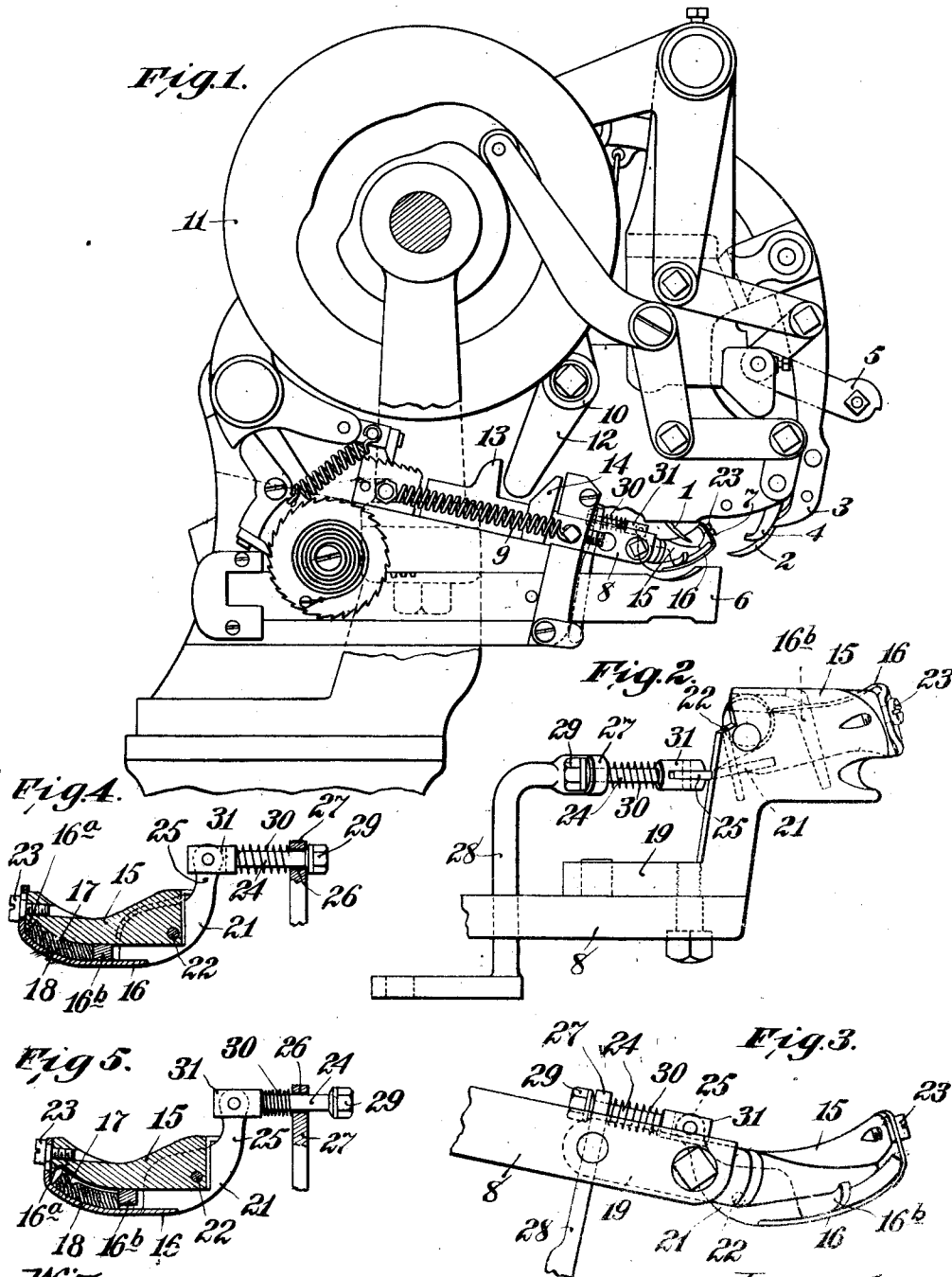


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WELT GUIDE MECHANISM.
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WELT-GUIDE MECHANISM.

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To all whom it may concern:

Be it known that I, JOHN V. ALLEN, a citizen of the United States, residing at South Weymouth, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Welt-Guide Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a welt guide mechanism for shoe sewing machines of the class employing a curved hook needle and used in sewing the upper and the welt to the insole in the manufacture of boots and shoes. Shoe sewing machines of this class are ordinarily provided with a welt guide having a guide opening through which the welt passes, which is moved toward the shoe to present the welt in proper position relative to the insole, upper and needle during the formation of the stitch and is moved away from the shoe subsequent to the formation of the stitch to avoid forming plaits or folds in the upper by the contact of the welt guide therewith during the feed movement of the shoe. The patent to French and Meyer, No. 412,704 illustrates one type of machine of this class. It is essential in sewing the upper and the welt to the insole that the welt be accurately and securely held in position during the formation of the stitch in order to insure that the needle shall pass through the groove in the welt. It is also essential that the welt pass freely through the welt guide opening of the welt guide during the movement of the guide away from the shoe or during the feed movement of the shoe to avoid stretching the welt and to permit free manipulation of the shoe. In one form of welt guide as heretofore constructed, the guide consists of members arranged with the welt guiding opening between them and mounted so as to be capable of relative movement to contract and expand the welt guiding opening. When the guide is moved toward the shoe, relative movement of the members to contract the welt guiding opening and grip and hold the welt in the desired position is produced by contact of the guide with the shoe. When the welt guide is moved away from the shoe, the members are permitted

to move relatively to expand the welt guiding opening and allow the welt to pass freely therethrough. A welt guide which is arranged to be operated by contact of the guide with the shoe to grip and hold the welt in proper position with relation to the needle is unsatisfactory, since in operating upon certain kinds of work, the relation of the guide to the shoe is such that the guide does not contact with the shoe at any point in its movement. The use of such a welt guide therefore necessarily limited.

The object of the present invention is to produce a welt guide mechanism of simple construction for curved hook needle shoe sewing machines which is operated independently of the work to grip and hold the welt in the desired position during the formation of the stitch and to permit the welt to pass freely through the welt guiding opening during the feed movement of the shoe.

With the above object in view, the invention comprises a welt guide arranged to move toward and from the shoe, and means operated by the movement of the guide toward the shoe to actuate the guide to grip and hold the welt in proper position with relation to the needle.

A further feature of the invention contemplates the provision of means operated by the movement of the guide away from the shoe to actuate the guide to release the welt and permit it to move freely during the feed movement of the shoe.

Further features of the invention reside in certain constructions, arrangements and combinations of parts, the advantages of which will be obvious to those skilled in the art from the following description.

In the accompanying drawings illustrating the invention in its preferred form;—Figure 1 is a side elevation of one type of shoe sewing machine with the welt guide mechanism applied thereto; Fig. 2 is a plan view of the welt guide mechanism; Fig. 3 is a side elevation of the parts shown in Fig. 2; Fig. 4 is a sectional view of the welt guide mechanism illustrating the relative positions of the parts when the welt guide is in advanced position; Fig. 5 is a sectional view similar to Fig. 4 illustrating the relative positions of the parts when the welt guide is in retracted position.

In Fig. 1 of the drawings, the preferred embodiment of the welt guide mechanism is shown applied to a sewing machine of the type illustrated in the patent to French and Meyer above referred to. In the machine 5 illustrated, the sewing mechanism, comprising a curved hook needle 1, an awl 2, a looper 3, a thread arm 4, and a take-up lever 5, and the back gage 6 against which the shoe is held during the sewing operation, are 10 constructed, arranged and operated substantially as in the French and Meyer patent. The welt guide 7 is mounted on the slide 8, moving in suitable guides in the frame. The 15 construction and arrangement of the guide and the mechanism for locking and releasing the same are substantially as shown in the French and Meyer patent. The slide is moved forwardly by means of the spring 9 20 attached at one extremity to the slide and at the other to a fixed point on the frame of the machine. Rearward movement of the slide is produced by the movement of a bell crank lever 10, operated by cam disk 11, one 25 arm 12 of which lever is arranged to contact with a lug 13 on the slide as the arm moves rearwardly. The slide 8 is provided with a lug 14 arranged in front of the arm 12 of the lever 10 to insure forward movement 30 of the slide. The slide is moved forwardly or toward the shoe to present the welt in proper position with relation to the needle prior to the formation of the stitch and is moved rearwardly or away from the shoe 35 during the feed movement of the shoe.

In the illustrated embodiment of the invention, the welt guide is the same in general construction and arrangement of parts 40 as the welt guide commonly employed in curved hook needle shoe sewing machines. The guide consists of a metallic block 15, ordinarily known as the frame, and a thin metallic plate 16, ordinarily known as the shield, mounted on the frame and arranged 45 with a welt guiding opening between the frame and shield. The inner edge of the welt is guided by an abutment 16^a formed on the frame and a gage 16^b adjustably mounted on the frame forms a guide for the outer 50 edge of the welt. The welt guiding surfaces 17 and 18 of the frame and the shield are curved in order to give the desired transverse curvature to the welt. The frame 15 is provided with a shank 19 which is adapted 55 to be secured to the welt guide 8 or other suitable guide carrying means of a sewing machine. This welt guide is simple in construction and is strong and durable. It is to be understood, however, that the invention may be embodied in other forms of welt 60 guides and that except as hereinafter defined by the claims, the invention is not limited to any specific structure or arrangement of the parts comprising the welt guide.

65 The members of the welt guide are pref-

erably mounted for relative movement to contract and expand the welt guiding opening to grip and release the welt. In order to provide for relative movement between the welt guiding members which, in the 70 present embodiment of the invention, consist of the frame and the shield, the shield is preferably mounted so that it is movable toward and from the frame. To this end, in the construction shown, the shield is provided at its rear extremity with an arm 21 75 which is received in a suitable slot in the frame 15. A pin 22 is passed through the arm 21 and engages the frame, which pin constitutes a pivot upon which the shield is 80 movable toward and from the frame. The upturned forward extremity of the shield extending in front of the frame is connected to the frame by means of a shouldered screw 23 passing through a slot in the shield and 85 threaded into the frame, thereby permitting movement of the shield on its pivot toward and from the frame. When the shield is moved toward the frame, the welt guiding opening is contracted and the welt is gripped 90 between the welt guiding surfaces of the frame and the shield, and between the abutment 16^a and the gage 16^b, as illustrated in Fig. 4. When the shield is moved away from the frame, the welt guiding opening is 95 expanded, as shown in Fig. 5, and the welt is permitted to pass freely therethrough.

In order that the welt may be gripped and held in the desired position during the formation of the stitch, means operated by 100 the movement of the guide toward the shoe is provided for moving the shield toward the frame to contract the welt guiding opening and grip and hold the welt in proper position with relation to the needle. In the 105 illustrated embodiment of the invention, this means comprises a rod 24 pivotally connected to an extension 25 on the arm 21 of the shield 16. This rod passes through a perforation 26 in a fixed arm 27 extending upwardly from an angular bracket 28 secured in fixed position to the frame of the machine. A stop nut 29 is threaded upon the 110 extremity of the rod 24 and is so adjusted on said rod that it contacts with the arm 27 just before the welt guide reaches its limit of forward movement so that the arm 27 constitutes a stop acting on the rod 24. The 115 continued forward movement of the guide after the stop nut 29 contacts with the stop arm 27 operates to move the shield toward the frame to contract the welt guiding opening. In order to move the shield away from the frame upon rearward movement of the welt guide, a coil spring 30 surrounding the 120 rod 24 is interposed between the arm 27 and a shoulder 31 on the rod. The initial rearward movement of the guide operates through the spring 30 to move the shield away from the frame to expand the welt 130

guiding opening. Further rearward movement of the guide compresses the spring between the stop arm 27 and the shoulder 31 on the rod 24, as shown in Fig. 5, and the welt guide opening is therefore maintained in expanded condition to permit the free passage of the welt therethrough until the guide again executes its final forward movement.

The operation of the welt guide mechanism briefly described is as follows:—Starting with the movement of the guide forwardly or toward the shoe, the shield is maintained by the spring 30 in position away from the frame so that the welt guiding opening is in expanded condition until just before the guide reaches the limit of forward movement when the stop nut 29 contacts with the stop arm 27. The continued forward movement of the guide then operates to move the shield toward the frame to contract the welt guiding opening and grip and hold the welt in proper position with relation to the needle during the formation of the stitch. When the guide is moved rearwardly or away from the shoe, the initial movement of the guide operates through the spring 30 to move the shield away from the frame to expand the welt guiding opening and permit the welt to pass freely therethrough. It is to be noted that the welt guiding opening is maintained in expanded condition during practically the entire forward and rearward movements of the guide and that the welt is therefore permitted to move freely through the welt guide during the forward and rearward movement of the guide and during the feed movement of the shoe.

In case the relation of the welt guide to the shoe is such that the guide contacts with the shoe before the nut 29 engages with the arm 27, the spring 30 permits the shield to be moved toward the frame by contact with the shoe to contract the welt guiding opening and grip the welt.

The welt guide mechanism above described is simple in construction, certain and reliable in operation, and may be readily applied to shoe sewing machines of the class ordinarily used in sewing together a welt upper and insole. Since the operation of the mechanism is independent of the relative positions of the welt guide and the shoe, it may be used in operating upon a great variety of work.

While it is preferred to employ the construction and arrangement of parts shown and described, it will be understood that this construction and arrangement is not essential except as far as specified in the claims, and may be modified without departing from the broader features of the invention.

Having explained the nature and object

of the invention and having specifically described the preferred embodiment thereof, what is claimed is:

1. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe, and means operated by the movement of the guide toward the shoe to actuate the guide to grip and hold the welt in proper position with relation to the needle, substantially as described.

2. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe and comprising mechanism to grip and hold the welt in proper position with relation to the needle, and means operated by the movement of the guide away from the shoe to actuate said mechanism to release the welt, substantially as described.

3. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe, and means operated by the movement of the guide toward and from the shoe to actuate the guide to grip and release the welt, substantially as described.

4. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe and comprising members arranged to form a welt guiding opening and mounted for movement with relation to each other to contract and expand the welt guiding opening, means operated by the movement of the guide toward the shoe to move one of said members relatively to the other to contract the welt guiding opening and hold the welt in proper position with relation to the needle, substantially as described.

5. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe and comprising members arranged to form a welt guiding opening and mounted for movement with relation to each other to contract and expand the welt guiding opening, and mechanism operated by the movement of the guide away from the shoe to move one of said members relatively to the other to expand the welt guiding opening and allow the welt to pass freely therethrough, substantially as described.

6. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe and comprising members arranged to form a welt guiding opening and mounted for relative movement to contract and expand the welt

guiding opening, mechanism operated by the movement of the guide toward and from the shoe to move one of said members toward and from the other to contract and expand the welt guiding opening, substantially as described.

7. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe and comprising a frame and a shield having a welt guiding opening between them mounted for relative movement to contract and expand said opening, and mechanism operated by the movement of the guide toward the shoe to move the shield relatively to the frame to contract the opening, substantially as described.

8. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe and comprising a frame and a shield, mounted on the frame for movement toward and from the frame and arranged with a welt guiding opening between the shield and the frame, means operated by the movement of the guide toward and from the shoe to move the guide toward and from the frame to contract and expand the welt guiding opening, substantially as described.

9. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe and comprising a frame, a shield pivotally mounted on the frame to move toward and from the frame, a rod connected with the shield, and a stop arranged to act on the rod as the guide is moved toward the shoe to move the shield on its pivot toward the frame, substantially as described.

10. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to

move toward and from the shoe and comprising a frame, a shield pivotally mounted on the frame to move toward and from the frame, and a spring arranged to act on the shield and operated by the movement of the guide away from the shoe to move the shield away from the frame, substantially as described.

11. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe, and means operated by the final movement of the guide toward the shoe to actuate the guide to grip and hold the welt in proper position with relation to the needle, substantially as described.

12. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe and comprising mechanism to grip and hold the welt in proper position with relation to the needle, and means operated by the initial movement of the guide away from the shoe to actuate said mechanism to release the welt, substantially as described.

13. A welt guide mechanism for curved hook needle shoe sewing machines having, in combination, a welt guide arranged to move toward and from the shoe, means operated by the final movement of the guide toward the shoe to actuate the guide to grip and hold the welt in proper position with relation to the needle, and means operated by the initial move- ment of the guide away from the shoe to actuate the guide to release the welt, and to maintain the guide in welt releasing condition until the guide again executes its final movement toward the shoe, substantially as described.

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