Dec. 18, 1945. C. A. MILLER ET AL. 2,391,260

DENTAL TOOL SHARPENING DEVICE

Filed March 2, 1945 3 Sheets-Sheet 1

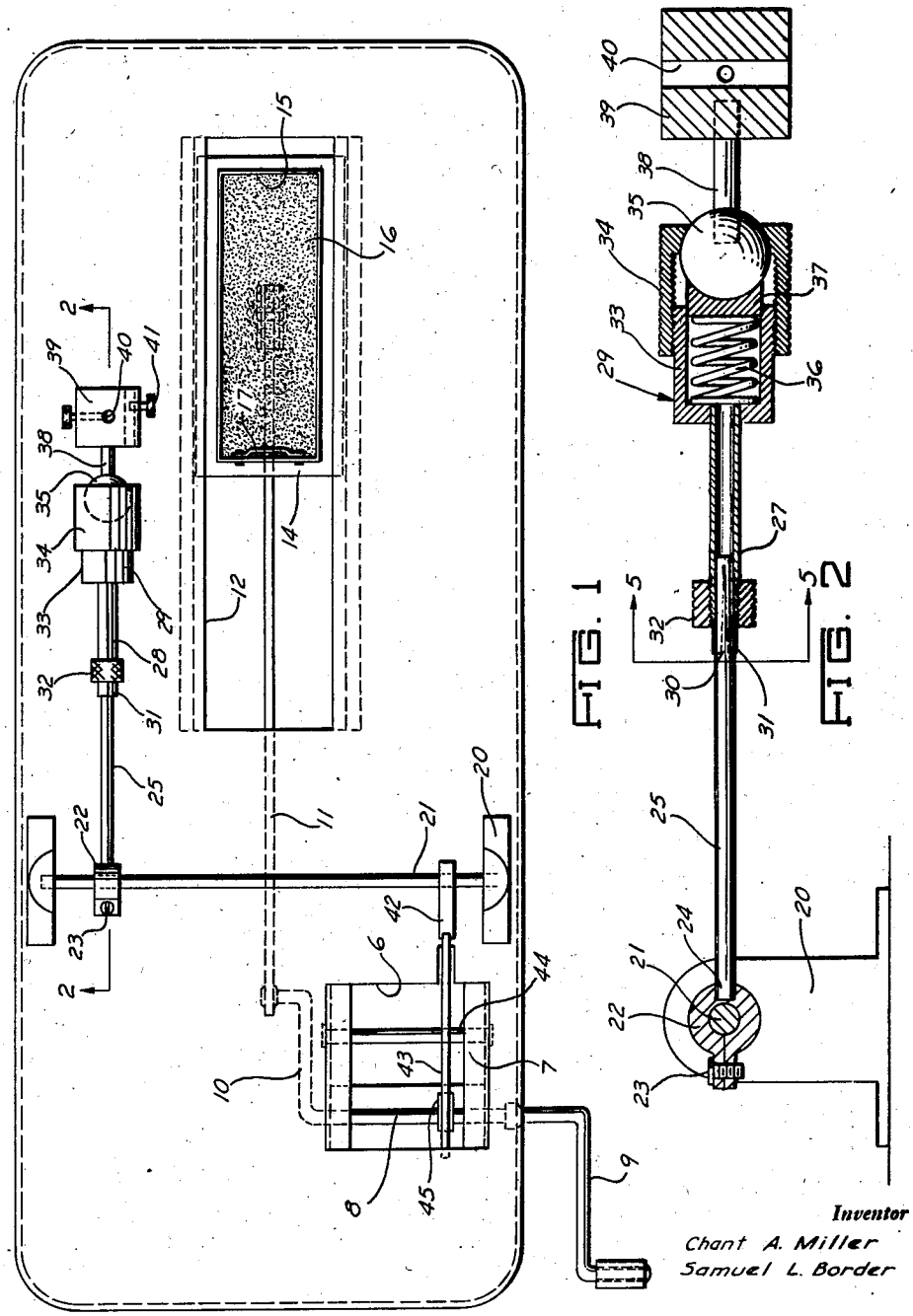


FIG. 1

FIG. 2

Inventor
Chant A. Miller
Samuel L. Border

By Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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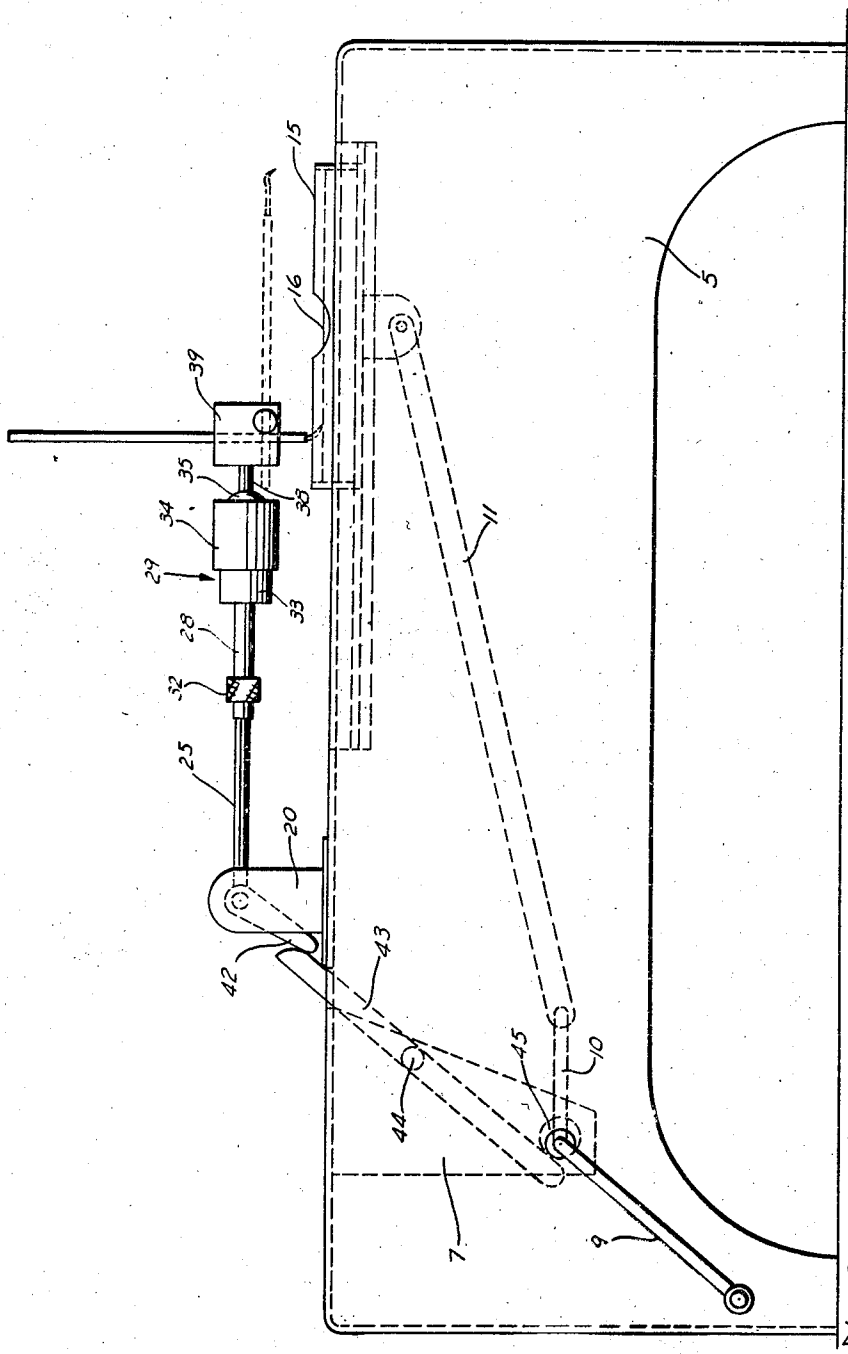


FIG. 3

Inventor
Chant A. Miller
& Samuel L. Border

By Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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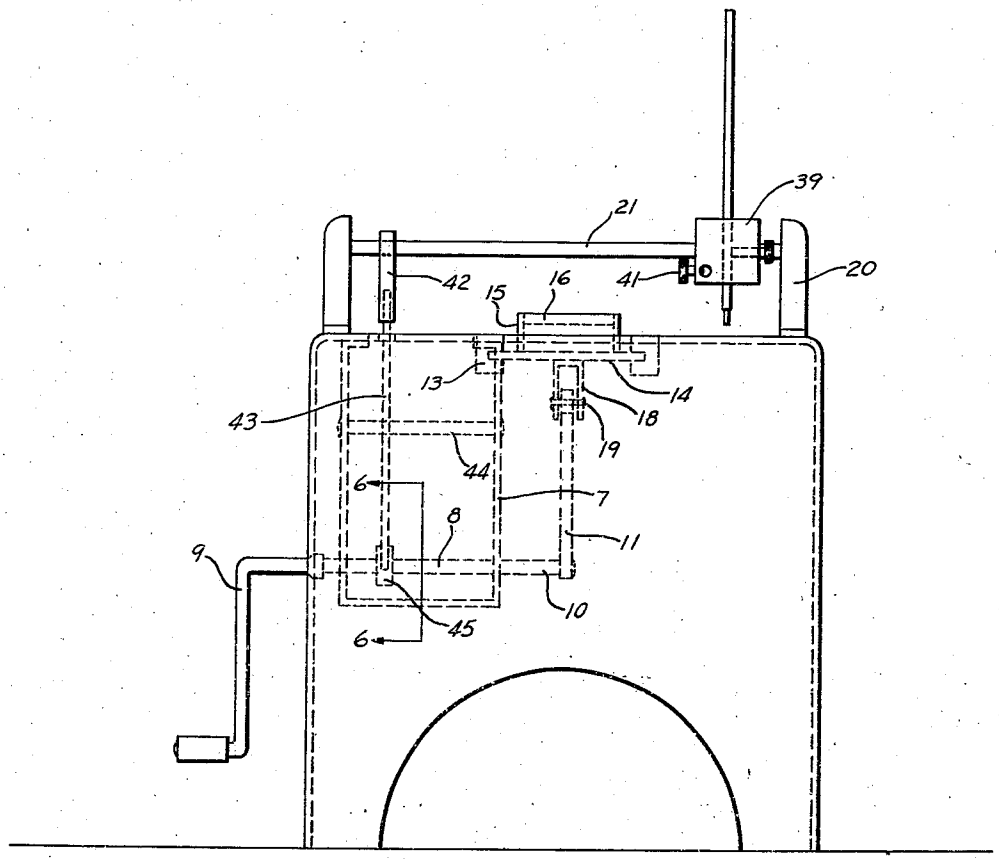


FIG. 4

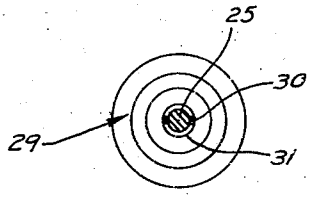


FIG. 5

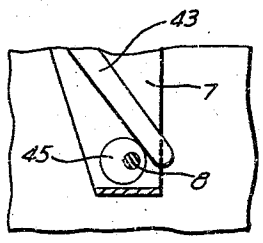


FIG. 6

Inventor
Chant A. Miller
Samuel L. Bordér

By Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Patented Dec. 18, 1945 2,391,260

UNITED STATES PATENT OFFICE

2,391,260

DENTAL TOOL SHARPENING DEVICE

Chant A. Miller, Winamac, and Samuel L. Border, Monon, Ind.

Application March 2, 1945, Serial No. 580,664

2 Claims. (Cl. 51—59)

The present invention relates to new and useful improvements in tool or instrument-holding and sharpening devices, and more particularly to a device of this character for sharpening dental instruments.

An important object of the present invention is to provide a dental tool-sharpening device of this character adapted for holding and sharpening various types of tools provided with comparatively narrow cutting edges formed on the end of a shank or handle, and embodying means for holding the tool or instrument at a proper angle with respect to a reciprocating sharpening stone to effect a proper sharpening thereof.

A further object of the invention is to provide a sharpening device of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like reference numerals refer to like parts throughout, and in which:

Figure 1 is a top plan view,

Figure 2 is a sectional view taken substantially on a line 2—2 of Figure 1,

Figure 3 is a side elevational view,

Figure 4 is an end elevational view,

Figure 5 is a sectional view through the tool-holding arm taken substantially on a line 5—5 of Figure 2, and

Figure 6 is a sectional view taken substantially on a line 6—6 of Figure 4.

Referring now to the drawings in detail wherein, for the purpose of illustration, we have disclosed a preferred embodiment of the invention, the numeral 5 designates a supporting stand or table having an opening 6 in the upper surface adjacent one end thereof.

Extending downwardly from the edges of the opening is a hanger bracket 7 of substantially U-shaped construction and in the opposite sides of which is journaled a shaft 8 having one end projecting outwardly through a side of the table 5 and provided with a crank handle 9. The opposite end of the shaft 8 is also formed with a crank 10, to which one end of a pitman arm 11 is pivotally attached.

The upper surface of the table 5 is also formed with a longitudinally extending opening 12, to the opposite sides of which are secured longitudinally extending guide tracks 13 in which the edges of a carriage 14 are slidably mounted, the carriage being formed with a tray-like member 15 on its upper surface and adapted to receive a sharpening stone 16 mounted in the tray and retained in position therein by means of a leaf spring 17 at one end of the tray, and in friction-gripping engagement with the adjacent end of the stone.

From the bottom of the carrier 14 extends a pair of spaced apart apertured ears 18 having a pin 19 extending transversely thereof and to which the front end of the pitman rod 11 is pivotally attached.

A pair of posts 20 rise from the surface of the table adjacent opposite sides thereof and in which is journaled the ends of a rock shaft 21, the shaft extending transversely of the table in spaced relation above the same.

A split collar 22 is secured to the shaft 21 by means of a screw or the like 23, the collar having a socket 24 therein in which is secured one end of a tool arm 25 extending longitudinally of the table.

The front end of the tool arm 25 is inserted in the rear end of a tube 27 of a tool holder 29.

The tube 27 is formed with longitudinally extending slots 30 to provide a plurality of friction-gripping fingers 31 which are secured in friction-gripping relation with the tool arm 25 by means of a taper threaded nut 32 threaded on the split end of tube 27, as will be apparent from an inspection of Figure 2 of the drawings.

The tool holder 29 includes a cylindrical member 33, to which the tube 27 is secured and having a nut 34 threaded thereon forming a socket for a ball 35. A coil spring 36 is positioned in the cylinder 33 behind a bearing block 37 engaging the ball 35 for frictionally holding the ball in engagement in the socket 34.

A stem 38 projects radially from the ball 35 into a tool-holding block 39 having right-angularly disposed openings 40 extending therethrough, and in either of which a dental tool or instrument 40a may be secured by means of set screws 41 so that the cutting edge of the tool may be extended either vertically or horizontally with respect to the block 39.

The cutting edge of the tool is adapted for gravitating onto the sharpening stone 16.

An arm 42 extends downwardly and rearwardly from the rock shaft 21 and adapted for engagement by the upper end of a rocker arm 43 pivoted intermediate its ends by means of a pin 44 to the sides of the hanger bracket 7.

The lower end of the rocker arm 43 extends

downwardly and rests on a cam or eccentric 45 secured to the shaft 8.

Accordingly, in the operation of the device, the handle 9 is operated to rotate the shaft 8 whereby the sharpening stone 16 is reciprocated through its connection with said shaft by means of the crank 10 and pitman 11.

At the same time, the rocker arm 43 is rocked back and forth by means of the cam 45 to rock the shaft 21 through the arm 42. The rocking motion of the shaft 21 causes a raising and lowering movement of the tool arm 25 whereby to raise and lower the tool carried by the block 39 into and out of engagement with the upper surface of the sharpening stone 16.

The raising and lowering movement of the tool arm 25 is timed so that the tool is held out of engagement with the sharpening stone during movement of the latter in one direction.

It will be apparent that the tool-holding block 39 may be moved into a desired position of adjustment by means of the ball and sockets 34 and 35 so that the tool may be held at a desired angle for properly sharpening the cutting edge thereof. The block 39 is secured in its adjusted position by threading the socket 34 on the cylinder 33 to place the spring 36 under proper tension.

From the foregoing, it is obvious that we have provided a comparatively simple tool-sharpening device which will be inexpensive to construct and operate, and adapted for sharpening various types of dental and other types of tools and instruments.

While we have herein shown and described a preferred embodiment of our invention, it will be apparent that the same is susceptible to certain changes and modifications without departing from the spirit of the invention or the scope of the appended claims.

Having thus described the invention, what we claim is:

1. A tool sharpener comprising a reciprocably mounted sharpening stone, means for reciprocably actuating the stone and including a rotatable shaft, a rock shaft, means for actuating the rock shaft by operation of the rotatable shaft, and a tool holding arm attached to the rock shaft for raising the arm during movement of the stone in one direction, said arm including a swivelly mounted tool holder adapted for holding a tool in a predetermined universally adjustable position above the stone, and said arm gravitating into a position for contacting the tool with the stone upon movement of the stone in an opposite direction.

2. A tool sharpener comprising a support, a sharpening stone slidably mounted on the support, a rotatable shaft journaled in the support and operatively connected to the stone for reciprocably actuating the stone, a rock shaft journaled on the support, an arm secured to the rock shaft, a trip arm pivoted on the support with one end engaging the first-named arm, a cam carried by the rotatable shaft for actuating the trip arm to rock said rock shaft, a tool-holding arm secured to the rock shaft for raising and lowering movement in accordance with the actuation of the rock shaft, a tool-holding member adapted for holding a tool to be sharpened, a ball and socket connection between the tool-holding member and the tool-holding arm, and means for securing the ball in a predetermined adjusted position in the socket for supporting the tool in a desired angularly disposed position relative to the stone.

CHANT A. MILLER.
SAMUEL L. BORDER.