

Feb. 17, 1931.

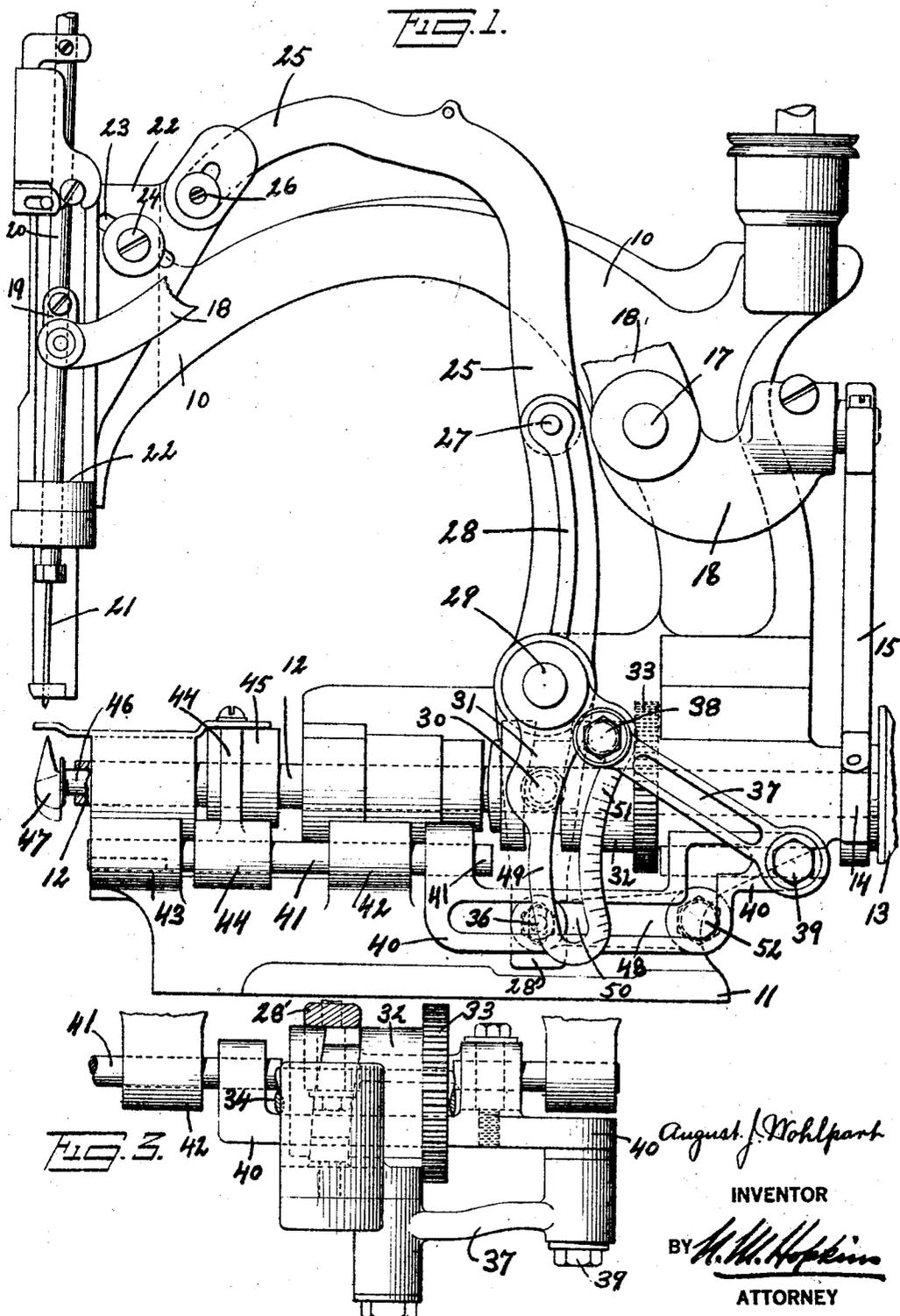
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SEWING MACHINE

Filed June 19, 1926

2 Sheets-Sheet 1



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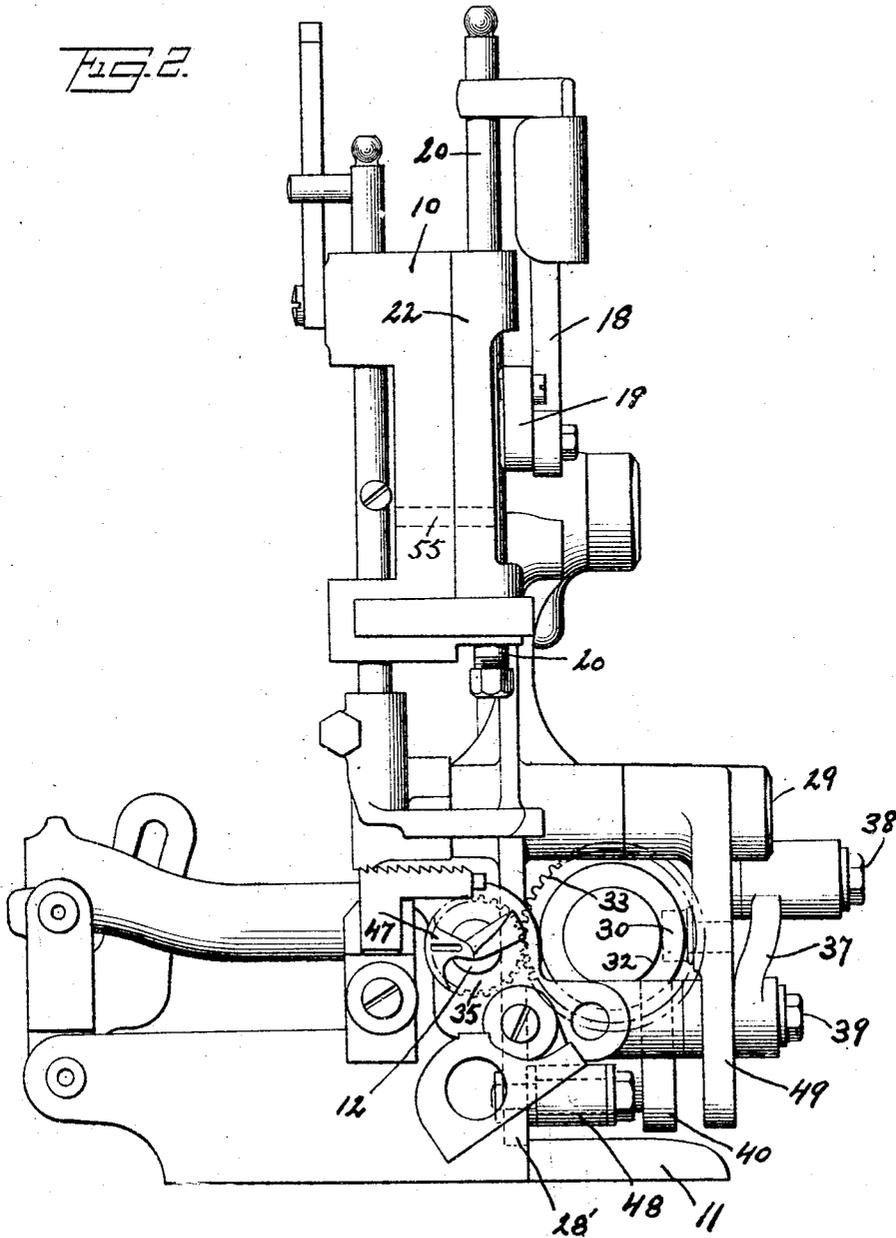
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SEWING MACHINE

Application filed June 19, 1926. Serial No. 117,070.

This invention relates to improvements in sewing machines and has for one of its objects to effect, by a novel combination of parts, a readily adjustable device for producing stitching from various ranges or widths of zigzags, to simple straight stitching.

With the present construction, my machine may sew stitches continuously in a straight line or ordinary sewing, or it may produce zigzag stitches of different width of throw up to, three eighths of an inch, or more, if necessary.

With the above objects, and certain other objects also in view which will become apparent as the present description proceeds, my invention consists in the novel parts, and combinations of parts, all as hereinafter will be more fully described and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views:

Figure I is a side view of a small sewing machine embodying my attachment for zigzag stitches of various width.

Figure II is the end view of this machine looking at it from the needle, feed mechanism, and stitching end.

Figure III is a detail view looking down upon the mechanism specific to the zigzag driving mechanism.

With further reference to Figure I, 10 is a stationary frame casting of usual sewing machine design integral with bed plate 11 adapted to support and guide, as well as to provide pivots, bearings, etc., etc. for the working parts of the machine. The bed plate 11 is adapted to mounting upon a table or other suitable support.

The main shaft 12 of the machine is mounted in suitable bearings in the frame, and is provided as usual, with a driving pulley or belt wheel 13, shown broken away, and an eccentric 14 which through the pitman 15, lever 18, pivoted at 17, shown broken away, and the link member 19, imparts to the needle bar 20 its vertical reciprocations.

The needle bar 20 is arranged to carry the

needle 21, and is mounted not only to reciprocate vertically in the frame 22, but to oscillate about a horizontal axis, on a pivot, (not shown in Figure I but indicated in dotted lines in Figure II at 55), between the frame 22 and the casting 10 as indicated by the positions of the slot-way 23 which is cut in the frame casting 22. A screw 24 enters into and engages threads in the stationary frame 10, and the oscillating motion is produced by the lever 25 adjustably and yieldingly connected to the frame 22 by the screw pivot 26 working in a slot provided therefor in said frame. The lever 25 is hinged, or pivoted, at 27 to a long ribbed lever 28, and which is again pivoted, but now to the frame casting of the machine, on the large stud fulcrum 29. Said lever 28 extends below the stud fulcrum 29 as shown in dotted lines, the lower end 28' thereof being shown in full lines, and consequently swings about said stud 29, and any motion communicated thereto to the lower end 28' of the lever appears in the reverse direction at the upper end thereof. For example, if the lower end of the lever moves to the right, the upper end of the lever 28 moves to the left and consequently also moves the pivot 27 to the left, and this in turn moves the lever 25 to the left, which in turn moves the frame 22 to the left, and since the frame 22 is pivoted to the casting 10, it swings the point of the needle 21 to the right. The lower end of the lever 28 has associated therewith the adjustably slotted stud 36, shown in dotted lines, for drivingly connecting the link 48, also shown in dotted lines, with said lever, and said link is adjustably secured by the stud 52 in the frame or yoke 40. This frame or yoke 40 is in turn driven to the right and to the left, alternately, by the stud 39 of the link 37 and the stud 38 in the radial slot-way 50, of the complex quadrant lever 49, which along with the lever 28 is also pivoted and free to swing about the common large stud 29. This complex quadrant lever 49 has a roller pin on its reverse side, shown in dotted lines at 30, and the said roller pin 30 imparts a right and left, back and forth swinging movement to the complex quadrant lever 49, as the roller pin is it-

self driven back and forth, right and left, in its engagement with the cam slot of the roller 32. The roller 32 is driven by the large gear 33 which it engages, and the large gear 33 is in turn driven by the smaller gear 35 and the main shaft 12. The complex quadrant lever 49 with its curved radial slotway 50 is calibrated off into the divisions 51.

When the link 37 is in the position shown in the drawing, with the stud or wrist pin 38 at the extreme upper end of the radial slotway 50, there is no back and forth motion imparted to the link 37, when the complex radial lever 49 moves about the pivot 29 as may be seen, and consequently there is no motion imparted to the frame or yoke 40, because of the close proximity of the stud or wrist pin 38 to the large pivot stud 29. The minimum motion of the quadrant slotway is, therefore, at its upper end, and the maximum motion of the said quadrant slotway is at the lower end, and the intermediary motions are indicated by the calibrated divisions 51, already referred to. To more easily change the position of the link 37, the stud 38 may conveniently be provided with a knurled head or wings for ready adjustment as desired while the machine is in operation, as will be apparent.

The frame or yoke 40, is attached at its left-hand end to the bar 41 which is adapted to slide back and forth through the guide bearings 42 and 43.

The bar 41 has attached fast to it, the member 44 and through the extension finger 44' running in a slot in the member 45 it slides the said member 45 to the right and to the left on the main shaft 12, when driven by the mechanism already described. The member 45 is in communication with, and engages the inner shaft 46 contained within the hollow main shaft 12, and the inner shaft 46 carries the thread looping device 47. The shaft 46 is arranged to slide in and out relative to the shaft 12 but is constrained to rotate therewith. The member 45 is connected to, and slides the inner shaft 46 back and forth in a manner not shown in the drawing but in accordance with previous patent disclosures in this art, and, therefore, it is not deemed essential to illustrate it in more detail here.

With further reference to Figure II, 20 is the reciprocating needle bar, 18 the end of the driving lever, 19 the connecting link between lever and needle bar 20, 22 the oscillating frame guiding the needle bar 20, 10 the stationary frame of the machine, 55 the pivot between the moving frame 22 and the stationary frame casting 10. 29 is the large common stud for the lever 28 and the complex quadrant lever 49. 38 is the end of the stud which slides down through the slot of the complex quadrant lever 49. 37 is the connecting link and 39 the lower stud adapted to drive the frame or yoke 40. 48 shows the

end of the driving link connected to the lower end 28' of the lever 28. 11 shows the bed plate, 12 is the main shaft of the machine, and 47 is the looper on the said main shaft 12 together with the small gear 35 which meshes with and drives the large gear 33 on the cam 32 which engages the roller stud 30.

With further reference to Figure III these same numbers and parts are shown looking down from above and the respective parts may be identified by like numbers.

From an inspection and analysis of these mechanisms it may now be appreciated that by the single movement of the stud 38 along the radial and calibrated slotway 50 of the complex quadrant lever 49, I simultaneously effect adjustment of both sewing needle and looper.

It will also be appreciated from an inspection and analysis of these mechanisms that the machine will sew straight or conventional stitches when the mechanism is set in the position shown, and furthermore, while the machine is in operation it is possible to make the change from straight or conventional stitching to zigzag stitching.

Whereas I have shown one design of a mechanism for simultaneously controlling the lateral oscillations of needle bar and looper respectively, I wish it to be understood that I do not confine myself to narrow or specific details, but rather to the broad invention of simultaneous needle bar and looper control and adjustment through the agency of a conveniently moved and simple lever, or its equivalent.

Having described my invention I claim:—

1. A sewing machine adapted to make zig-zag stitches, comprising a needle bar, a lever for oscillating the same, a looper, single means commonly pivoted with said lever for controlling the increase or decrease in the lateral movements of the said needle bar and looper, and driving connections between said means said lever and said looper.

2. A sewing machine adapted to make zig-zag stitches, comprising a synchronized needle bar and looper, a lever for oscillating the former, means commonly pivoted with said lever for simultaneously controlling the increase or decrease in the lateral oscillatory movement of the said needle bar and looper, a main driving shaft, and driving connections between said shaft said lever and said looper.

3. A sewing machine adapted to make zig-zag stitches comprising a needle bar, a lever for oscillating the same, a looper, and means commonly pivoted with said lever for predeterminedly and graduately controlling the lengths of the zig-zag stitches.

4. A sewing machine adapted to make zig-zag stitches, comprising a needle bar and a looper, a needle bar reciprocating lever, a needle bar oscillating lever, a reciprocating

looper shaft, a driving lever commonly pivoted with said oscillating lever and provided with a radial slot-way and movable link, and connections between said link said shaft said driving lever and said oscillating lever, said driving lever adapted to control, and simultaneously vary, the oscillations of the said needle bar oscillating lever, and the said reciprocating looper shaft respectively.

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5. A sewing machine adapted to make straight conventional stitches, or zig-zag stitches of varying lengths at will, comprising a needle bar, a looper, a needle bar reciprocating lever, a needle bar oscillating lever, a reciprocating looper shaft, and a reciprocating looper shaft mechanism, a main shaft, a gear on said main shaft, a jack shaft, a gear on the said jackshaft engaging the gear on the main shaft, a cam with an eccentric slot-way on the jack shaft gear, a roller pin in the said eccentric slot-way and fixed to a lever commonly pivoted with said oscillating lever and provided with a radial slotway and a movable and adjustable link, and driving connections between said link and said oscillating lever, said link adapted to drive simultaneously the said needle bar oscillating lever, and the said reciprocating looper shaft mechanism.

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6. A sewing machine adapted to make zig-zag stitches of various lengths, comprising a needle bar and associated lever for oscillating the same, a main drive shaft, a looper, and driving connections between said shaft said looper and said lever including means commonly pivoted with said lever for controlling the length of stitch desired.

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7. A sewing machine adapted to make zig-zag stitches of various lengths, comprising a needle bar and associated lever for oscillating the same, a main drive shaft, a looper, and driving connections between said shaft said looper and said lever including singly operated means comprising a second lever commonly pivoted with said first named lever and a link adjustably associated with said second lever, said means adapted to predeterminedly and variably control the movements of said needle bar and said looper.

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8. A sewing machine adapted to make zig-zag stitches of various lengths, comprising a synchronized needle bar and looper, a link for oscillating the needle bar, a lever for actuating said link, means commonly mounted with said lever for simultaneously controlling the increase or decrease in the degree of lateral oscillation of the said needle bar and looper respectively, and driving connections between said means, said lever and said looper.

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Signed at New York city in the county of New York and State of New York, this 16th day of June, A. D. 1926.

AUGUST JOHN WOHLPART.