

H. CORRALL.
SEWING MACHINE.
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1,313,265.

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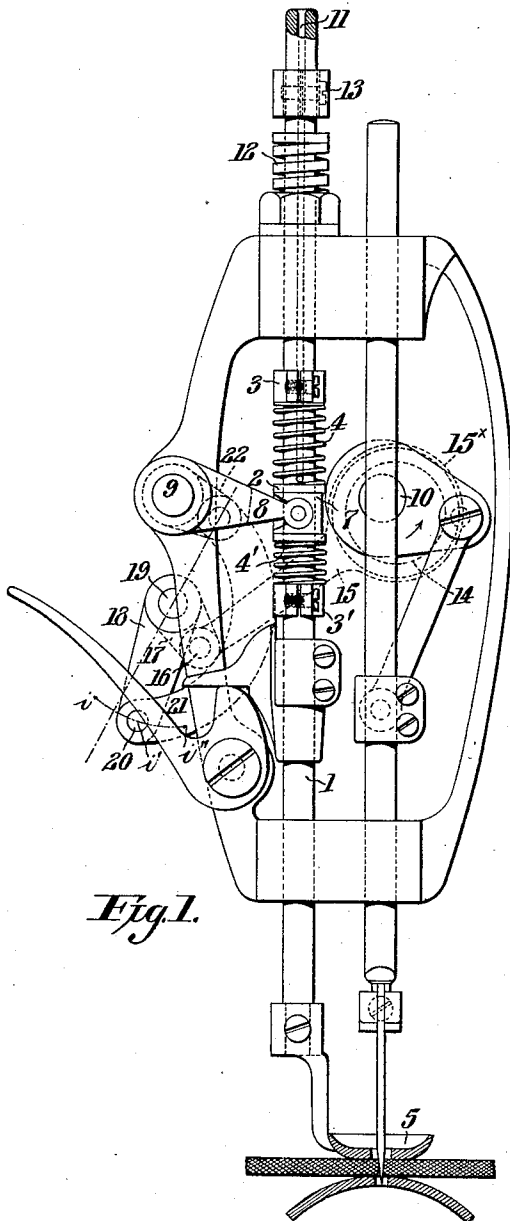


Fig. 1.

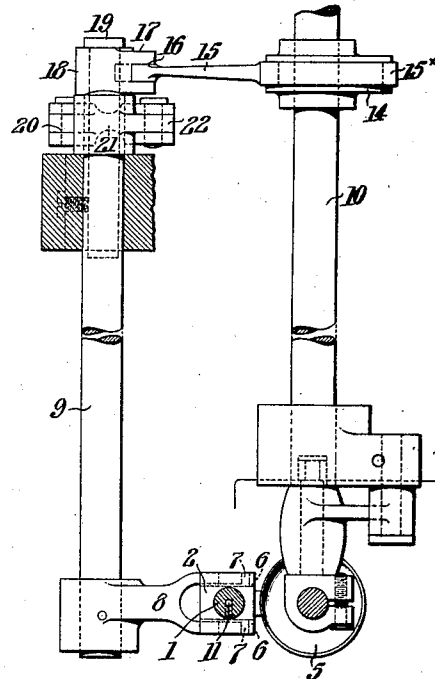


Fig. 2.

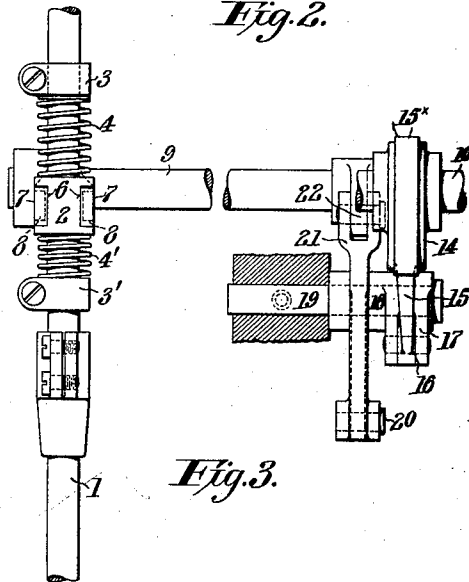


Fig. 3.

WITNESSES:

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HERBERT CORRALL, OF HELENSBURGH, SCOTLAND, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

SEWING-MACHINE.

1,313,265.

Specification of Letters Patent.

Patented Aug. 19, 1919.

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To all whom it may concern:

Be it known that I, HERBERT CORRALL, a subject of the King of the United Kingdom of Great Britain and Ireland, and residing at Parkview, Helensburgh, Dumbartonshire, Scotland, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to sewing machines, being particularly applicable to machines for sock darning, patching and the like, and has for its primary object to provide improved presser-bar actuating mechanism which will permit of control of the pressure to suit the thickness of the goods and insure silent running at high speeds, and will be less subject to wear and tear, by reason of the elimination of the shocks to which the moving parts of machines of this class are subjected.

In the present embodiment of the invention a block is slidably mounted upon the presser-bar of the machine and is engaged by upper and lower spiral springs, surrounding and movable with the bar. The block is engaged by the arm of a rocker so operated by link and lever connections with an eccentric on the driving shaft that the presser-bar is normally held raised but is depressed and held at rest upon the work during the movement of the needle therein.

In the accompanying drawings, Figure 1 is an end elevation showing the head of a sewing machine embodying the invention; Fig. 2 is a sectional plan showing the connections for operating the presser-bar, and Fig. 3 is a detail view of certain of said connections.

Mounted to slide vertically on the presser-bar is a block 2 above and below which are collars 3, 3' fixed on the presser-bar. Interposed between the block 2 and the upper collar 3 is a helical spring 4 surrounding the presser-bar; interposed between the block 2 and the lower collar 3' is a spring 4' also surrounding the presser-bar. The springs 4 and 4' thus constitute a yielding connection between the block 2 and the presser-bar through the collars 3 and 3' which afford thrust-receiving shoulders upon the presser-bar.

The block 2 thus constitutes a floating member deriving vertical reciprocating

movements from a train of connections hereinafter described.

It will be understood that as the block 2 is caused to descend the presser-bar 1 will in the first place be moved therewith, said springs 4, 4' being substantially in equilibrium. When, however, the presser-foot 5 engages the work, so that resistance is offered to the downward movement of the presser-bar, the lower spring 4' is compressed while the upper spring 4 expands, the block 2 remaining under the control of the springs 4, 4'.

The compression of the spring 4' will evidently be proportional to the thickness of the goods engaged by the presser-bar 1, so that the pressure on the goods is proportionate to the weight of the material being handled.

The block 2 is formed with guideways 6 entered by slide plates 7 formed with substantially circular sockets receiving the substantially circular ends of the forked arm or rocker 8 carried by a shaft 9 parallel with and driven from the main-shaft 10 as herein-after referred to; the reciprocation of the block being effected by the oscillation of said rocker 8. With this arrangement no side strains are imposed on the presser-bar 1, the actuating means acting in the line of the bar.

The presser-bar 1 is formed with a duct 11 for leading lubricant from its upper end to said block 2 and to the wearing faces of said slide plates etc.; so that any foreign matter entering between the wearing faces may be washed out by lubricant. The lower opening of the duct is normally covered by a wall of the block, but is exposed when the block is depressed to lower the presser-bar, as shown in Fig. 1.

The presser-bar is surrounded at its upper end by a cushion spring 12 and an adjustable collar 13 serves to engage the spring and thus to check the bar 1 and insure quiet running at high speed on very thin material.

The shaft 9 is actuated from an eccentric 14 on the main-shaft 10 through suitable connections as follows:—

Mounted on the main-shaft 10 is the eccentric 14 embraced by the strap 15* of an eccentric rod 15 which is connected at 16 to the end of the short arm 17 of rock-lever 18 loosely mounted upon the fulcrum pin 19.

The rock-lever 18 is connected at 20 with the lower end of a link 21, the opposite end of the link being connected to a crank-arm 22 on the shaft 9.

5 It will be seen from inspection of Fig. 1 that endwise reciprocation of eccentric rod 15 will swing the lower end of link 21 in a short arcuate path and subsequently will move the link bodily. As indicated in the
10 said figure, the idle movement of the link is within the points $i-i'$. In the movement of link 21 to the right from the position shown in Fig. 1 and until it passes the point i' the presser-foot is held in engagement with the
15 work. Immediately thereafter however, the needle rises above the work and link 21 is given a bodily upward movement by lever 18 to rock the shaft 9 and elevate block 2 with the presser-bar.

20 Having thus set forth the nature of the invention, what I claim herein is:—

1. In a sewing machine, the combination with a presser-bar, of a block slidably mounted on the said bar, oppositely-acting
25 springs engaging the block, and means to impart up and down movements to the said block and thereby to the said bar.

2. In a sewing machine, the combination with a presser-bar, of a block slidably
30 mounted on the said bar, oppositely-acting springs engaging the block, an element operatively connected with the said block for imparting up and down movements thereto, and means adapted to alternately actuate
35 said element and hold the same in a state of rest for a predetermined period.

3. In a sewing machine, in combination, a presser-bar and a presser-foot carried thereby, a reciprocatory member mounted upon
40 said presser-bar and yieldingly maintained in operative relation therewith, and means including a common element for actuating said reciprocatory member to raise and hold the presser-bar in elevated position and to
45 forcibly depress and hold said bar in lowered position respectively during predetermined intervals.

4. In a sewing machine, the combination with a frame and a presser-bar mounted for

endwise movement therein, of a shaft, an
50 eccentric element on the said shaft, a rock-lever, an operative connection between the rock-lever and said eccentric element, a lifting arm operatively connected with the
55 presser-bar, and a connection between the said rock-lever and the lifting arm including a link arranged to swing idly during part of the movement of said rock-lever.

5. In a sewing machine, the combination with a presser-bar, of a block slidably
60 mounted on said bar, oppositely-acting springs surrounding the bar and engaging the said block, slides movable on the block transversely of the bar and a rocking member engaging said slides and imparting up
65 and down movements to said block and thereby to the said bar.

6. In a sewing machine, the combination with a presser-bar formed with a longitudinal lubricant duct, a block slidably mounted
70 upon the said bar, oppositely-acting springs surrounding said bar and engaging said block, and means for imparting up and down movements to said block to alternately
75 elevate and depress the bar and also to alternately expose and cover one end of said duct.

7. In a sewing machine, the combination with a frame and a work-plate supported thereon, of a presser-bar and a presser-foot
80 carried thereby, and common means including a yielding element for lifting said presser-bar during one period of the cycle and for forcing the presser-foot yieldingly
85 against the work with a pressure proportionate to the thickness of the work during another period of the cycle.

8. In a sewing machine, in combination, a reciprocatory element, a presser-bar, and oppositely acting springs connecting said ele-
90 ment with said bar.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT CORRALL.

Witnesses:

WALLACE CRANSTON FAIRWEATHER,
HENRY MASON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."