April 17, 1951 D. THOMPSON 2,549,263

DENTAL INSTRUMENT SHARPENER

Filed March 30, 1950

Fig. 1

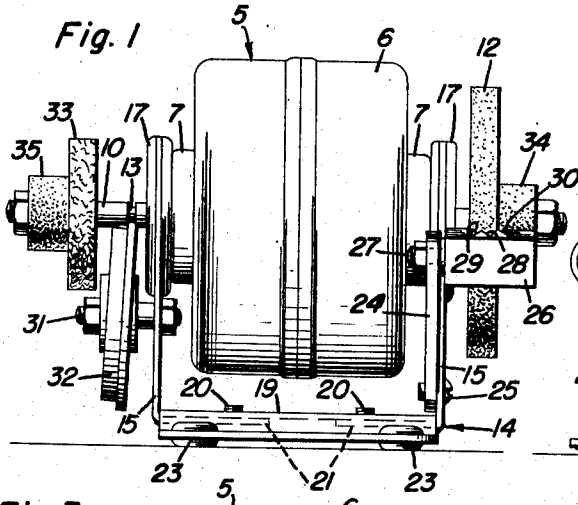


Fig. 2

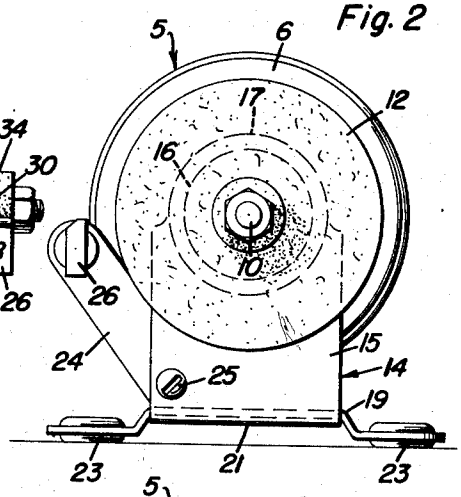
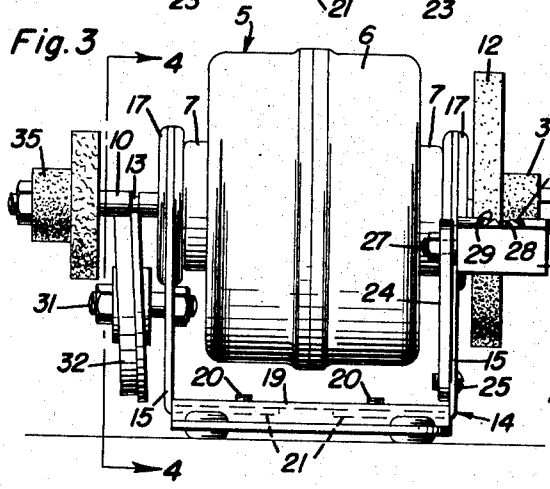


Fig. 3



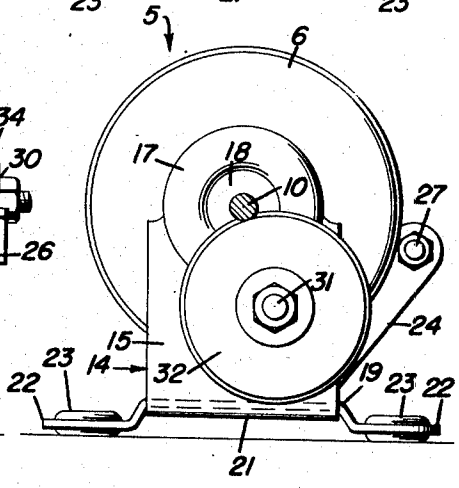


Fig. 4

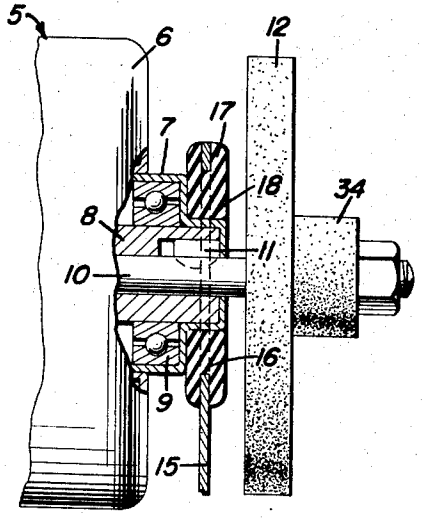


Fig. 5

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DENTAL INSTRUMENT SHARPENER

Donald Thompson, Missoula, Mont.

Application March 30, 1950, Serial No. 152,790

5 Claims. (Cl. 51—34)

1

This invention relates to an improved device for sharpening dental cutting and excavating instruments.

An object of the invention is to provide a device of the above kind including a rotary electric motor having a rotatably driven and axially reciprocable horizontal drive shaft, a fixed dental tool guiding support, a vertically disposed grinding wheel secured on said drive shaft, and means to axially reciprocate said drive shaft upon rotation thereof for moving the grinding wheel back and forth transversely of an instrument supported by said support, whereby the grinding operation is facilitated and effected without grooving said grinding wheel or manually moving the instrument transversely of the latter.

Another object is to provide a device of the above kind wherein the drive shaft of the motor has a projecting end provided with an annular peripheral groove, and wherein a combined friction wheel and swash plate is peripherally engaged with and in the groove of said drive shaft so as to be driven by the latter to effect the axial reciprocation of said shaft.

A further object is to provide a device of the above kind including a supporting stand in which the motor is resiliently mounted to provide a device which is quiet and substantially free of vibration in operation.

Still another object is to provide, in a device of the above kind, a dental tool guiding support including a forwardly inclined arm adjustably hinged at its lower end to the motor supporting stand for vertical swinging adjustment toward and from the grinding wheel, and a tool guiding and supporting member adjustably swivelled at one end in and projecting laterally from said arm, whereby various tools may be properly supported against the periphery of said grinding wheel in accordance with the level of the face of the tool to be sharpened.

In the accompanying drawing:

Figure 1 is a front elevational view of a device embodying the present invention, showing the grinding wheel in its projected or "out" position;

Figure 2 is a side view looking toward the left of Figure 1;

Figure 3 is a view like Figure 1 showing the grinding wheel in its retracted or "in" position;

Figure 4 is a vertical section taken on the line 4—4 of Figure 3; and,

Figure 5 is an enlarged fragmentary view, partly in front elevation and partly broken away and in section, showing the manner of journalling the hub of the motor armature in the motor casing and the manner of slidably keying the motor drive shaft in said hub.

2

Referring in detail to the drawing, 5 indicates a small rotary electric motor including a casing 6 provided at opposite ends with central bosses 7, a tubular horizontal armature hub 8 journalled adjacent its ends in the bosses 7 by means of antifriction bearings 9, and a drive shaft 10 extending through and slidably keyed at 11 to the hub 8 so as to be reciprocable in and rotatably driven by the latter. The ends of shaft 10 project outwardly from the casing bosses 7 and armature hub 8, and a vertically disposed grinding wheel 12 of relatively large diameter is secured on one projecting end of said shaft. The other projecting end of shaft 10 is provided with an annular peripheral groove 13, for a purpose to be presently explained.

The motor 5 is mounted in a stand 14 which includes a pair of L-shaped members 15 whose vertical legs have large openings 16 in their upper ends within which resilient grommets 17 are fitted. The bosses 7 have reduced outer ends 18 which are snugly fitted in the grommets 17 so as to resiliently mount the motor in the stand between the vertical legs of the members 15 thereof, whereby the motor is rendered quiet and substantially free of vibration in operation. The stand also includes a base plate 19 rigidly secured intermediate its ends by bolts 20 or the like upon and connecting the horizontal lower flanges 21 of the members 15, said base plate, having downwardly offset ends 22 forming supporting legs and provided with openings in which resilient grommets 23 are fitted to provide a soft yieldable or cushion feet for the stand.

A dental tool guiding support is provided to support and hold tools to be sharpened in various positions against the periphery of the grinding wheel 12. This support includes a forwardly inclined arm 24 adjustably hinged at its lower end as at 25 to the lower end of the vertical leg of the stand member 15 which is adjacent the grinding wheel 12, for vertical swinging adjustment toward and from said grinding wheel, and a tool guiding and supporting member 26 adjustably swivelled at one end in the upper end of the arm 24 as at 27 and projecting laterally from said arm. The member 26 is provided at the top with a plurality of V-shaped notches 28, 29, 30, as and for the purpose disclosed in the U. S. Patent to O. Suter, No. 1,950,824, March 13, 1934. The adjustment of arm 24 and member 26 provides for supporting various tools in a large number of different fixed positions

against the periphery of the grinding wheel 12, in accordance with the bevel of the face of the tool to be sharpened.

A stub axle 31 is fixed to and projects laterally from the stand member 15 remote from the grinding wheel 12, at a point below the drive shaft 10, and a combined friction wheel and swash plate 32 is journaled on and disposed obliquely of this stub axle so as to peripherally engage with and in the groove 13 of said drive shaft. Thus, when the shaft 10 is driven, it rotates the friction wheel and swash plate 32, and the latter causes axial reciprocation of said shaft 10 and the grinding wheel 12 transversely of the tool supported by the tool support. This facilitates the grinding operation without grooving the grinding wheel or manually moving the tool transversely of said grinding wheel.

A buffing wheel 33 is secured on the end of shaft 10 remote to the grinding wheel 12 for cleaning burrs off of tools and for buffing the faces of tools after they have been ground or sharpened. Also, yieldable abrasive wheels 34 and 35 of relatively small diameter are secured on the shaft 10 at the outer sides of wheels 12 and 33 for use in cleaning out the inside of spoons, excavators and gingival margin trimmers.

From the foregoing description, the construction, operation and advantages of the invention will be apparent to those skilled in the art. The device is simple, compact and efficient; involves no gearing or cam or crank mechanism; will sharpen a large variety of tools; and will operate efficiently over a long period of time with a minimum amount of attention and repair. Modifications and changes in details of construction are contemplated within the spirit of the invention as claimed.

What is claimed as new is:

1. In a dental tool grinding device, a rotary electric motor having a rotatable and axially reciprocable horizontal drive shaft, a vertically disposed grinding wheel secured on one end of said drive shaft, the other end of said drive shaft having an annular peripheral groove and a combined friction wheel and swash plate journalled near one end of the motor and peripherally engaged with and in the groove of said drive shaft for axially reciprocating the latter when the same is driven.

2. In a dental tool grinding device, a rotary electric motor having a rotatable and axially reciprocable horizontal drive shaft, a vertically disposed grinding wheel secured on one end of said drive shaft, the other end of said drive shaft having an annular peripheral groove, a combined friction wheel and swash plate journalled near one end of the motor and peripherally engaged with and in the groove of said drive shaft for axially reciprocating the latter when the same is driven, and a dental tool guiding support positioned opposite the periphery of said grinding wheel and comprising a forwardly inclined arm adjustably hinged at its lower end for vertical swinging adjustment toward and from said grinding wheel, and a tool guiding and supporting member adjustably swivelled at one end to and projecting laterally from the upper end of said arm.

3. In a dental tool grinding device, a rotary electric motor having a rotatable and axially reciprocable horizontal drive shaft, a vertically disposed grinding wheel secured on one end of said drive shaft, the other end of said drive shaft having an annular peripheral groove, a combined friction wheel and swash plate journalled near one end of the motor and peripherally engaged with and in the groove of said drive shaft for axially reciprocating the latter when the same is driven, said motor further including a casing having central end bosses concentric with said drive shaft, and a supporting stand including spaced vertical legs provided with horizontally aligned openings, and resilient grommets fitted in said openings and having said bosses snugly fitted therein.

4. In a dental tool grinding device, a stand having spaced vertical legs, a rotary electric motor arranged between and resiliently mounted at its ends in said legs, said motor including a rotatably driven and axially reciprocable horizontal drive shaft having its ends projecting through said legs, a vertically disposed grinding wheel secured on one end of said drive shaft, the other end of said drive shaft being provided with an annular peripheral groove, a dental tool grinding support mounted on one of said legs adjacent said grinding wheel, and a combined friction wheel and swash plate journalled on the other leg below said drive shaft and peripherally engaged with and in said groove for axially reciprocating said drive shaft when the latter is driven so as to move the grinding wheel back and forth transversely of a tool supported by said tool support.

5. In a dental tool grinding device, a rotary electric motor having a rotatable and axially reciprocable horizontal drive shaft, a vertically disposed grinding wheel secured on one end of said drive shaft, the other end of said drive shaft having an annular peripheral groove, a dental tool guiding support mounted opposite the peripheral surface of said grinding wheel for guiding and supporting dental tools in predetermined fixed grinding positions relative to said surface, and a combined friction wheel and swash plate journaled near one end of the motor and peripherally engaged with and in the groove of said drive shaft for axially reciprocating the latter when the same is driven.

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No references cited.