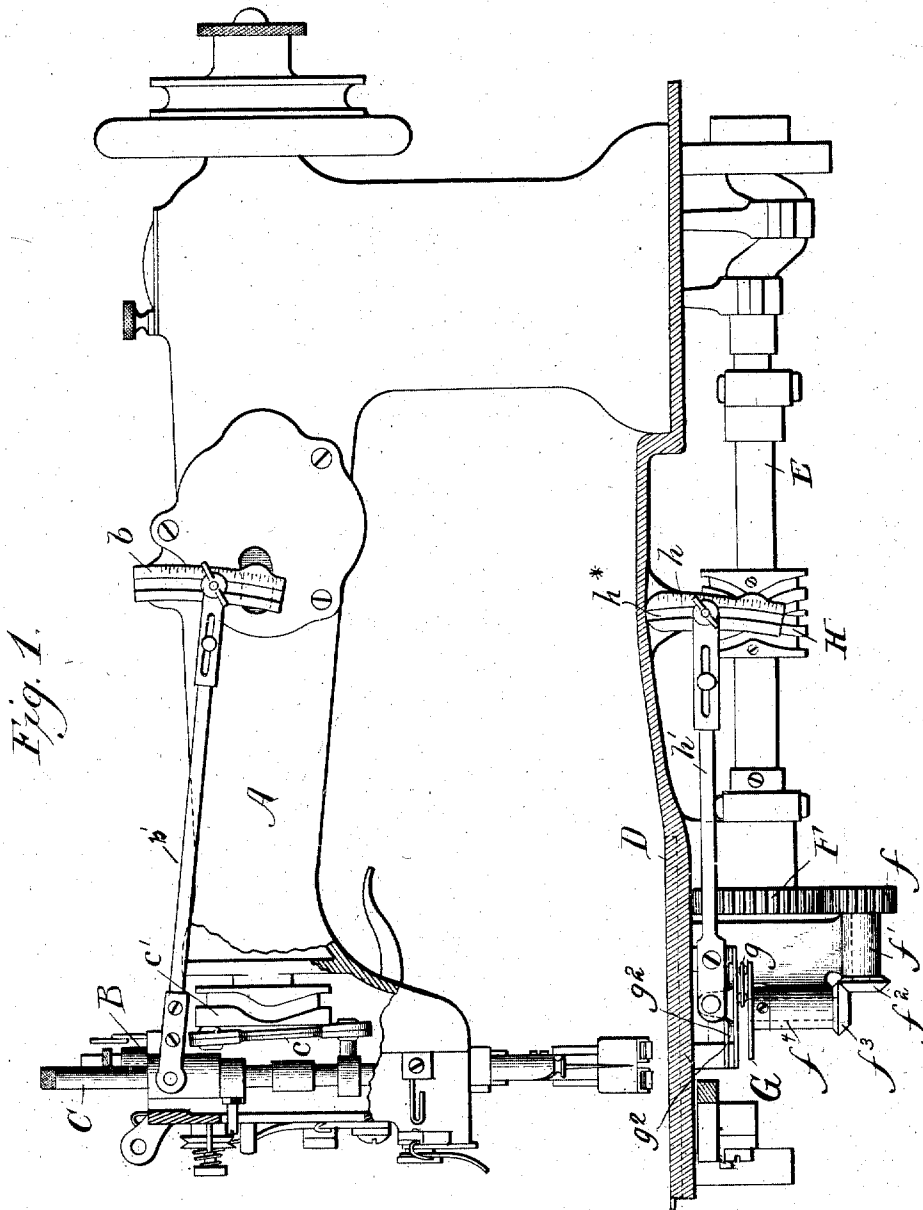




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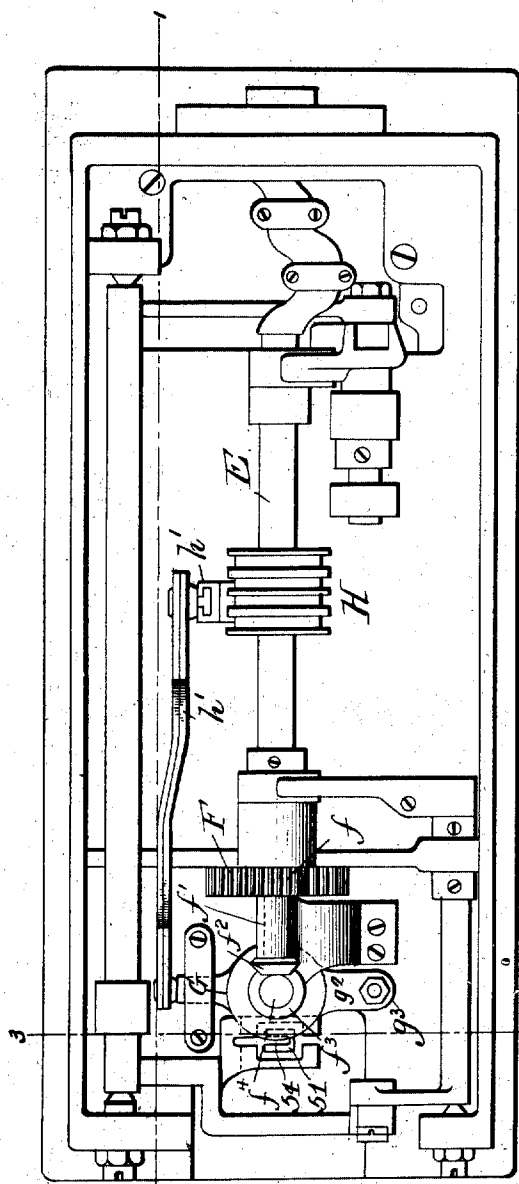
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994,532.

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SEWING MACHINE.
APPLICATION FILED JAN. 6, 1899.

Patented June 6, 1911.

3 SHEETS—SHEET 2.



WITNESSES:
J. B. McGirr.
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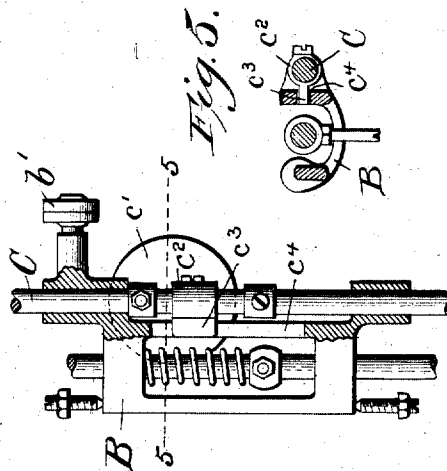


Fig. 5.

Fig. 4.

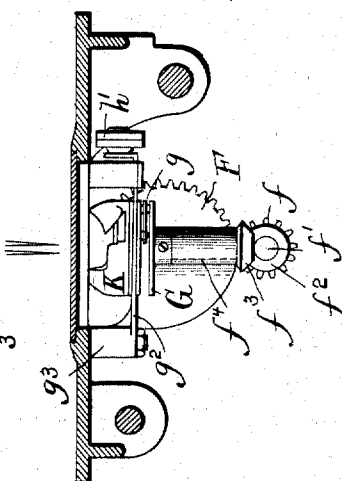


Fig. 3.

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Fig. 8.

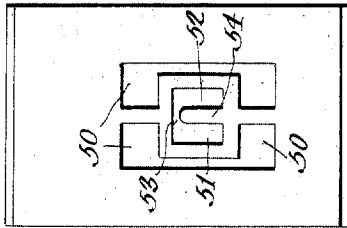


Fig. 9.

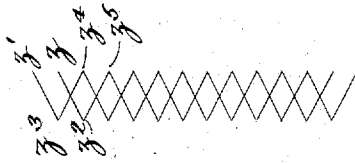


Fig. 6.

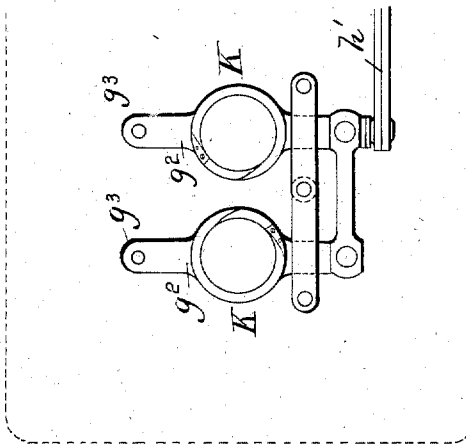


Fig. 7.

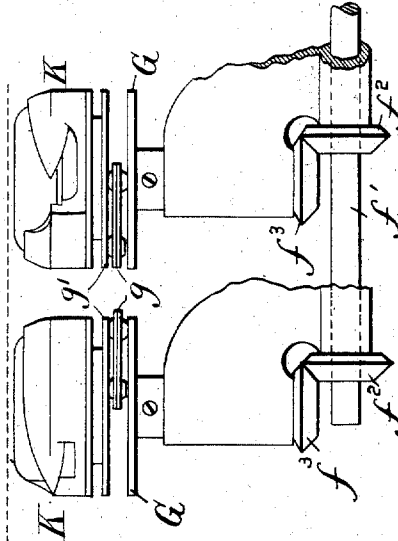
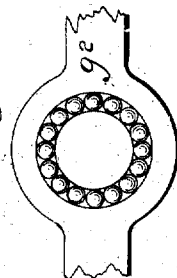


Fig. 10.



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SEWING-MACHINE.

994,532.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed January 6, 1899. Serial No. 701,349.

To all whom it may concern:

Be it known that I, WILLIAM N. PARKES, a citizen of the United States of America, residing at the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following, in connection with the drawings, is a specification.

The invention belongs to the class of sewing machines in which a relative lateral movement is produced between the stitch-forming mechanism and the work, or zig-zag machines in which the needle or needles are vibrated laterally.

The main object of the invention is to provide in machines of this class, mechanism whereby a plurality of laterally vibrating needles may be used in line in the direction of the feed of the work, to the end that a plurality of rows of overseam or zig-zag stitches may be simultaneously deposited along the same path in the interior, or along the edge of a piece of fabric, thereby largely increasing the production and scope of such machines.

It is a further object of the invention to provide in a machine having a continuously or plurality revolving hook of the lock stitch type, mechanism for moving said hook laterally in unison with one or more laterally vibrating needles, thereby increasing the extent said needles may be moved laterally without causing the machine to skip stitches.

The invention consists in the elements and combination of elements hereinafter described in the specification and specially set forth in the claims.

Referring to the drawings: Figure 1 represents a front elevation of a machine embodying my invention, the cloth-plate being broken away on the line 1-1 of Fig. 2; Fig. 2 is a bottom plan view of the mechanism under the cloth-plate; Fig. 3 is a section on the line 3-3 Fig. 2; Fig. 4 is a detail of the swinging gate (partly in section) in which the needle-bar reciprocates; Fig. 5 is a section on the line 5-5 Fig. 4; Fig. 6 is a top plan view of another form of my invention, showing an arrangement of two hooks and carriers; Fig. 7 is a front view of the same; Fig. 8 is a plan of the throat-plate; Fig. 9 is a diagrammatic view illustrating the intersecting lines of overseaming

stitches, and Fig. 10 is a detail view showing the ball-bearing for the looper carrier.

In the drawings: A, designates the arm of the machine; B, the needle-bar carrier or gate pivoted upon journal screws in the head of the machine, Fig. 4; C, the needle-bar mounted in the gate; D, the work-plate and E, the under shaft of the machine.

b, is a segment lever vibrated by a cam in a usual manner, and b¹, is an adjustable link connection between the same and the needle-bar gate, all of which are of usual construction.

A ball-joint connection c, connects the needle-bar with a revolving cam disk c¹, secured to the main shaft of the machine; and a collar c², having a lug c³, projecting into a guide-way c⁴, in the needle-bar gate B, serves to keep the needle bar from turning relatively to the gate. It will be observed that this ball-joint connection between the crank pin carried by the disk c¹, and the needle-bar permits the bar to be moved freely laterally, and that the lug c³, projecting into the guide-way c⁴, formed in the needle-bar gate B, is important in connection with said ball-joint connection because it restrains the needle-bar from turning laterally relative to the needle-bar gate which it would do if there were no means provided for guiding it.

A gear wheel F, mounted on the lower shaft E, of the machine, which shaft is rotated in unison with the usual upper shaft through a usual connection with the same, turns a gear wheel f, mounted on the end of a short horizontal shaft f¹, the relative size of the gears being two-to-one. Bevel gear wheels f² and f³, transmit the rotating movement to a vertical shaft f⁴. A driving disk G, is secured to the upper end of the vertical shaft f⁴. A ball-joint link connection g, connects the disk G, with hook carrier disk g¹, which latter is mounted to turn in bearings formed in a lever g², said lever being fulcrumed to a stationary part of the machine, at g³. The lever g² may be provided with a ball-bearing for the hook carrier disk g¹, as illustrated in Fig. 10. The disk g¹, carries a hook or looper K, which in turn carries a bobbin-case in a usual manner. A cam H, mounted on the lower shaft E, vibrates a segment-lever h, in unison with the segment-lever b, and an adjustable link con-

nection h^1 , transmits the vibrations of the segment-lever h , to the lever g^2 , which carries the hook. The segment-lever h , is pivoted at h^* ; therefore it will be understood that by connecting the end of the link h^1 , central with the axis of the pivot h^* , no lateral movement will be given to the lever g^2 , and the hook K, will therefore remain in the same center of rotation.

The segment levers b and h , are of the usual construction provided with the usual ways in which the ends of the links b^1 , and h^1 , respectively are adjustably connected.

The axes of the lever g^2 , and the swinging gate B, are in a vertical line with each other. This disposition of these axes causes the needle and the hook to move laterally in circular paths that are concentric with respect to each other, thereby aiding in maintaining proper cooperation between the beak of the hook and the needles.

Reference character 50, indicates apertures through the throat or needle-plate to permit the operation of a usual feed dog through the same in a usual manner. The plate is also provided with needle slots 51, and 52, that are connected by a slot 53, and the plate is also provided with a tongue 54. In the operation of the machine the needles are arranged in a line in the direction of the length of these slots which is the direction of the movement of the feed. Ordinarily the needles are operated so they alternately descend in these slots first in one and then in the other. The tongue 54 serves to assist in supporting the cloth, and also to take the strain of the threads as the stitches are being set. The work moves in the direction of the arrow in said Fig. 8, so it will be understood that the aperture 53 permits the lateral link of bobbin thread to move from under said tongue up through the slot 53 to the work as the latter is fed forward.

Referring more particularly to the two-to-one gearing before mentioned, it is noted that this construction gives a longer relative period for the action of the take-up, and the feed, than these elements have in the ordinary zig-zag machine, because the hook moves more rapidly relative to said elements, and at the same time the hook has a uniform rotating movement, all of which adds to the scope and also to the speed at which the machine can be run. The needle-bar and needle-holder are located so that the needles reciprocate at the side of the looper for the purpose of bringing about loop engagement between the needles and the looper with the needles in line in the direction of the movement of feed of the work. The looper is timed to engage the needle-thread during alternate rotations of the hook, and between these engagements the needle-bar rises and moves laterally, the feed moves the work, the take-up acts, and a stitch is completed.

Referring to the stitches made, it will be understood that the single stitches of each line of overseaming stitches will intersect each other as shown in Fig. 9, under one adjustment of the extent of the movement of the feed, and that different adjustments of the extent of the said movement will vary the point of intersection of these stitches.

It will be clear that the invention may be duplicated in a single machine and stitching thereby done over more than one path at once; for example, by duplicating the stitch-forming mechanism, as illustrated in Figs. 6 and 7, and by using any suitable form of needle clamp for holding the needles. This arrangement of two hooks and hook carriers is practically a duplication of the single hook mechanism which has been described; another set of needles may be used having the same arrangement relative to the additional hook as the set shown has to the hook in the single hook mechanism. As seen in Fig. 6, the link connection h^1 , which is connected to one of the carriers, may vibrate both of the carriers, as they are connected with each other so as to move in unison. The two loopers can be rotated by means of the shaft f^1 , being extended as shown in Fig. 7, and duplicating the bevel gearing f^2 and f^3 . These Figs. 6 and 7, are intended to simply indicate a manner in which the single hook mechanism can be duplicated.

In the operation of the machine when a single hook and two needles are used, the needle in the front descends at z , Fig. 9, and the one in line back of the said front needle descends at z^1 . After the said needles have engaged with the complemental stitch-forming mechanism, ascended and become disengaged from the work, they are moved to the left when they descend at z^2 and z^3 , after engagement again with the complemental stitch-forming mechanism and disengagement from the work, they are moved to the right and descend at z^4 and z^5 , and so on, thus forming intersecting lines of zig-zag stitches over the same path.

Having now described my invention, what I claim as new is:

1. In a sewing machine, a series of stitch forming devices for depositing upon the fabric to be sewed a plurality of rows of overseam stitches, said stitch-forming devices including a plurality of needles arranged one directly behind the other in the line of the direction of feed, and complemental stitch-forming devices, whereby a plurality of intersecting stitches in the same path may be deposited upon the fabric.

2. In a sewing machine, a series of stitch-forming devices for depositing upon the fabric to be sewed a plurality of rows of overseam stitches, said stitch-forming devices including a plurality of laterally vi-

brating needles arranged one directly behind the other in the line of the direction of feed, and complemental stitch-forming devices, whereby a plurality of intersecting
5 stitches in the same path may be deposited upon the fabric.

3. In a sewing machine, a series of stitch-forming devices for depositing upon the fabric to be sewed a plurality of rows of
10 overseam stitches, said stitch-forming devices including a plurality of laterally vibrating needles arranged one directly behind the other in the line of the direction of feed, whereby a plurality of intersecting
15 stitches in the same path may be deposited upon the fabric, and a single under thread carrying looper with means for operating it to cause it to cooperate with said needles.

4. A sewing machine having a plurality
20 of needles, arranged one behind the other in the line of feed, means for laterally vibrating said needles, and an under thread carrying looper cooperating with said needles, and means for vibrating said looper in unison with the lateral movements of the
25 needles.

5. A sewing machine comprising a reciprocating needle and a looper; a vibrating gate carrying the needle and a vibrating
30 carrier for the looper, the axes of which are coincident; and means for actuating the needle and looper and for vibrating the gate and carrier.

6. A sewing machine comprising a vertically reciprocating needle and a rotating
35 looper; a vibrating gate carrying the needle and a vibrating carrier for the looper, the axis of which are co-incident; means for actuating the needle and looper and for vibrating
40 the gate and carrier.

7. A sewing machine comprising a reciprocating and vibrating needle and a looper having a revolving movement cooperating with the needle and having a vibrating
45 movement about an axis that is in line with the axis about which the needle vibrates; and means for actuating the needle and looper with a ratio of two-to-one.

8. A sewing machine comprising a reciprocating and vibrating needle-bar having a
50 plurality of needles arranged one in advance

of the other; a cooperating looper; means for actuating said needles and looper with a ratio of two-to-one; and means for vibrating said needle and looper on axes that are
55 in alinement with each other.

9. A sewing machine comprising a vertically reciprocating and laterally vibrating needle and a horizontally rotating and laterally vibrating looper; a horizontally rotating
60 driver; a connection between the looper and driver for imparting the rotary movement and permitting the vibratory movement; an actuating mechanism; a connection between the latter and the driver;
65 and means for imparting the vibratory movement to the needle and looper.

10. A sewing machine having a stitch-forming mechanism comprising a horizontally rotating and vibrating looper; means
70 for giving the vibratory movement; and means for giving the rotating movement; including a horizontally arranged driver, a vertically arranged gear and connecting means between the driver and gear.
75

11. A sewing machine having a stitch-forming mechanism comprising a horizontally rotating and vibrating looper; means for giving the vibrating movement; and means for giving the rotating movement, including a horizontal driver located directly
80 beneath the looper, a gear and connecting means between the driver and gear.

12. A sewing machine comprising a revolving shaft provided with a crank pin, a
85 pivoted needle-bar gate, a needle-bar mounted in said needle-bar gate, a ball-joint connection between the crank pin and the needle-bar whereby the needle-bar is reciprocated from the movement of the shaft, a
90 guide-way formed in the gate, a part carried by the needle-bar that extends into said guide-way, and means for vibrating the needle-bar gate.

In testimony whereof I have hereunto set
95 my hand in the presence of two subscribing witnesses.

WILLIAM N. PARKES.

Witnesses:

E. P. HENDRICKSON,
GEO. W. EISENBRAUN.