C. E. KING.

CUTTING MACHINE.

APPLICATION FILED FEB. 18, 1920.

1,406,459.

Patented Feb. 14, 1922.

2 SHEETS—SHEET 1.

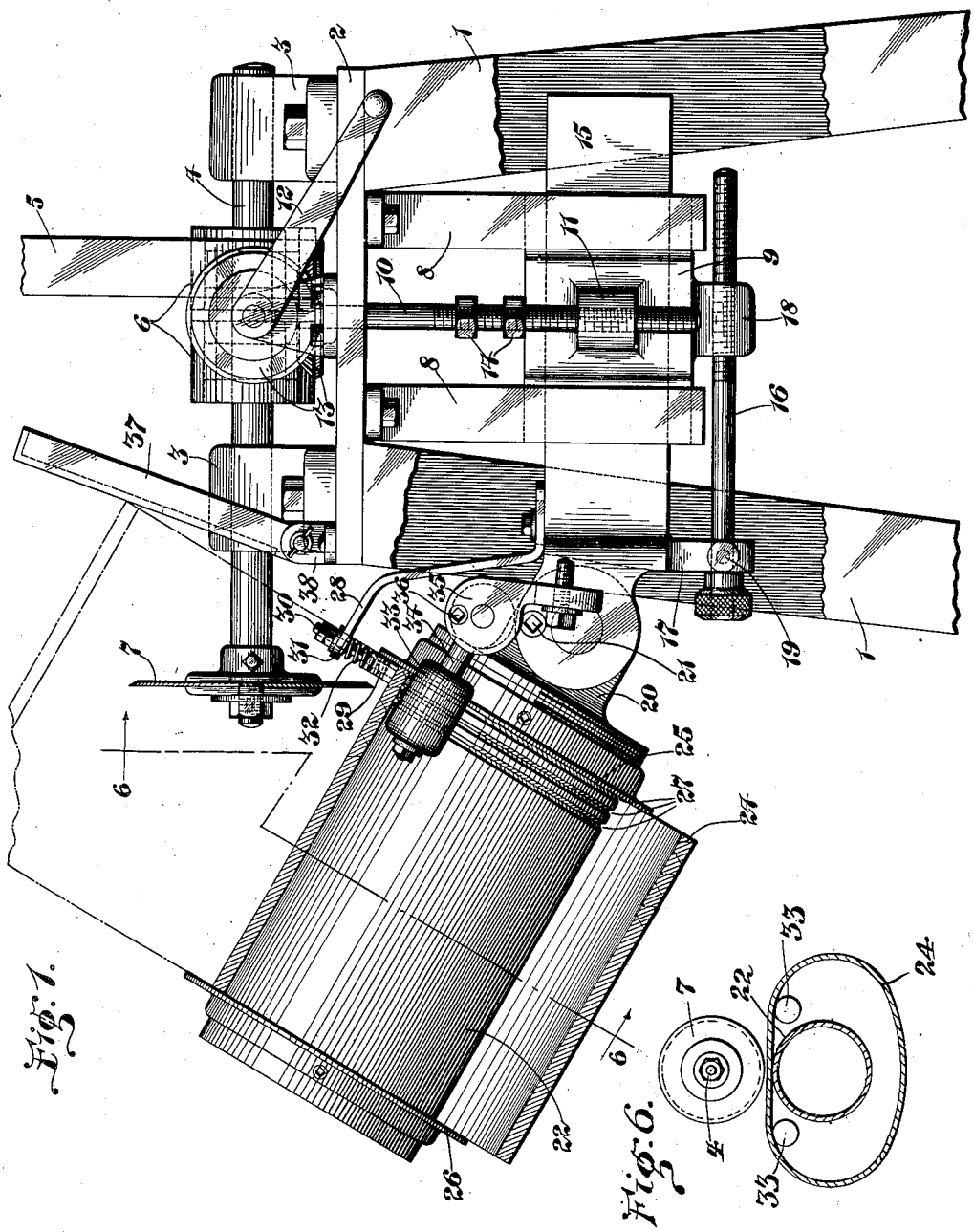


Fig. 1.

Fig. 6.

Attest.

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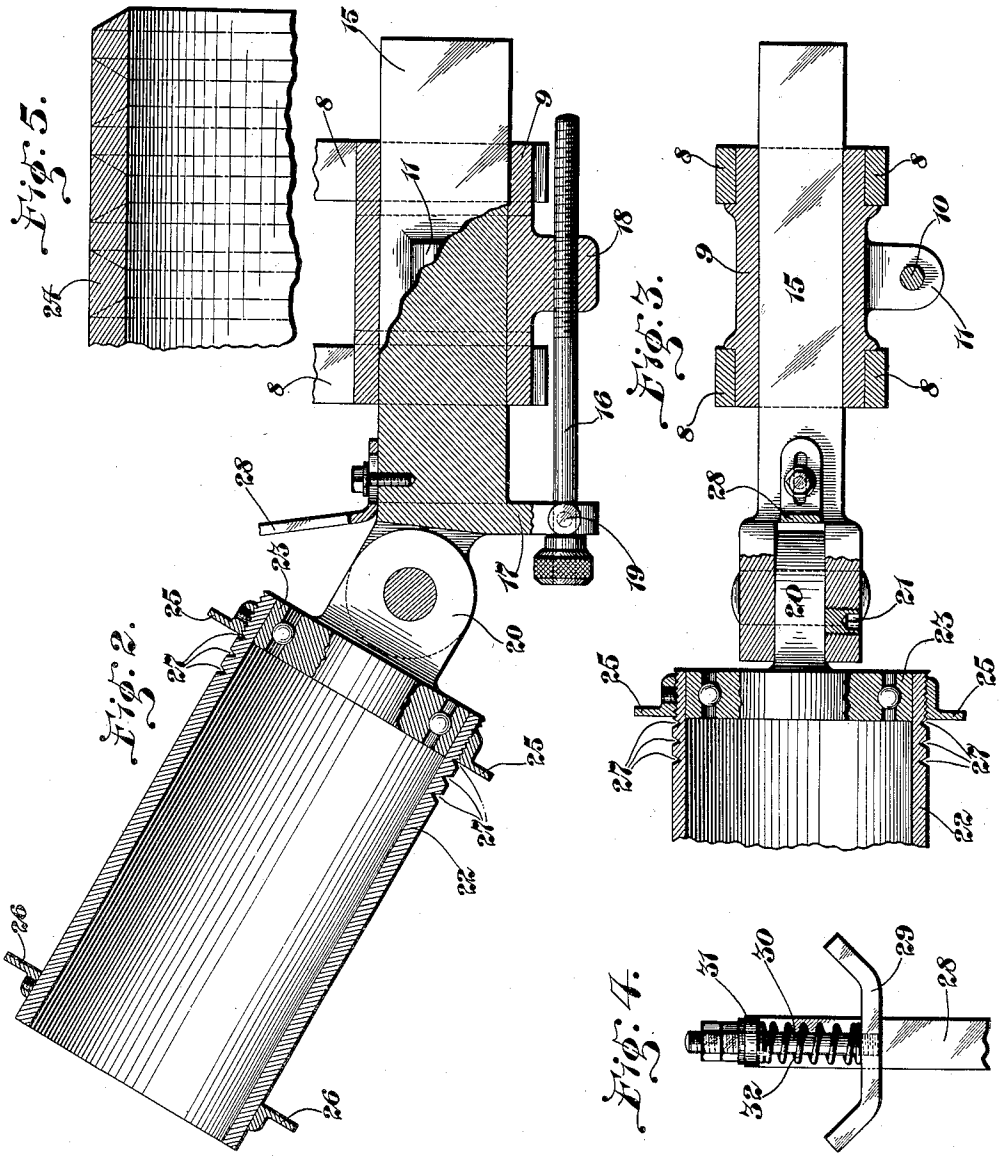
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Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES E. KING, OF ST. LOUIS, MISSOURI, ASSIGNOR TO CAPEN BELTING AND RUBBER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

CUTTING MACHINE.

1,406,459. Specification of Letters Patent. Patented Feb. 14, 1922.

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To all whom it may concern:

Be it known that I, CHARLES E. KING, a citizen of the United States, residing at the city of St. Louis and State of Missouri, have invented a new and useful Cutting Machine, of which the following is a specification.

This invention relates to improvements in cutting machines and more particularly to a cutting machine adapted to cut V-shaped or angular belts from a cylindrical blank of leather, or other material.

An object of the invention is to provide a machine adapted to cut from a cylindrical blank a plurality of belts having the side edges thereof oppositely beveled, forming a V-shaped or angular belt.

Another object of the invention is to provide in a machine of the class described an adjustable cylindrical blank support arranged to present the blank to a cutter at an angle, whereby a plurality of belts having oppositely beveled edges may be cut from the cylindrical blank.

Another object of the invention is to provide a machine of the class described designed to support a cylindrical blank for presentation to the cutting edge of a cutter and arranged so that the blank may be cut both from the outer and inner periphery of the cylindrical wall of the blank.

Additional advantages and improved features of construction inherent in the invention will be understood without specific mention from the following detailed description of the invention taken in connection with the accompanying drawings, in which—

Fig. 1 is a side elevation partially in section illustrating the construction of the machine.

Fig. 2 is a detached vertical section illustrating the construction and adjustment of the cylindrical blank support.

Fig. 3 is a cross section through a portion of the element illustrated in Fig. 2, further illustrating the construction thereof.

Fig. 4 is a detailed view of a presser foot arranged to cooperate with other parts to hold the work in proper relation to the cutter.

Fig. 5 is a fragmentary view of a portion of the work illustrating the lines of cut performed by the machine.

Fig. 6 is a sectional view taken substantially on the line 6—6 of Fig. 1.

In the embodiment of the invention illustrated in the drawings, the invention is shown as including a frame composed of four standards 1 and a top plate 2. Supported by the top plate 2 is a pair of journal brackets 3 constituting bearings for a cutter shaft 4 that extends beyond the edge of the frame of the machine at one side.

The shaft 4 may be driven from any suitable source of power, the indicated means being a belt 5 arranged to drive the usual fast and loose pulley construction 6. A circular cutter 7 is removably attached at the end of the cutter shaft, the cutter 7 being disposed at a right angle to the axis of the shaft 4.

Below the plate 2 and in the space between the standards 1 are depending brackets 8 preferably removably attached to the under face of the plate 2. The brackets 8 support a block, 9, the block 9 being slidable vertically in the brackets 8. Any suitable form of mechanism may be provided for vertically moving the block 9, the form illustrated comprising a screw 10 operating in a threaded boss 11 formed integral with a side face of the block 9. Manual mechanism for operating the screw 10 is provided and in the form illustrated comprises a handle 12 operatively connected with the screw 10 by bevel gear construction 13. Adjustable nuts 14 are provided on the screw 10 in order to limit the upward movement of the block 9. An arm 15 is slidably supported in an opening running longitudinally of the block 9, the arm being movable horizontally in respect of the block 9. Means for adjusting the arm 15 is provided, the means illustrated comprising a thumb screw 16 extending at one end through a bracket 17 supported from the lower wall of the arm 15 and operating at the opposite end in a threaded boss 18 supported by the lower wall of the block 9. By manipulation of the screw 16 the arm 15 may be moved longitudinally in a horizontal direction in respect of the block 9. After the proper adjustment has been made the parts may

be locked against movement by a set screw 19 mounted in the bracket 17.

The arm 15 carries at its outer end an adjustable bearing support 20 which has a knuckle or hinge connection with the end of the arm 15. The support 20, therefore, may be adjusted at different angular positions with respect to the arm 15 and after the proper angular adjustment for the specific size and angle of cut has been effected, the parts may be locked against displacement by a lock screw 21.

The support 20 carries a cylindrical sleeve 22. The sleeve 22 is journaled for rotation in connection with the support 20, in the embodiment shown an antifriction ball bearing construction 23 being employed. The sleeve 22 constitutes the work support, the work being in the form of a cylindrical blank 24, and in order to effect a proper alinement of the work adjustable flanges 25 and 26 are mounted adjacent each end of the sleeve 22. Near the inner or lower end of the sleeve is a plurality of spaced grooves 27 in the periphery of the sleeve. These grooves are provided so as to prevent the cutter edge, after having cut through the blank, from coming in contact with the sleeve.

An angular bracket 28 is supported by the upper face of the arm 15, the bracket extending over the work support and carrying at its outer end a presser foot 29, the presser foot being supported by a stem 30 slidably mounted in an eye 31 formed at the extremity of the bracket 28. An expansion spring 32 is interposed between the upper face of the presser foot 29 and the end face of the eye 31, thereby resiliently and yieldingly holding the presser foot in contact with the work when the edge of the cylindrical blank, constituting the work, is adjusted for cutting operation.

A pair of rollers 33, carried by stud shafts 34 hinged in brackets 35 carried by the frame of the machine, is provided. These rollers are positioned at each side of the cutter, and slightly above the lower edge thereof. The shafts on which they are supported are hinged to the brackets 35, so that angular adjustment of the rollers may be effected. After the adjustment has been made the shafts may be locked against displacement by lock screws 36.

Attached to the frame of the machine on each side of the shaft 4 is a rod 37, pivoted to ears 38, said rods 37 constituting a support or back rest for the edge of the cylindrical blank, thus serving to aline the blank for the presentation of it to the cutter.

The operation of the machine is as follows. The work, in the form of a cylindrical blank of leather, composition, or other material, is placed upon the sleeve 22, the lower edge of the cylindrical blank extending under the presser foot 29. By manipulation of the handle 12 the work is raised into contact with the cutting edge of the cutter 7.

When the work is first presented to the cutter the work is only elevated a sufficient distance so that the edge of the cutter will make contact with the surface of the work, performing a scoring cut at an outwardly obliquing angle. After the scoring cut has been performed the work is further elevated by manipulation of the handle 12, the work revolved on the sleeve 22, and the material cut through. Upon the next operation the cylindrical blank is removed from the sleeve 22 and is placed upon the upper face of the sleeve in the position indicated in dotted lines in Fig. 1, the lower edge of the cylindrical blank being pressed under the presser foot. The inside lower edge of the cylindrical blank, when the work is in this position, encircles the rollers 33 so as to straighten out the cylindrical blank adjacent to the cutting edge of the cutter, and prevent contact with the cutter except at the cutting point against the sleeve. The work is then raised against the cutter a sufficient distance to perform the initial or scoring cut, after which the work is further raised to perform the final cut through the material.

It will be noted that the channels or grooves 27 are so arranged as to receive the edge of the cutter after the cutter has cut through the cylindrical blank, thereby preventing contact of the cutter edge with the sleeve 22.

By adjusting the angle of the support 20, and by moving the arm 15 and by adjusting the ring 25, the cylindrical blank may be cut into belts of varying widths with the edges thereof beveled at varying angles.

It will be noted also that the angle of the rollers 23 is arranged so that they may be adjusted coordinately with the adjustment of the work support.

The machine of the present invention provides means for cutting belts from a cylindrical ring blank which is entirely a new practice in constructing V-shaped or angular belts. This practice utilizes the entire width of the blank without loss of material, excepting the slight loss of material on the initial and final trimming cuts at the ends of the cylindrical blank. The angular cut for the edge of one belt forms a beveled edge for the adjacent belt and by cutting the cylindrical ring blank alternately from the outer wall and then from the inner wall the belts are formed with uniformly beveled edges, and there is no waste of material such as results in the present practice of beveling the edges of a straight strip, and then forming the belt by joining the ends of the bevel strip.

I am aware that the invention may be modified in details of construction without

departing from the spirit and scope of the invention, I do not restrict myself therefore to the exact construction and arrangement shown and described, but what I claim and desire to secure by Letters Patent, is:—

1. In a machine of the class described, the combination with a frame, a cutter shaft mounted in said frame, and a circular cutter carried by said shaft, of a cylindrical sleeve, a support for said sleeve, means for adjusting the angular position of said sleeve, and means for raising and lowering said support to bring the work into and out of contact with the cutter.

2. In a machine of the class described, the combination with a frame, a cutter shaft mounted in said frame extending beyond the frame at one side, and a circular cutter carried by said shaft, of a vertically movable support carried by said frame, an adjustable arm carried by said support, a support hinged to said arm, a sleeve carried by said support and disposed below said cutter, and means for moving said first-named support to bring the work supported by said sleeve into and out of contact with the cutter.

3. In a machine of the class described, the combination with a circular cutter, of a work support adapted to present the work to the cutter, a presser foot arranged adjacent to the work support, guide rollers arranged at each side of the cutter, and means for raising and lowering said work support.

4. In a machine of the class described, the combination with a frame, a cutter shaft mounted in said frame, a circular cutter carried by said shaft, of a vertically movable block supported in the frame, mechanism for raising and lowering said block, a slidable arm mounted in said block and extending laterally in respect thereof, mechanism for adjusting said arm, a bearing hinged to said arm, a revoluble sleeve carried by said bearing and arranged below the cutter, and adjustable guiding flanges on said sleeve.

5. In a machine of the class described, the combination with a frame, a cutter shaft mounted in said frame, a circular cutter carried by said shaft, of a vertically movable block supported in the frame, mechanism for raising and lowering said block, a slidable arm mounted in said block and extending laterally in respect thereof, mechanism for adjusting said arm, a bearing hinged to said arm, a revoluble sleeve carried by said bearing and arranged below the cutter, adjustable guiding flanges on said sleeve, a bracket carried by said arm, and a presser foot mounted in said bracket adapted to hold the work.

6. In a machine of the class described, the combination with a frame, a cutter shaft mounted in the frame, a circular cutter carried by said shaft, of a cylindrical sleeve constituting a work support, a vertically movable and angularly adjustable support for said sleeve, and means for effecting the adjustment of said support.

7. In a machine of the class described, the combination with a frame, a cutter shaft mounted in the frame, a circular cutter carried by said shaft, of a cylindrical sleeve constituting a work support, a vertically movable and angularly adjustable support for said sleeve, means for effecting the adjustment of said support, and guide rollers positioned at each side of the cutter.

8. In a machine of the class described, the combination with a frame, a cutter shaft mounted in the frame, a circular cutter carried by said shaft, of a cylindrical sleeve constituting a work support, a vertically movable and angularly adjustable support for said sleeve, means for effecting the adjustment of said support, guide rollers positioned at each side of the cutter, and a presser foot arranged adjacent to the sleeve adapted to hold the work against said sleeve in cutting operations.

CHARLES E. KING.