H. LYON.

WELT GROOVING AND BEVELING MACHINE.

APPLICATION FILED MAY 17, 1913.

1,074,726.

Patented Oct. 7, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

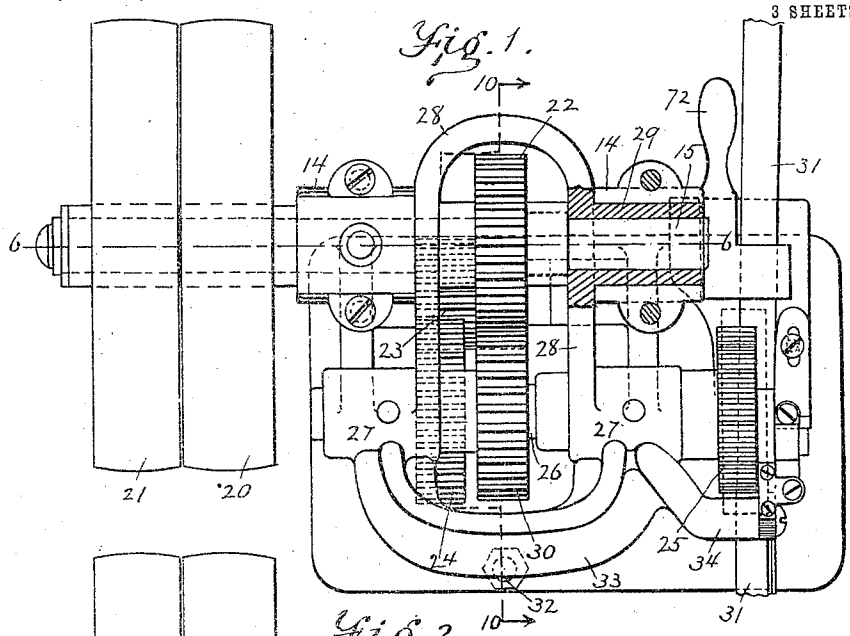

Fig. 2.

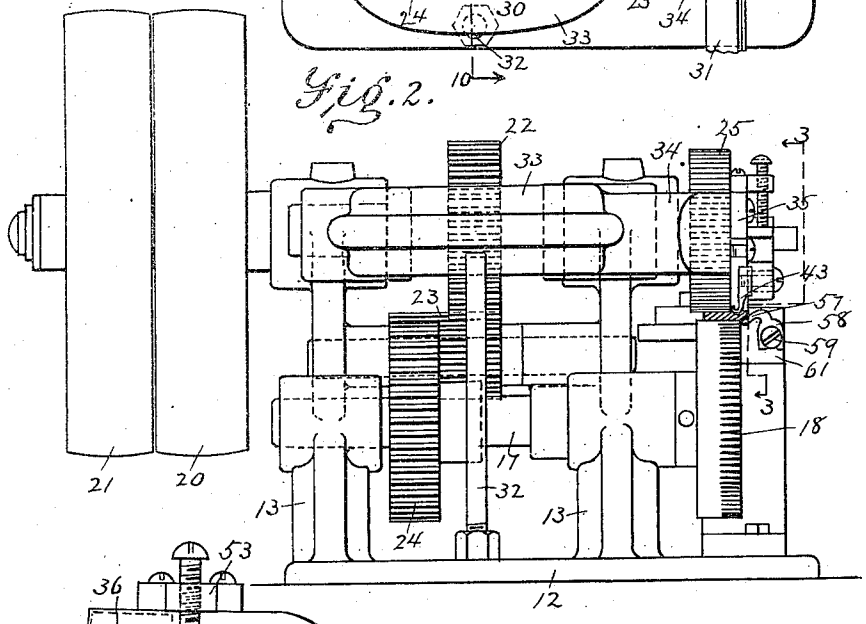

Fig. 3.

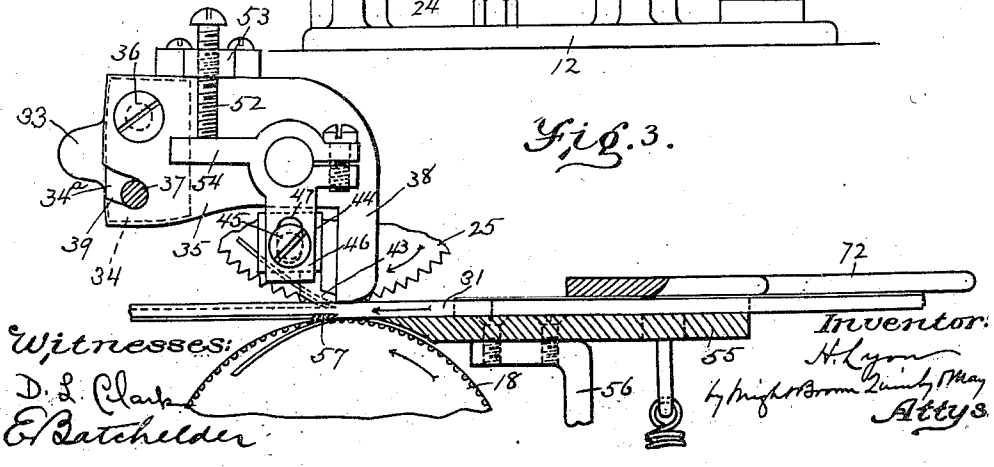

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Fig. 4.

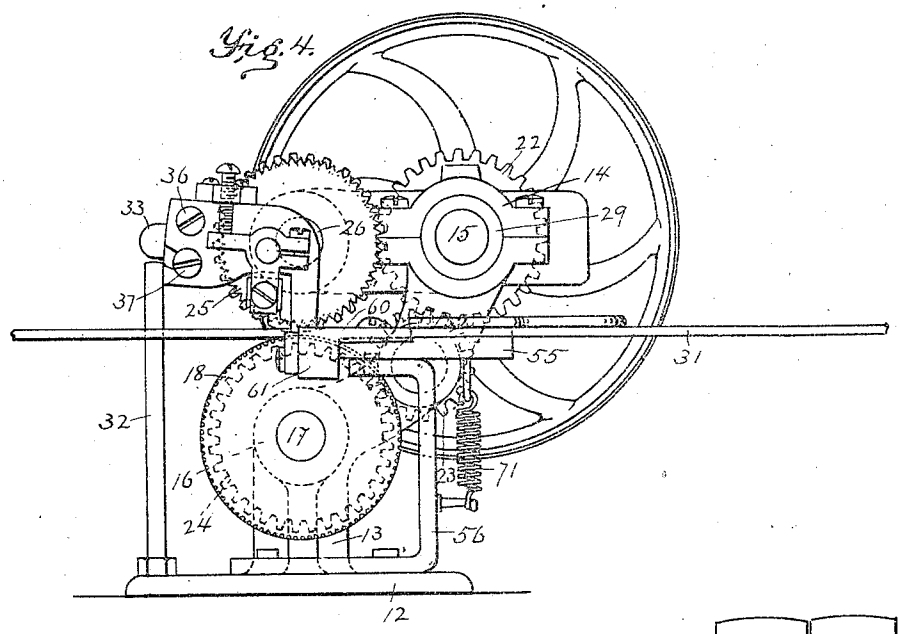


Fig. 5.

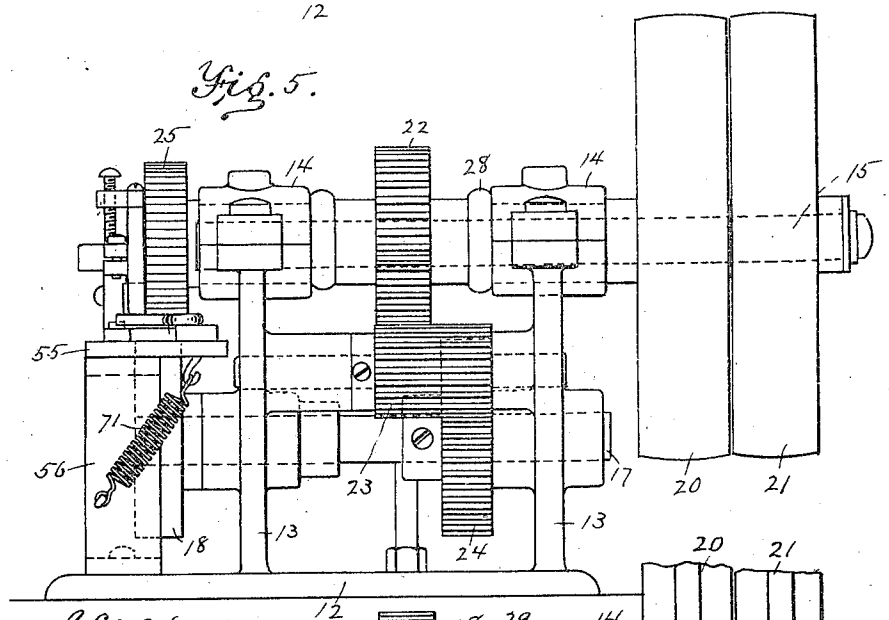
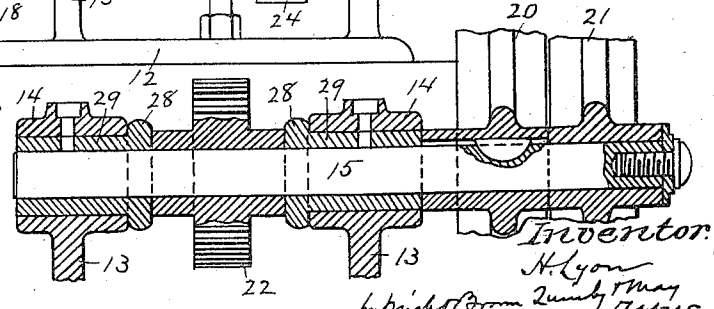


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

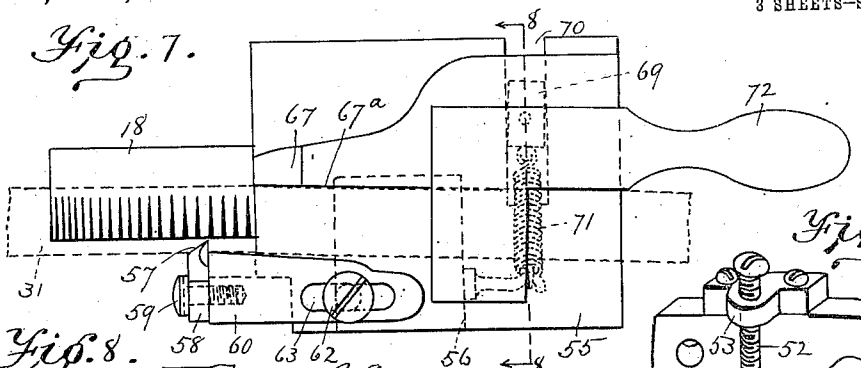


Fig. 8.

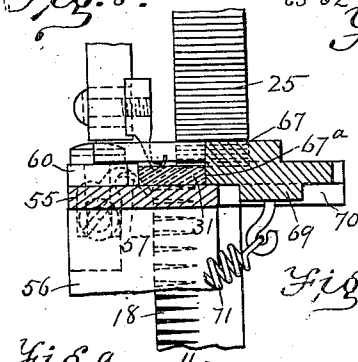


Fig. 13.

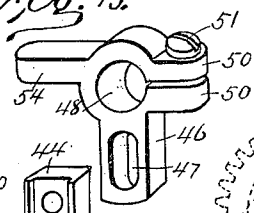


Fig. 12.

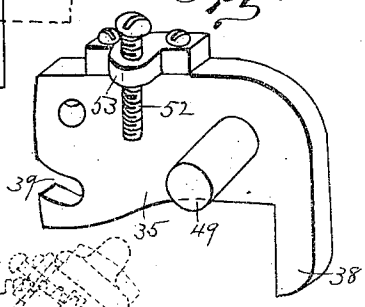


Fig. 14.

Fig. 10.

Fig. 9.

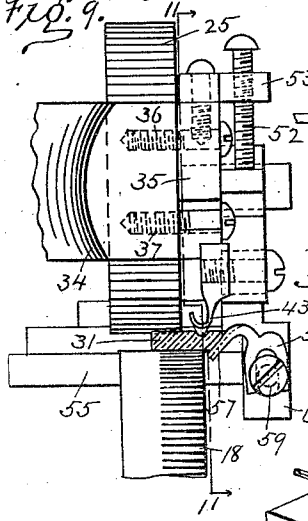


Fig. 15.

Fig. 16.

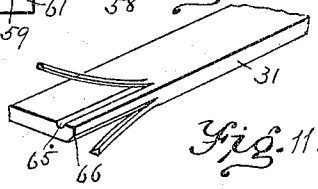
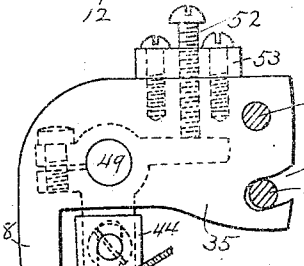
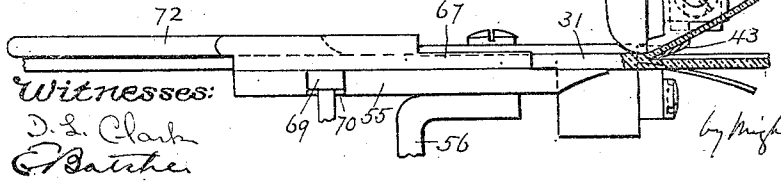


Fig. 11.





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UNITED STATES PATENT OFFICE.

HARRY LYON, OF BROCKTON, MASSACHUSETTS, ASSIGNOR TO JOHN A. BARBOUR AND PERLEY E. BARBOUR, OF BROCKTON, MASSACHUSETTS, COPARTNERS DOING BUSINESS AS BROCKTON RAND COMPANY, OF BROCKTON, MASSACHUSETTS.

WELT GROOVING AND BEVELING MACHINE.

1,074,726. Specification of Letters Patent. Patented Oct. 7, 1913.

Application filed May 17, 1913. Serial No. 768,285.

To all whom it may concern:

Be it known that I, HARRY LYON, a citizen of the United States, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Welt Grooving and Beveling Machines, of which the following is a specification.

This invention relates to machines for grooving one side of a strip of leather or other material suitable for welting for boots and shoes, and for forming a beveled face on one of the edges of said strip, or for performing either of these operations, the two operations being preferably performed simultaneously.

The invention is embodied in a machine having a lower and an upper strip-feeding roll, the lower roll being journaled in fixed bearings and being accompanied by a fixed beveling knife, adapted to act on one edge of the strip, while the upper roll is journaled in movable bearings, and is adapted to be moved toward and from the lower roll and conform to the thickness of the strip between the rolls, the upper roll being accompanied by a grooving-knife, which is also movable toward and from the lower roll and the beveling knife, so that the machine adjusts itself automatically to the thickness of the welt strip and is adapted to form a groove of uniform depth, regardless of the thickness of the strip, and also to bevel the edge of a strip of any thickness.

The invention is also embodied in a machine characterized as above stated, and provided with an adjustable gage for the inner edge of the welt strip, said gage being adapted to be quickly adjusted to the width of the strip, and to be automatically locked in its adjusted position.

The nature and objects of the invention are more fully set forth in the following specification, and the novel features are pointed out in the claims.

Of the accompanying drawings forming a part of this specification,—Figure 1 represents a top plan view of a machine embodying my invention, a part of the machine being shown in section. Fig. 2 represents a side elevation of the machine. Fig. 3 represents a partial section on line 3—3 of Fig. 2, and an elevation of parts at the left of said line. Fig. 4 represents a front elevation of the entire machine. Fig. 5 represents an elevation of the side opposite that shown by Fig. 2. Fig. 6 represents a section on line 6—6 of Fig. 1. Fig. 7 represents an enlargement of a portion of Fig. 1, the upper feeding roll and other parts being removed. Fig. 8 represents a section on line 8—8 of Fig. 7. Fig. 9 represents an enlargement of a portion of Fig. 2. Fig. 10 represents a section on line 10—10 of Fig. 1. Fig. 11 represents a section on line 11—11 of Fig. 9, and an elevation of the parts at the right of said line. Fig. 12 represents a perspective view of the part hereinafter called the face plate. Fig. 13 represents a perspective view of the grooving-knife supporting-arm. Fig. 14 represents a perspective view of the grooving-knife. Fig. 15 represents a perspective view of the beveling knife. Fig. 16 represents a perspective view of a welt strip partially grooved and beveled.

The same reference characters indicate the same parts in all of the figures.

12 represents the base of the machine frame to which are affixed standards 13, having upper bearings 14, for the driving-shaft 15, and lower bearings 16 for the shaft 17 which carries the lower welt-feeding roll 18, the upper ends of said standards being offset, as shown by Figs. 4 and 10, so that the shaft 15 is located at one side of and above the shaft 17. The driving-shaft has the usual fast and loose belt pulleys 20 and 21, and a driving gear 22, located between the bearings 14. An intermediate gear 23, the shaft of which is journaled in bearings in the standards 13, connects the driving gear 22 with a gear 24 on the lower feed roll shaft 17.

25 represents the upper welt-feeding roll, the shaft 26 of which is journaled in movable bearings 27 on a swinging yoke or frame 28 (Fig. 1), adapted to swing on the driving-shaft 15, said yoke being preferably provided with tubular trunnions 29, forming bushings for the bearings 14, and adapted to turn therein. A gear 30 attached to the upper feeding-roll shaft 26, meshes with the driving gear 22.

It will now be seen that the upper feeding roll 25 is adapted to be raised and lowered relatively to the lower feeding roll 18 and to a welt strip 31 interposed between said rolls, the upper roll being thereby adapted

to conform to the thickness of the welt strip and to be raised to entirely clear the same as indicated by dotted lines in Fig. 10. The downward movement of the upper roll may be limited by a fixed stop member 32 on the base and a movable stop member provided by a neck 33 formed on or attached to the bearings 27 and yoke 28, and extending across the space between the bearings 27, as shown by Fig. 1.

34 represents an arm which is movable with the bearings 27 and yoke 28 and is preferably formed integral with one of said bearings and with the neck 33, as shown by Fig. 1, said arm supporting the welt-grooving knife 43 (Fig. 14), through the intermediate devices next described. The outer end of the arm 34 has a flat face 34ª, on which bears an adjustable face plate 35, (Figs. 3 and 12), secured to the arm 34 by screws 36, 37. Said face plate has a downwardly projecting finger 38, adapted to bear on the outer end of the knife 43, above the U-shaped portion of the cutting edge, and also to bear lightly on the upper surface of the welt strip, said finger preventing the upper surface of the portion of the welt in which the groove is formed from being raised or bent upwardly by the knife. The plate 35 is provided with a curved slot 39 which receives the screw 37 and permits the plate to swing on the screw 36 to adjust the finger 38. The grooving-knife 43 has a shank 44 which is attached by a screw 45 to an arm 46 adjustably secured to the face plate 35, said arm having a slot 47 which receives the screw 45, and permits a vertical adjustment of the knife 43. The arm 46 has a socket 48 which is divided at one side and is adapted to receive a stud 49, affixed to the plate 35. The arm 46 is adapted to turn on said stud for the purpose of adjusting the knife 43 to a bearing on the finger 38. The socket 48 is adapted to be contracted on said stud to secure the knife in its adjusted position, the arm being provided for this purpose with ears 50 adjustably connected by a screw 51. A screw 52 adjustable in a tapped ear 53 on the plate 35 bears on an ear 54 on the arm 46, and is adapted to turn the arm on the stud 49 when the screw 51 is loosened.

It will be seen from the foregoing that the grooving-knife 43 is adjustably mounted on the frame which carries the upper feeding-roll and is movable with said roll toward and from the lower feeding-roll and the interposed welt strip.

55 represents a fixed strip-supporting bed supported by a fixed standard 56 on the base, the upper surface of the bed being tangential to the lower feeding-roll 18, as shown by Fig. 3. The welt-beveling knife 57 (Fig. 15) is supported by the bed 55, said knife having a slotted shank 58, which is attached by a screw 59 to a projection 61, (Fig. 4) on a strip guide or gage 60 which is secured to the bed 55 by a screw 62, passing through a slot 63, (Fig. 7) in said gage. The cutting edges of the grooving and beveling knives are arranged to form a groove 65 in the upper surface, and a beveled face 66 on one edge of the welt strip, as indicated by Fig. 16. The gage 60 bears on the outer edge of the welt strip, as indicated by Fig. 7. The beveling-knife is rendered adjustable by the slot 63 and screw 62, to compensate for wear of its cutting edge.

67 represents an inner gage or guide for the inner edge of the welt strip, said gage being adjustable toward and from the fixed gage 60, and provided with means whereby it may be quickly adjusted to the width of the strip, and automatically locked in its adjusted position. The adjustable gage 67, which is best shown by Figs. 7 and 8, is a plate formed to slide on the bed 55, and provided with a guiding face 67ª against which the inner edge of the welt strip bears. The under side of the gage plate 67 is provided with a projection 69, and the bed 55 is provided with a slot 70 in which the projection is movable. The slot and projection have parallel edges and the projection is narrower than the slot, so that its edges are movable out of parallelism with the edges of the slot, as shown by dotted lines in Fig. 7, two diagonally opposite corners of the projection being therefore adapted to be held in binding or locking engagement with the edges of the slot. A spring 71 connected at one end with a hook on the projection 69 and at the other end with a hook on the standard 56, normally holds the projection 69 in locking engagement with the sides of the slot. The gage plate 67 is provided with a handle 72 by which the operator may turn it to loosen the projection 69, and permit free movement thereof lengthwise of the slot 70, for the purpose of laterally adjusting the gage face 67ª. When a welt strip is applied to the machine, the upper feed roll rises automatically, it being raised by the welt strip. The operator places the outer edge of the strip against the fixed gage 60, and at the same time manipulates the handle 72, to release the projection 69, so that the gage plate 67 is free to adjust itself to the width of the strip. When the strip is in place between the two gages, the operator releases the handle 72, and the gage plate 67 is automatically locked in its adjusted position.

The feeding-rolls 18 and 25 are rotated by the described mechanism in the directions indicated by the arrows in Fig. 3, and the knives 57 and 43 are arranged to engage the strip at points close to or beside the nip of the feeding-rolls, so that the rolls do not

exert a pulling strain on the portion of the strip which is engaged by the knives, but instead, push said portion against the knives. Hence, there is no liability of stretching the strip and temporarily reducing its thickness at the point where it is being cut, when the strip is of soft and stretchy material. The depth of the groove 65 formed in the strip is therefore uniform. The upper feeding-roll and the grooving-knife being mounted, as described, on a frame which is journaled to swing on the axis of the driving gear 22, the torque of said gear exerts a downward pressure on the upper feeding-roll and holds it against the welt strip with a pressure which is not affected by the thickness of the strip. Said pressure is however affected by the resistance offered by the knives to the feed movement of the strip, so that when the knives are dull and offer an increased resistance, the downward pressure of the upper feeding-roll is increased in proportion to the resistance. The positive feeding of the strip against relatively dull knives is thus insured and the pressure maintained at all times at no more than the degree necessary to cut and feed the strip. When the knives encounter relatively soft portions of the strip, the pressure is diminished, so that the soft portions are not unduly compressed by the feeding-rolls.

I claim:

1. A welt-preparing machine comprising a lower feeding-roll supported by fixed bearings, a support movable toward and from the lower roll, an upper feed roll and a grooving-knife carried by said support, a driving-shaft and driving connections between said shaft and feeding-rolls causing the torque of the driving-shaft to exert a downward pressure on the upper feeding-roll.

2. A welt-preparing machine comprising a lower feeding shaft journaled in fixed bearings and provided with a lower feeding-roll, a driving-shaft provided with a driving gear, an oscillatory support journaled on the driving-shaft, an upper feeding shaft journaled in bearings on said support and provided with an upper feeding-roll, a grooving-knife connected with said support, and connections between the driving gear and the feeding shafts, whereby said shafts and rolls are driven, the upper feeding-roll being pressed downwardly by the torque of the driving gear.

3. A welt-preparing machine comprising a lower feeding shaft journaled in fixed bearings and provided with a lower feeding-roll, a driving-shaft provided with a driving gear, an oscillatory support journaled on the driving-shaft, an upper feeding shaft journaled in bearings on said support and provided with an upper feeding-roll, a grooving-knife connected with said support, a gear on the upper feed shaft meshing with the driving gear and pressed downwardly by the torque of the latter, a gear on the lower feed shaft, and an intermediate gear journaled in fixed bearings and connecting the gear on the lower feed shaft with the driving gear.

4. A welt-preparing machine comprising a lower shaft supported by fixed bearings and provided with a lower feeding roll, a driving shaft having a driving gear, a swinging frame journaled on the driving shaft, and provided with an arm at its swinging end, an upper shaft journaled in bearings on said frame and provided with an upper feeding roll, driving connections between the driving gear and feed shafts, and a grooving-knife adjustably mounted on said arm.

5. A welt-preparing machine comprising a lower shaft supported by fixed bearings and provided with a lower feeding-roll, a driving shaft having a driving gear, a swinging frame journaled on the driving shaft, and provided with an arm at its swinging end, an upper shaft journaled in bearings on said frame and provided with an upper feeding roll, driving connections between the driving gear and feed shafts, a finger connected with said arm and adapted to bear on a welt strip, and a grooving-knife adjustably mounted on the arm and adapted to bear on said finger.

6. A welt-preparing machine comprising a lower shaft supported by fixed bearings and provided with a lower feeding-roll, a driving shaft having a driving gear, a swinging frame journaled on the driving shaft, and provided with an arm at its swinging end, an upper shaft journaled in bearings on said frame and provided with an upper feeding roll, driving connections between the driving gear and feed shafts, a face plate adjustably secured to said arm and provided with a downwardly projecting finger, an arm adjustably connected with said face plate and a grooving-knife attached to said arm, and adapted to bear on the finger.

7. A welt-preparing machine comprising lower and upper feeding-rolls, fixed bearings for the lower roll, a movable support having bearings for the upper roll, a fixed bed adjacent to the nip of the rolls, an outer gage attached to said bed and adapted to guide the outer edge of a welt strip, a beveling knife adjustably secured to said gage, and supported thereby at a predetermined height relatively to the highest part of the lower roll, and an inner gage adjustably mounted on the bed.

8. A welt-preparing machine comprising lower and upper feeding-rolls, fixed bearings for the lower roll, a movable support having bearings for the upper roll, a fixed

bed adjacent to the nip of the rolls, an outer gage attached to said bed and adapted to guide the outer edge of a welt strip, a beveling knife adjustably secured to said gage, and supported thereby at a predetermined height relatively to the highest part of the lower roll, an inner gage adjustably mounted on the bed, and a grooving-knife adjustably secured to the said movable support.

9. A welt-preparing machine comprising lower and upper feeding-rolls, fixed bearings for the lower roll, a movable support having bearings for the upper roll, a fixed bed adjacent to the nip of the rolls, an outer gage attached to said bed and adapted to guide the outer edge of a welt strip, a beveling knife adjustably secured to said gage, an inner gage movable on the bed, and adjustable toward and from the outer gage, and automatic means for locking the inner gage in any position to which it may be adjusted.

10. A welt-preparing machine comprising lower and upper feeding-rolls, fixed bearings for the lower roll, a movable support having bearings for the upper roll, a fixed bed adjacent to the nip of the rolls, and provided with a parallel-sided slot, an outer gage attached to said bed and adapted to guide the outer edge of a welt strip, a beveling knife adjustably secured to said gage, an inner gage movable on the bed and provided with a parallel-sided projection movable in said slot and adapted to engage the sides thereof, and a spring adapted to hold the projection in binding engagement with the sides of the slot.

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

HARRY LYON.

Witnesses:
HARRY J. HISTEN,
KENNETH W. KEITH.