is inactive, and means for adjusting the extent of vibration of said implement; substantially as described.

37. A sewing machine including in combination an implement, means for operating said implement comprising a driving shaft, means operated from said driving shaft for vibrating said implement including a locking device for connecting and disconnecting the driving shaft to said operating means, means for simultaneously adjusting the extent of vibration of said implement and the position of the locking device, and a second locking device for holding said implement stationary when the first locking device is disconnected; substantially as described.

38. A sewing machine including in combination an implement, means for operating said implement comprising a driving shaft, means operated from said driving shaft for vibrating said implement, including a locking device for connecting and disconnecting the driving shaft to said operating means, means for simultaneously adjusting the extent of vibration of said implement and the position of the locking device; substantially as described.

39. In a sewing machine adapted for straight-away or zig zag stitching, the combination of a driving shaft, a needle, means for reciprocating the same vertically, means for vibrating the needle laterally, including a vibrating member, connections between the vibrating member and the driving shaft, controlling means for rendering the vibrations imparted through said connection in-

effective, said controlling means being manually operated, and a stop carried by a moving part of the machine mechanism for preventing complete movement of said controlling means, except at a predetermined portion of the reciprocation of the needle.

40. The combination of a needle, complementary stitch-forming mechanism, means for vibrating said needle laterally to position the same for forming alternate stitches over the edge of the fabric, controlling means for rendering said vibrating means ineffective, whereby straight-away stitching may be produced, and means for preventing the operation of said controlling means when the needle is positioned for making the overedge stitches.

41. The combination of a needle and complementary stitch-forming mechanism, for producing straight-away stitching, means for vibrating said needle laterally, whereby alternating stitches are formed outside of the line of straight-away stitching; controlling means whereby said vibrating means may be rendered ineffective including a lever, a treadle connected to said lever, and means cooperating with said lever for preventing the operation of said controlling means when making stitches out of line with the straight-away stitching.

42. The combination of a needle, complementary stitch-forming mechanism, means for vibrating said needle laterally to position the same for forming alternate stitches over the edge of the fabric, controlling means for rendering said vibrating means ineffective whereby straight away stitching may be produced, and automatic means for preventing the operation of said controlling means, when the needle is positioned for making the overedge stitches.

43. In a machine for straight-away and zig zag stitching, a needle, complementary stitch-forming mechanism, means for vibrating said needle laterally, manually controlled means for rendering said vibrating means effective to vibrate said needle, and automatic means operating upon the manually controlled means for causing said needle to form straight-away stitching when said manually controlled means is released, and means for preventing the operation of said automatic means when said needle is forming the stitches out of line with the straight-away stitching.

44. In a machine for straight-away and zig zag stitching, a needle and complementary stitch-forming mechanism, means for vibrating said needle to form zig zag stitches, a treadle, means intermediate said treadle and said vibrating mechanism including a lever, whereby the latter may be rendered effective or ineffective to vibrate the needle, and means cooperating with said lever for preventing the operation of said treadle except when said needle is in a predetermined position.

45. The combination of a needle and complementary stitch-forming mechanism for producing straight-away stitching, means for vibrating said needle laterally to position the same for forming alternate stitches over the edge of the fabric, manually controlled means for rendering said vibrating mechanism effective or ineffective, and means for preventing the operation of said manually controlled means during the formation of alternate stitches in the straight-away stitching.

46. In a machine for straight-away and overedge stitching, a needle and complementary stitch-forming mechanism, mechanism for vibrating said needle to form the overedge stitching, controlling means for rendering said vibrating mechanism effective or ineffective, including a lever, a treadle connected thereto for operating the same to cause the overedge stitching to be effected, a spring for operating said lever to cause the straight-away stitching to be effected, and means for preventing the operation of said lever while the needle point is below the plane of the upper surface of the material during the formation of certain stitches.

47. A sewing machine, including in combination, a work support, a needle, means for reciprocating said needle, mechanism for vibrating the same laterally, including means for producing a dwell at the extremes of the lateral vibrations, manually operated controlling means for rendering said vibrating mechanism ineffective, and means for preventing action of the controlling means except during a dwell.

48. A sewing machine, including in combination, a work support, a needle, means for reciprocating said needle, means for vibrating said needle laterally, including a cam having a concentric portion for causing a dwell in the lateral vibration of said needle, manually operated controlling means for rendering said vibrating means ineffective, and means for preventing the operation of said controlling means, except during a dwell in the lateral vibrations of said needle.

49. A sewing machine, including in combination, a work support, a needle, means for reciprocating said needle, means for vibrating said needle laterally including a cam having a concentric portion for causing a dwell in the lateral vibration of said needle, controlling means for rendering said vibrating means ineffective, a stop carried by said needle-vibrating means, and preventing the operation of said controlling means, except during a dwell in the lateral vibrations of said needle.

50. A sewing machine, including in combination, a needle, means for reciprocating the same, means for vibrating the same laterally including a pivoted lever having a forked end, a cam located in said fork and having a concentric portion, whereby said le-

ver is given a dwell at each end of its vibration, controlling means for rendering said vibrating means ineffective, and a stop carried by said lever and lying in the path of the controlling means, except at one extreme throw of said lever.

51. A sewing machine, including in combination, a needle, means for reciprocating the same, means for vibrating the same laterally including a pivoted lever having a forked end, a cam located in said fork and having a concentric portion, whereby said lever is given a dwell at each end of its vibration, controlling means for rendering said vibrating means ineffective, including a lever, a treadle for operating said last named lever, an arm connected to said lever, and a stop carried by the first named pivoted lever and lying in the path of said arm for preventing the operation of said controlling means, except when said first named pivoted lever is at one extreme throw.

52. In a sewing machine, a needle, means for reciprocating said needle, means for vibrating the same laterally for forming zigzag stitches of a predetermined length, means to suspend the lateral movement of the needle at the will of the operator while the machine is in operation, whereby straight away stitching may be made and means for preventing the formation of short zigzag stitches when changing from zigzag stitching to straight away stitching.

53. In a sewing machine for straight away and zigzag stitching, a needle, and complementary stitch forming mechanism, means for vibrating the needle to form zigzag stitches, controlling means for rendering said vibrating means effective or ineffective, including a lever, a treadle for moving said lever in one direction, a spring for moving said lever in the opposite direction and means for preventing the movement of said lever except at a predetermined time in the reciprocation of the needle.

54. The combination of a needle and complementary stitch forming mechanism for producing straight away stitching, means for vibrating said needle laterally whereby alternating stitches are formed outside of the line of straight away stitching, controlling means whereby said vibrating means may be rendered ineffective, including a lever, a treadle for depressing said lever, a spring for raising said lever and means including a stop, carried by a moving part of the machine mechanism for preventing the operation of said lever except at a predetermined time in the reciprocation of the needle.

55. The combination of a needle, complementary stitch forming mechanism, means for vibrating said needle laterally, controlling means for rendering the said vibrating means ineffective including a lever, a stop moving with said lever, and a member moving with

the machine mechanism, and cooperating with said stop for preventing the movement of said lever except at a predetermined time in the reciprocation of the needle.

56. The combination of a needle, complementary stitch forming mechanism, means for vibrating said needle laterally, controlling means for rendering said vibrating means ineffective, including a lever, a stop moving with said lever, a member moving with the machine mechanism and cooperating with said stop for preventing the movement of said lever except at a predetermined time in the reciprocation of the needle, a treadle, means for connecting said treadle to said lever and for moving the same in one direction and a spring for moving the lever in the opposite direction.

57. In a sewing machine, a needle, means for reciprocating said needle, mechanism for vibrating the same laterally to form zigzag stitches, said lateral vibrating means including a fork, means for vibrating said fork, a member connected to and moving continuously, bodily with said fork, and manually controlled means for rendering the movements of said member ineffective, and for positively holding said needle whereby a line of stitches may be formed substantially in line with one of the rows of needle punctures, in the zigzag stitches when the lateral vibrations of the needle are suspended.

58. In a sewing machine, a needle, means for reciprocating said needle, mechanism for vibrating the same laterally, said lateral vibrating means including a fork, means for vibrating said fork, a member connected to and moving continuously bodily with said fork and manually controlled means for rendering the movements of said member ineffective, whereby the lateral vibrations of the needle are suspended, and means for preventing the operation of the manually controlled means except at a predetermined time in the reciprocation of the needle.

59. In a sewing machine, a needle, means for reciprocating said needle, mechanism for vibrating the same laterally to form zigzag stitches, said lateral vibrating means including a pivoted fork, a link connected to and moving continuously with said fork, and means for rendering the movements of said link ineffective, and for positively holding said needle, whereby a line of stitches may be formed, substantially in line with one of the rows of needle punctures, in the zigzag stitches when the lateral vibrations of the needle are suspended.

In testimony whereof I affix my signature, presence of two witnesses.

RUSSEL G. WOODWARD.

Witnesses:

CHESTER MCNEIL,
JULIUS SHIRE.