E. E. WINKLEY.

WELT GROOVING AND BEVELING MACHINE.

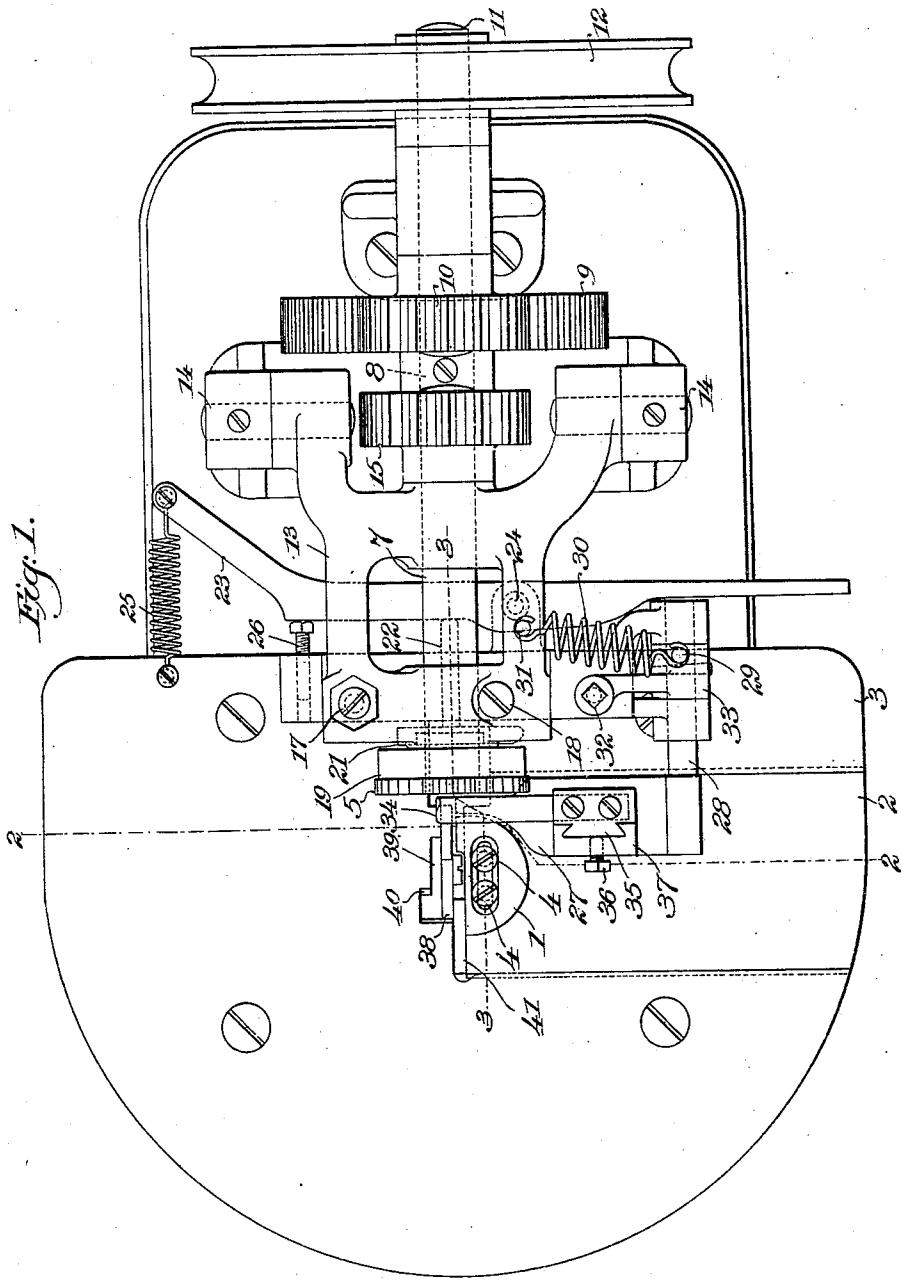
APPLICATION FILED JAN. 29, 1902.

977,496.

Patented Dec. 6, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

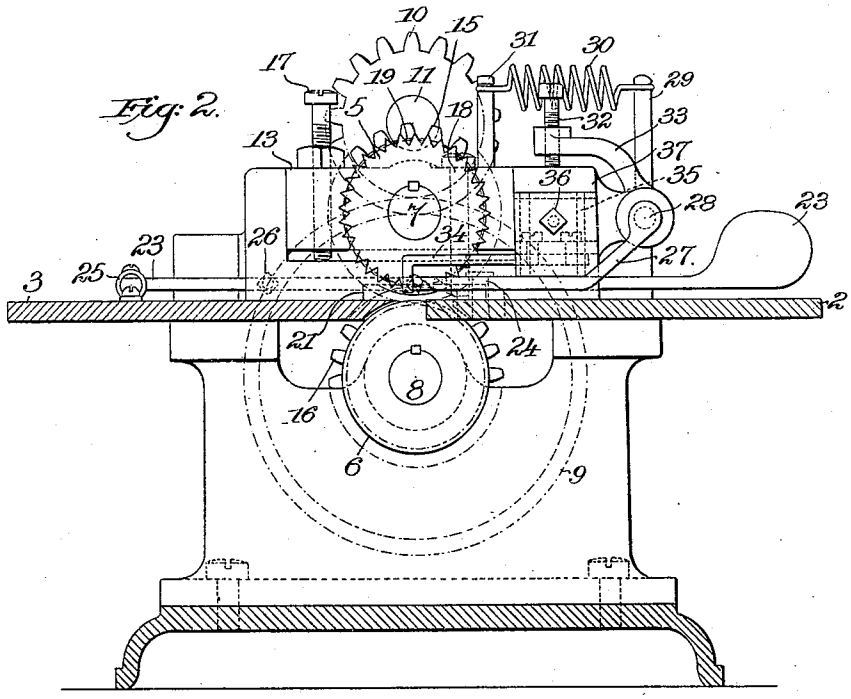
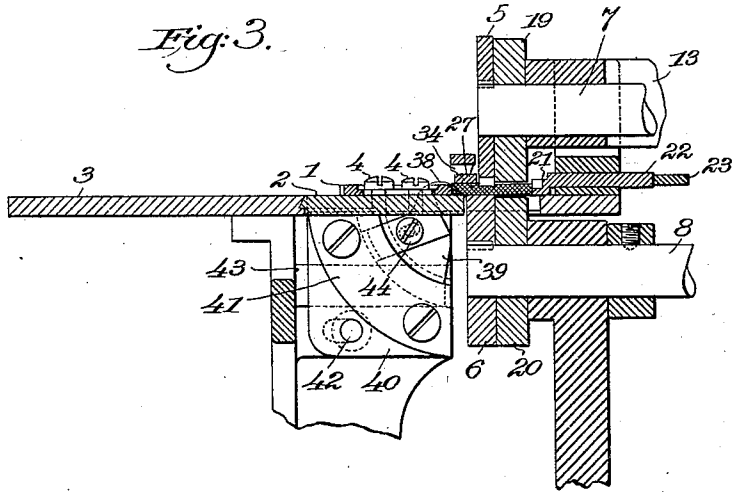


Fig. 3.



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UNITED STATES PATENT OFFICE.

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WELT GROOVING AND BEVELING MACHINE.

977,496. Specification of Letters Patent. Patented Dec. 6, 1910.

Application filed January 29, 1902. Serial No. 91,781.

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Welt Grooving and Beveling Machines; 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.

The present invention relates to welt grooving and beveling machines.

In my prior Patent, No. 685,365, dated October 29, 1901, I have disclosed a machine for grooving and beveling a U-shaped welt which comprises grooving and beveling knives, feeding mechanism for feeding a U-shaped welt, and an internal guide arranged to engage the inner edge of the welt and to coöperate with the feeding mechanism to turn the welt.

The objects of the present invention are to provide an improved machine of the general type disclosed in said patent which will operate to bevel the inner edge of the welt in a uniform manner and to cut a groove in the surface of the welt at a uniform distance from its inner edge regardless of variations in the width of the welt; to provide such a machine which will be certain and reliable in operation; to provide such a machine which can be readily adjusted for operation upon welts of different widths and thicknesses, and in general to improve the construction and mode of operation of this type of machines.

With these objects in view my invention consists in providing a machine of the type referred to with a yielding guide arranged to bear against the outer edge of the welt and to hold the welt in contact with the internal guide, whereby the inner edge of the welt is maintained in the same position with relation to the knives during the entire operation of the machine, regardless of variations in the width of the welt.

My invention also consists in providing a machine of the type referred to with a yielding presser foot arranged to press upon the welt in proximity to the knives to prevent the welt from buckling or wrinkling while being turned about the internal guide.

My invention also consists in mounting the grooving knife to move with the presser foot whereby the knife is caused to cut a groove in the welt of uniform depth throughout as will be hereinafter more fully explained.

My invention also consists in certain devices, combinations, and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art.

A preferred form of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a welt grooving and beveling machine embodying the same; Fig. 2 is a view in sectional elevation taken on the line 2—2 of Fig. 1; and Fig. 3 is a detail sectional view taken on the line 3—3 of Fig. 1.

The internal guide for engaging the inner edge of the U-shaped welt is indicated at 1 and consists of a semi-circular disk adjustably secured to a slide 2 mounted in the work-supporting table 3, by means of screws 4 passing through a slot in the guide and screwing into the slide, whereby the guide can be adjusted transversely to the direction of feed as will hereinafter appear.

The means for feeding the welt consist of upper and lower feed rolls 5 and 6 which bear the same relation to the internal guide 1 and engage and feed the welt in the same manner as the feed rolls of the machine disclosed in my prior patent hereinbefore referred to. These feed rolls are secured to shafts 7 and 8 respectively. The shaft 8 of the lower roll is journaled in stationary bearings in the machine frame and is provided at its rear end with a gear wheel 9 which meshes with a pinion 10 upon a short driving shaft 11 journaled in the upper rear portion of the machine frame. The driving shaft 11 is rotated by means of a driving pulley 12 secured to the rear end of the shaft. The shaft 7 is journaled in bearings in a frame 13 which is pivoted at 14 to the main frame of the machine, so as to be capable of an oscillating movement in a vertical plane. A pinion 15 is secured to the rear end of the shaft 7 and meshes with a similar pinion 16 secured to the shaft 8, whereby the shafts 7 and 8 and the feed rolls 5 and 6 secured thereto are positively driven in opposite directions.

The purpose of pivotally mounting the frame 13 is to enable the upper feed roll 5 to be adjusted toward and from the lower feed roll 6 to accommodate welts of different

thicknesses. The means for so adjusting the feed roll 5 consist of adjustable clamping screws 17 and 18 of which the clamping screw 17 has a screw-threaded engagement with the frame 13 and bears against a stationary portion of the main frame below the frame 13 and the clamping screw 18 passes through an opening in the frame 13 and screws into the main frame. By means of these screws the frame 13 can be raised or lowered to adjust the upper feed roll 5 to accommodate welts of different thicknesses and can be securely clamped in adjusted position.

As in the machine disclosed in my prior patent pressure rollers 19 and 20 are provided mounted upon the shafts 7 and 8 so as to rotate loosely thereon, the function of which is to press lightly upon the welt and prevent it from buckling while being turned about the guide 1. The internal guide 1 and the feed rolls 5 and 6 to guide and feed the welt and turn it about the guide operate in the same manner as the guide and rollers disclosed in my prior patent. The yielding guide which I have provided to press against the outer edge of the welt and hold the inner edge of the welt in contact with the internal guide regardless of variations in the width of the welt, is indicated at 21. This guide extends in the direction of the feed on both sides of the line of contact of the feed and pressure rolls and is secured to or formed integral with a slide 22 mounted in the machine frame to move transversely to the direction of feed. The rear end of the slide 22 is pressed upon by a lever 23 pivoted at 24 to the machine frame. One end of this lever is acted upon by a coiled spring 25 which tends to move the lever in a direction to press the guide 21 against the outer edge of the welt and the other end of the lever 23 extends into a position to be grasped by the operator. The movement of the guide 21 toward the internal guide 1 under the influence of the spring-pressed lever 23 is limited by an adjustable stop screw 26 arranged in the path of movement of the lever. In addition to holding the inner edge of the lever in contact with the guide 1 the guide 21 automatically accommodates itself to welts of different widths so that no adjustment of the machine is required when welts of different widths are to be operated upon. The stop-screw 26 prevents the guide 21 from being moved into a position to interfere with the introduction of the welt into the machine, and the arrangement of the lever 23 enables the operator to move the lever against the force of spring 25 and release the guide 21 so that the welt can be easily inserted.

In the practical operation of the machine disclosed in my prior patent it has been found that the material of the welt sometimes becomes crowded out of position or buckles, as the welt is being turned around the internal guide, and sometimes fails to cut a groove at the toe portion of the welt or cuts a groove which is not of the same depth as the groove at the other portions of the welt. In order to obviate these difficulties I have provided a yielding presser foot arranged to press upon the welt in proximity to the beveling and grooving knives, and have mounted the grooving knives to move with the presser foot. This presser foot is indicated at 27 as consisting of a plate which bears upon the upper surface of the welt. The forward end of this plate is shaped to fit between the feed roll 5 and the guide 1 and extends to the line of contact of the feed roll. The rear end of the plate is bent upwardly and is secured to a rock shaft 28. Also secured to the rock shaft 28 is a vertically-extending arm 29 which is acted upon by a coiled spring 30 which connects the upper end of the arm with a pin or stud 31 on the frame 13 the arrangement being such that the spring tends to rotate the shaft 28 in a direction to press the plate 27 against the welt. The movement of the plate 27 under the force of the spring is limited by an adjustable stop screw 32 which passes through an arm 33 secured to the shaft 28 and bears against a fixed portion of the frame. The grooving knife is indicated at 34 and is located in front of the presser foot and in close proximity thereto. In order to cause the grooving knife to move with the presser foot the shank of the knife is bent as shown in Fig. 1 to extend over the presser foot and is secured to the lower surface of a block 35 adjustably secured by means of a set screw 36 in vertical guideways formed in a block 37 secured to or formed integral with the presser foot.

By providing a presser foot arranged to press upon the welt in proximity to the beveling and grooving knives and by mounting the grooving knife to move with the presser foot, I have found that the welt is effectually prevented from wrinkling or buckling while being turned about the internal guide, and that the grooving knife cuts a groove in the welt of uniform depth throughout. By mounting the grooving knife so as to be adjustable vertically upon the presser foot the grooving knife can be moved toward and from the surface of the welt to vary the depth of the groove as may be desired.

The beveling knife which I have shown in the drawings is substantially the same in construction and arrangement as the beveling knife of the machine disclosed in my prior patent. In addition to having provision for adjustment to change the angle of the bevel produced on the welt, the beveling

knife shown in the drawings also has provision for adjustment transversely to the direction of feed for a purpose which will be presently described. The beveling knife is indicated at 38 and is secured to a segmental-shaped block 39 mounted in an arc-shaped slot in a block 40. The block 39 can be adjusted with relation to the block 40 to change the angle of the bevel produced by the beveling knife and is clamped in adjusted position by means of a clamping plate 41 secured to the block 40 by means of suitable screws as shown. In order to enable the beveling knife to be adjusted transversely to the direction of feed, the block 40 is adjustably secured to the frame of the machine below the work-supporting table by means of a screw 42 which passes through a slot in the frame and screws into the block. The block 40 is also held in position and guided during horizontal adjustment by means of a projection on the block which fits a horizontal guideway 43 formed in the frame.

It is desirable in welt grooving and beveling machines that means be provided whereby the grooving knife can be caused to cut a groove in the welt at different distances from the beveled edge. In the machine shown in the drawings these means consist of the means hereinbefore described for adjusting the internal guide and the beveling knife transversely to the direction of feed, as it will be readily seen that an adjustment of the internal guide and of the beveling knife toward the left as viewed in Fig. 3 will allow the edge guide 21 to press the welt farther to the left and cause the grooving knife to cut at a greater distance from the inner edge of the welt. An adjustment of the internal guide alone will change the distance from the edge of the welt at which the grooving knife acts and at the same time will change the depth of the cut produced by the beveling knife. The depth of cut produced by the beveling knife may also be varied by adjusting the knife upon the block 39, such adjustment being permitted by means of the screw 44 which secures the knife to the block and which passes through a slot in the knife.

The operation of the machine above described will be readily understood from the preceding description being, except in the particulars hereinbefore pointed out, substantially the same as that of the machine disclosed in my prior patent.

It will be understood that the machine above described which is similar in many respects as to the construction, arrangement, and mode of operation of its various parts to the machine disclosed in my prior patent, embodies my invention in its preferred form, but that except as specifically defined in the claims my invention is not limited to the machine shown nor to any particular construction or arrangement of parts.

Having thus indicated the nature and scope of my invention, and having specifically described the preferred embodiment thereof, I claim as new and desire to secure by Letters Patent of the United States.

1. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, an internal guide arranged to engage the inner edge of the welt and coöperate with the feeding mechanism to turn the welt, and a movable guide arranged to yieldingly engage the outer edge of the welt and force the welt into contact with the internal guide, substantially as described.

2. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, an internal guide arranged to engage the inner edge of the welt and coöperate with the feeding mechanism to turn the welt, and a yielding presser foot arranged to press upon the welt in proximity to the knives, said grooving knife being mounted to move with the presser foot, substantially as described.

3. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, an internal guide arranged to engage the inner edge of the welt and coöperate with the feeding mechanism to turn the welt, and a yielding presser foot arranged to press upon the welt in proximity to the knives, said grooving knife being adjustable thereon toward and from the surface of the welt, substantially as described.

4. A welt-groving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, an internal guide arranged to engage the inner edge of the welt and coöperate with the feeding mechanism to turn the welt, and means for adjusting said guide transversely to the direction of feed, substantially as described.

5. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, an internal guide arranged to engage the inner edge of the welt and coöperate with the feeding mechanism to turn the welt, and means for adjusting said guide and beveling knife transversely to the direction of feed, substantially as described.

6. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding a U-shaped welt, an internal guide arranged to engage the inner edge of the welt and coöperate with the feeding mechanism to turn the same, and means for adjusting the beveling knife transversely to the direction of feed to regulate the depth of the cut, substantially as described.

7. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, means for feeding a U-shaped welt, an internal guide arranged to engage the inner edge of the welt and cooperate with the feeding mechanism to turn the welt, a movable guide arranged to engage the outer edge of the welt and force the welt into contact with the internal guide, and a spring pressed lever acting to force the movable guide toward the internal guide and extending into a position to be moved by the operator, substantially as described.

8. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner end of a U-shaped welt, mechanism for feeding the U-shaped welt, an internal guide arranged to engage the inner edge of the welt and coöperating with the feeding mechanism to turn the same, means for angularly adjusting the beveling knife to change the angle of the bevel produced on the welt, and means for adjusting the beveling knife transversely to the direction of feed to regulate the depth of the cut, substantially as described.

9. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, mechanism for feeding the U-shaped welt, an internal guide arranged to engage the inner edge of the welt and coöperate with the feeding mechanism to turn the welt, and a yielding guide arranged to bear against the outer edge of the welt in line with the internal guide transversely of the welt and force the welt into contact with the internal guide, substantially as described.

10. A welt grooving and beveling machine, having, in combination, a grooving knife, a beveling knife arranged to act on the inner edge of a U-shaped welt, feed rolls, an internal guide arranged to engage the inner edge of the welt and coöperate with the feed rolls to turn the welt, and a yielding guide extending in the direction of feed on both sides of the line of contact of the rolls arranged to engage the outer edge of the welt and force the welt into contact with the internal guide, substantially as described.

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

ERASTUS E. WINKLEY.

Witnesses:

BENJAMIN PHILLIPS,

FRED O. FISH.