B. J. ROY.

PURFLING GROOVE CUTTER.

APPLICATION FILED MAR. 10, 1921.

1,432,910.

Patented Oct. 24, 1922.

Fig. 1

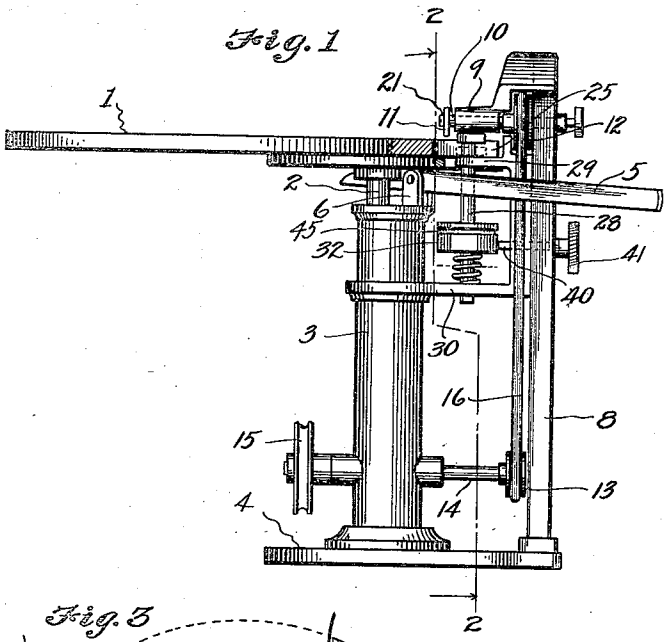


Fig. 2

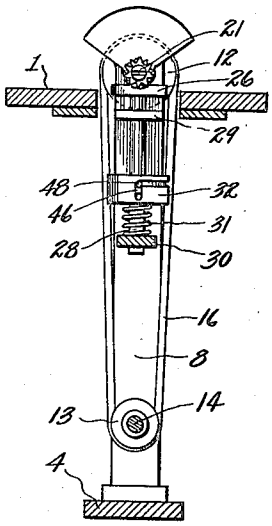


Fig. 3

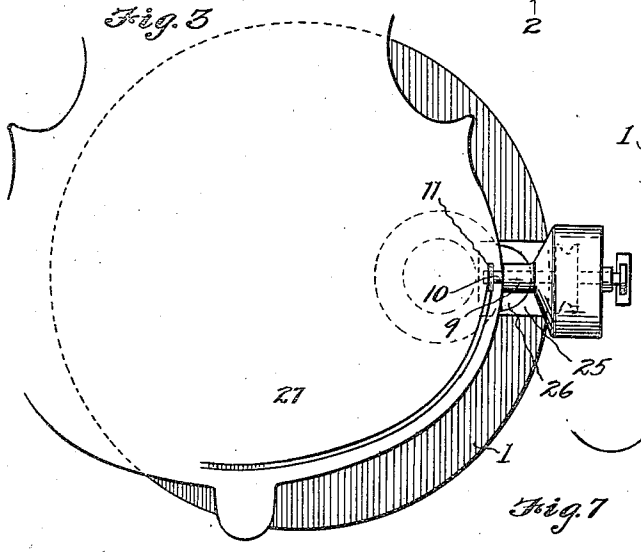


Fig. 4

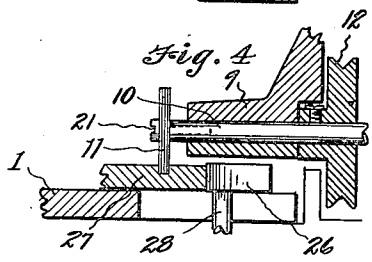


Fig. 5



Fig. 6

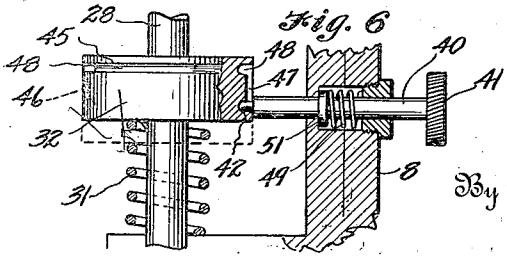


Fig. 7

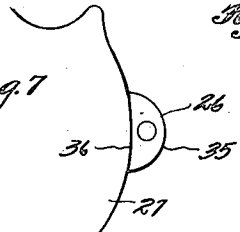
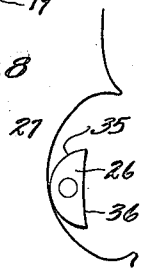


Fig. 8



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Patented Oct. 24, 1922. 1,432,910

UNITED STATES PATENT OFFICE.

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PURFLING-GROOVE CUTTER.

Application filed March 10, 1921. Serial No. 451,166.

To all whom it may concern:

Be it known that I, BENJAMIN J. ROY, a citizen of the United States, and a resident of the city of Seattle, county of King, State of Washington, have invented certain new and useful Improvements in Purfling-Groove Cutters, of which the following is a specification.

My invention relates to purfling groove cutting machines, more particularly it relates to improvements in the groove cutting member itself and in a guide along which the piece wherein the groove is being formed, may be advanced to the cutter.

The principal object of the present invention resides in the provision in a machine of the above character for the purpose of cutting purfling grooves in violin bodies, of an improved means for cutting the grooves and for adjusting the parts to produce a groove of any desired depth or width, embodying a specific cutter whereby the grooves about the C cuts and sharp curves in the corners, may be easily and accurately made.

Another object of the invention resides in the provision of an improved, reversible guide block or gauge having opposite sides adapted to fit the covex or concave curves which the cutter is required to follow and which makes the work of guiding the piece easier, especially for beginners using the machine.

Another object of the invention resides in the details of construction of the cutter, whereby it may be used in forming grooves of various widths.

A still further object of the invention resides in the means provided for adjusting the guide block to different positions, and in the means for retaining it at an adjusted position.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of a purfling groove cutting machine, embodied by the present invention.

Figure 2 is a vertical section of the same, taken on the line 2—2 in Figure 1.

Figure 3 is a plan view of the machine, showing its use in cutting a groove in the back section of a violin body.

Figure 4 is an enlarged, detail, sectional view through the cutter shaft supporting bearing.

Figure 5 is a perspective view of the cutter forming discs in disassembled relation.

Figure 6 is an enlarged, sectional view of the guide block supporting and locking device.

Figure 7 is a plan view illustrating the disposition of the guide when a groove is being formed along a convex curve.

Figure 8 is a similar view showing the disposition of the guide when working along a C or concave curve.

Referring more in detail to the several views of the drawings—

1 designates a horizontal work supporting table which is mounted, at one side of its side of its center, upon a standard 2, that is slidably contained to move vertically within a tubular post 3 that is fixed rigidly upon a flat base plate 4. A lever 5 is pivotally mounted upon the upper end of the post 3 between two upstanding ears 6, with its inner end dsposed beneath the table in such manner that vertical movement of its outer end will cause the table to be adjusted vertically for a purpose presently disclosed.

Also mounted upon the base 4 is a standard 8 equipped, at its upper end, with suitable bearings as at 9, wherein a horizontal shaft 10 is revolubly contained. At its outer end, which is disposed above the adjacent edge of the table 1, the shaft is equipped with a circular cutter 11, which will presently be described in detail, and at its other end, has a belt wheel 12 fixed thereto which lines up with a belt wheel 13 on a drive shaft 14 that is revolubly carried within the lower end of the post 3. The latter shaft is equipped with a belt wheel 15 whereby it may be driven, and a belt 16 is extended about wheels 12 and 13 to provide for driving the cutter shaft and cutter.

The cutter used in the present machine is made up of a plurality of toothed cutter disks, as are best illustrated in Figure 5; the number used at any particular time depending upon the desired width of the groove being formed. In their preferred form the outer or end disks 18 making up a cutter, are equipped with regular straight cutting saw teeth while the intermediate cutting disks 19 are equipped with drag teeth of irregular length and spacing whereby the

wood is gouged out from between the cuts made by the end cutters. It has been found by experimenting that the success of the cutter to a great extent is due to the irregularity of the teeth of the intermediate disks and for this reason they are not all made alike or arranged in any particular order when ssembled.

Each cutter disk is provided centrally with an aperture 20 for receiving a screw 21 which threads into the end of the shaft, or arbor 10, to hold the cutters tightly together and fixed to the driving shaft.

Directly beneath the cutter, the table has a recess 25 cut therein wherein a guide block 26 is located, and against which the edge of a piece of work, such as the back section of a violin as shown at 27 in Figure 3, may be moved to gauge the distance of the groove from the edge of the piece.

This guide block is mounted at the upper end of a stem 28 that is slidably supported in the upper and lower arms 29 and 30 of a bracket that is fixed to the standard 8. Normally the stem is retained at its upper limit by means of a spring 31 that is wound about the same and bears against the arm 30 and against a cylindrical knob 32 fixed on the stem.

The guide block has a semi-circular, radially curved convex surface 35 which is turned against the piece of work when operating along the C curves or on concave surfaces, as shown in Figure 8, and at its opposite side has a slightly concave surface 36 which is turned against the work when the groove is being formed along convex surfaces, as illustrated in Figure 7. The vertical movement of the stem which carries the guide permits the latter to be adjusted to use either face without the work having to be removed from the cutter.

To hold the guide at an adjusted position, I have provided a locking pin 40, Figure 6, which is mounted in the standard 8. At its outer end the pin has a knob 41 thereon, and at its inner end has a point 42 adapted to seat within the sockets formed in the knob 32. A groove 45 is formed circumferentially half way about the knob 32 which leads into vertical grooves 46 and 47 at opposite sides of the knob, and in the opposite ends of these latter grooves sockets 48 are formed for receiving the end of the locking pin.

The pin is yieldingly held against the knob by means of a spring 49 that is seated within a socket formed in the standard 8 about the pin, and bears against a shoulder 51 on the pin. This construction provides for locking the guide block at raised or lowered position with either face in position for engaging the piece being grooved.

Assuming that the device is so constructed, in using the same, the piece to be grooved is placed upon the table 1 and the table raised to bring the work against the cutter 11; the latter is then driven through the belt connections provided, to cause a groove to be cut within the piece parallel to its edge as the piece is moved along the guide block. While the groove is being formed along the convex surfaces, as is shown in Figure 3, the guide block is adjusted so that the face 36 thereof will engage the piece. But, when the groove is being formed along the C curves, or concave surfaces, the guide is reversed so that the surface 35 will engage the work. This adjustment is effected by drawing the pin 40 outwardly to release the knob 32, so that the latter may be moved downwardly and revolved to bring its opposite face into position.

If it is desired to increase the depth of the groove being formed, the outer end of the lever 5 is moved downwardly to raise the table. If the groove is to be made wider or narrower, the cutter is removed from the shaft 10 and more or fewer of the cutters 19 inserted, so that the desired width can be obtained.

The distance that the groove is formed from the edge of the piece may be varied by the adjustment of the shaft 10 outwardly or inwardly; it being held at any position of adjustment by means of the pulley wheel 12 which is secured thereto, in any suitable manner.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent, is:

1. In a machine of the class described, the combination with a work supporting table, and a rotary cutter for making grooves in said work, of a reversible guide block mounted adjacent said cutter, against which said work may be advanced and guided to the cutter; said block having convex and concave guide surfaces at its opposite sides for the purpose set forth.

2. In a machine of the class described, the combination with a work supporting table, and a rotary cutter for making grooves in said work, of a revolubly and slidably mounted guide block supporting stem, a guide block fixed to said shaft and disposed adjacent the cutter against which the work may be advanced and guided to the cutter, said block having convex and concave guide surfaces at opposite sides thereof and a yieldable locking member for retaining the shaft and block at adjusted positions for the use of either guide surface.

3. In a machine of the class described, the combination with a work supporting table, and a rotary cutter for making grooves in said work, of a revolubly and slidably mounted guide block supporting stem, a guide block fixed to said shaft and dis-

posed adjacent the cutter against which the work may be advanced and guided to the cutter; said block having convex and concave guide surfaces at opposite sides thereof, a cylindrical knob fixed on said stem having sockets at diametrically opposite sides thereof, a yieldable locking pin having a pointed end adapted to be projected into some of said sockets to lock the stem at different positions of adjustment in a longitudinal direction and into other sockets to retain the different faces of the guide block in position for use.

Signed at Seattle, Washington, this 3rd day of March, 1921.

BENJAMIN J. ROY.