A. F. CRAMPTON.

MEANS FOR REFINISHING SMALL GRINDING WHEELS.

APPLICATION FILED APR. 18, 1921.

1.393,667. Patented Oct. 11, 1921.

Fig. 1.

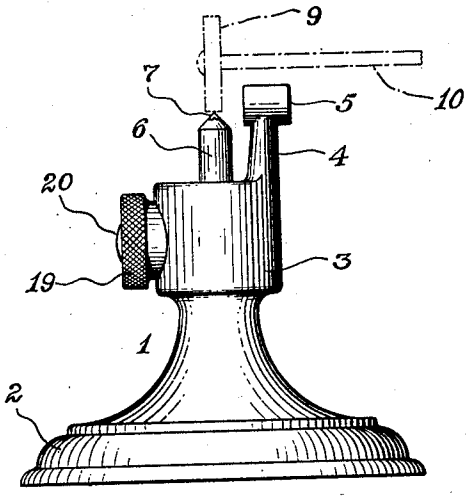


Fig. 2.

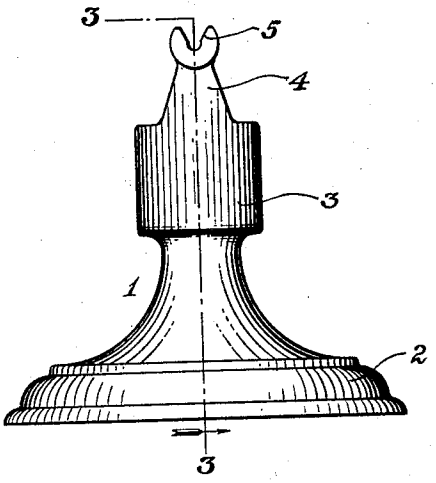


Fig. 4.

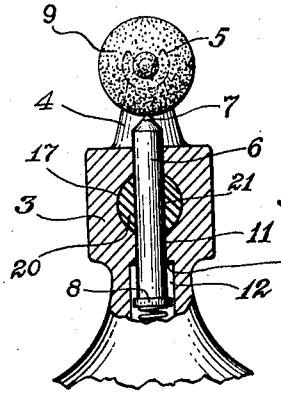


Fig. 3.

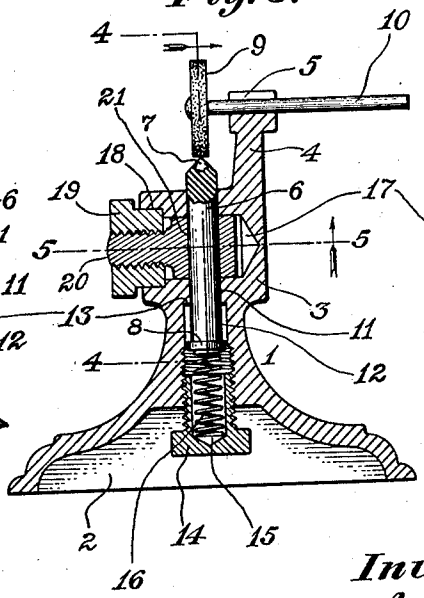
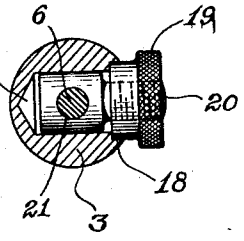


Fig. 5.



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UNITED STATES PATENT OFFICE.

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MEANS FOR REFINISHING SMALL GRINDING-WHEELS.

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Application filed April 18, 1921. Serial No. 462,286.

To all whom it may concern:

Be it known that I, ARTHUR F. CRAMPTON, a citizen of the United States, residing at West Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Means for Refinishing Small Grinding-Wheels, of which the following is a specification.

This invention relates to a holder and tool therefor, and especially to a holder and diamond pointed tool for truing and resurfacing small grinding wheels of the type employed by dentists in performing much of the work incidental to filling and otherwise repairing teeth. Such wheels are held for rotation in the handle provided at the end of the flexible shaft of a dental engine and applied to their work by the hand of an operator. The manner of applying the tools to their work and the character of the substances to which they are applied cause them to quite rapidly wear out of round or become glazed and unfit for use. However, a true cylindrical form may again be imparted to the wheels and the grinding surface renewed by means of a diamond pointed turning tool.

One object of my invention is the provision in a device for renewing the form and surface of small grinding wheels, of a construction of novel form and arrangement including features of adjustment, whereby convenience, efficient operation and low cost of manufacture are assured. Another object of the invention is the provision of a diamond tool and holder therefor suitable for support upon the instrument stand of a dental operator and adapted to coöperate with the normal holding and driving means of a dental grinding wheel in a process of dressing the work engaging surface of the latter. To this end the invention consists in the simple construction and novel arrangement of parts set forth in the following detailed description and illustrated in the accompanying drawings, in which,—

Figure 1, is a view in elevation of a tool holder and tool constructed in accordance with my invention. In this view there is also shown in dot-and-dash lines a small emery wheel in a certain position relative to the diamond point which will be hereinafter more fully explained.

Fig. 2, is a view in elevation of the tool holder as it would be seen looking in the direction of the arrow in Fig. 1.

Fig. 3, is a sectional view on line 3—3 of Fig. 2, it also shows a grinding wheel supported by the work rest.

Fig. 4, is a sectional view on line 4—4 of Fig. 3, and,—

Fig. 5, is a sectional view on line 5—5 of Fig. 3.

Referring to the drawings, the numeral 1, designates a standard which comprises, preferably in integral form, a base 2, body portion 3, and the work rest 4. The base, as shown is circular, the body portion cylindrical and the work rest is an arm extending from the body portion and terminating in a head 5, of V-block form. A diamond tool suitable for use in the holder is best shown in Fig. 3. It consists of a rod 6, with a diamond point 7, set in one end, and at the opposite end provided with a slightly enlarged head 8. This tool is designed to be held in the body portion of the standard with the diamond pointed end projecting therefrom for engagement with a grinding wheel as 9, comprising the work, the shank or arbor 10, of which is supported and guided by the work rest 5, at right angles to the longitudinal axis of the tool. For different diameters of work, adjustment of the diamond tool is required and means for permitting and effecting such adjustment, together with means for rigidly securing the tool in adjusted relation to the work will now be described.

To receive the diamond tool there is extended through the standard from the hollow base thereof, a bore 11, countersunk at 12, to form the shoulder 13, and threaded to receive the adjusting screw 14, the latter being bored out at 15, to receive and house a light compression spring 16, said spring also engaging the adjacent end of the diamond tool and tending to move the tool in a direction to engage its head 8, with the shoulder 13. With the diamond tool thus limited in its outward movement by the shoulder 13, it assumes a position with the diamond point substantially coincident with the axis defined by a tool arbor supported by the work rest, or in other words, the diamond point is slightly beyond the extreme limit of adjustment required for work of minimum diameter. For a given diameter of work the diamond tool may be brought to the required position by placing the grinding wheel to be operated upon in contact with the diamond point and then to-

gether with the grinding wheel, moving the tool against the pressure of spring 16, until the grinding wheel arbor comes into engagement and suitable alinement with the work rest. Such position of the tool is then secured by clamping means which may be of any suitable form,—that shown is associated with the body portion of the standard, which to receive the clamping member is provided with a hole 17, transversely extended and intersecting the tool receiving bore 11. The hole 17, is counterbored at 18, to receive the hub of a knurled headed nut 19, which is threaded upon the clamping member or bolt 20, the latter having a transverse opening 21, to register with the bore 11, so that the tool 6, may extend through it and engage the bore 11, on both sides of the bolt, thereby providing a construction with ample and advantageously distributed clamping surfaces. The clamping action of the bolt is controlled by the nut 19, and it will be clear that the arrangement just described provides means for quickly securing the tool in an adjusted position or for quickly releasing it to permit of changing its adjustment.

As hereinbefore intimated the tension of spring 16, is preferably just sufficient to overcome the weight of the diamond tool and move it when released to its outermost position. The degree of tension necessary for this purpose may be secured by manipulating the nut 14.

In the use of my improved device the manner of proceeding may be as follows:— release the nut 19, to permit the diamond tool to move to the extreme limit of its adjustment toward an axis defined by the work rest (see dot-and-dash lines, Fig. 1) then with the grinding wheel to be resurfaced secured in the chuck or handle of a dental engine but with the motive power turned off, apply the periphery of the grinding wheel to the diamond point and, maintaining this relation, move the two against the pressure of spring 16, until the grinding wheel arbor engages with the work rest 5, in alined relation thereto. This will give an adjustment closely approximating that best suited for the turning operation,—should a slight change be desired it may readily be obtained by maintaining contact of the grinding wheel arbor with the work rest and slightly tilting the arbor from the alinement to be derived from the work rest during the turning operation. With the desired adjustment effected, after the manner set forth, it is secured against displacement by tightening the clamping nut 19. The power for rotating the grinding wheel is then turned on, and with the wheel rotating at a high rate of speed it is moved back and forth across the diamond point in an alinement defined by the work rest.

Having thus described my invention, what I claim is,—

1. A device of the class described including in combination, a standard having a tool receiving bore, a work rest associated with the standard, means for yieldingly moving a tool in the bore toward an axis defined by the work rest, and means for clamping the tool in the standard.

2. A device of the class described including in combination, a standard having a tool receiving bore, a work rest associated with the standard, a tool movable longitudinally of the bore toward and from an axis defined by the work rest, and means for clamping the tool against movement.

3. A device of the class described including in combination, a standard having a counterbored tool receiving bore, a work rest associated with the standard, a tool extending through the bore into the counterbore, a spring within the counterbore for moving the tool toward an axis defined by the work rest, stop means within the counterbore for limiting movement of the tool imparted by the spring, and means for clamping the tool against movement.

4. A device of the class described including in combination a standard having a hollow base and a body portion with a tool receiving bore extending therethrough from the hollow base, a work rest associated with the body portion, a tool extending into the bore, a spring in the bore for moving the tool toward an axis defined by the work rest, means within the base for adjusting the tension of said spring, and means for clamping the tool against movement.

In testimony whereof I affix my signature.

ARTHUR F. CRAMPTON