June 19, 1928. 1,673,913

A. P. JURGENSEN

MOUNTING FOR DENTAL GRINDING ELEMENTS

Filed May 13, 1925

Fig. 1.

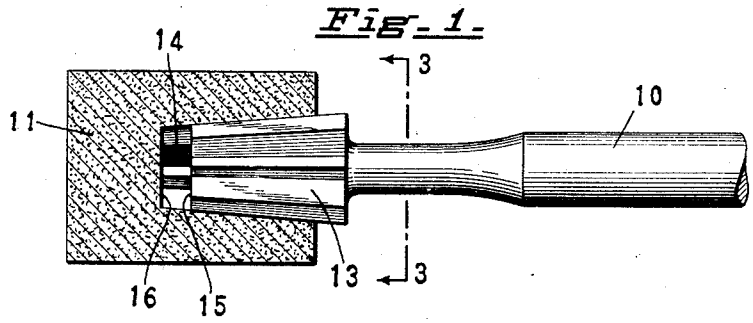


Fig. 2.

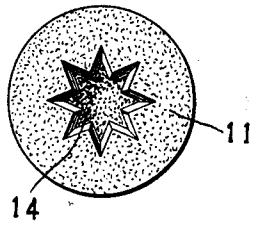


Fig. 3.

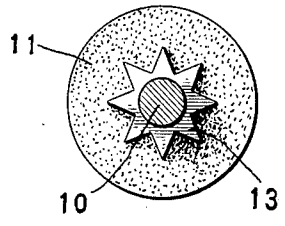


Fig. 4.

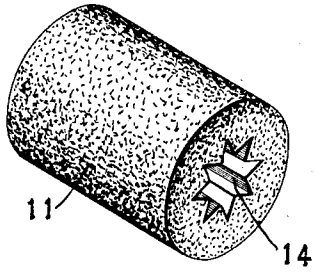
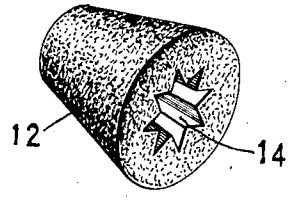


Fig. 5.



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Patented June 19, 1928. 1,673,913

UNITED STATES PATENT OFFICE.

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MOUNTING FOR DENTAL GRINDING ELEMENTS.

Application filed May 13, 1925. Serial No. 29,861.

This invention relates to means and a method for mounting dental grinding or polishing elements on a supporting spindle.

In the prior art of mounting dental grinding or polishing stones on the operating spindles considerable difficulty has been found in so mounting the stone on its supporting shaft that it will maintain an immovable relation with the shaft and partake of a concentric relation with relation to the shaft.

A general object of the present invention is to provide means and a method for mounting grinding or polishing elements of the type described on their supporting shafts in a manner that will be free from the objections referred to.

The invention includes the provision of a tapered and fluted seating section on the supporting spindle and a complementary formed recess in the grinding element, the recess being somewhat smaller than the seating section of the spindle to provide for a wedging engagement of the spindle section with the recess.

Other features of the invention will be hereinafter referred to.

In the drawings,

Figure 1 is a view on an enlarged scale and in longitudinal section of a dental grinding tool embodying the invention.

Figure 2 is an end view of the grinding element shown in Figure 1 before being mounted on the spindle.

Figure 3 is a view in transverse section taken on the line 3—3 of Figure 1.

Figure 4 is a view in perspective of the grinding element shown in Figure 2.

Figure 5 is a perspective view of a grinding element having a different formation than that shown in Figure 4.

Referring to the drawings for a more detailed description of the invention, a shaft 10 is shown which is adapted to be inserted in the chuck of a dental engine or tool operating machine in order to rotate the shaft and the cutting or polishing instrument carried thereby.

The spindle or shaft 10 shown in the drawings herein is particularly adapted to support grinding elements of different sizes and forms. A feature of the invention resides in the method and means of mounting the grinding element on the driving shaft 10.

The operating elements under consideration take the form of grinding and polishing stones 11, the grinding elements in Figures 1 to 3, inclusive, having a cylindrical formation while the element 12 shown in Figure 5 of the drawing has the conformation of the frustrum of a cone. In grinding devices of this general character heretofore known and used considerable difficulty has been found in so mounting the grinding stones on the driving shafts or spindles that they will remain in set or immovable relation with the shaft so as to invariably rotate therewith during a grinding or polishing operation. A feature of the present invention resides in a relation that is produced between the grinding element and the spindle upon which it is mounted which insures the invariable rotation of the grinding element with its shaft and obviates the bringing about of a loose condition of the grinding element on the shaft.

The free or outer end of the shaft or spindle 10 is provided with a seat 13 for the grinding element which consists of a tapered section having a star or fluted formation in cross-section. A complemental fluted and tapered recess 14 is formed in the grinding elements 11 and 12 at the time that the grinding elements are molded or otherwise formed.

The relation of the recess 14 in the grinding elements to the fluted and tapered seating section 13 of the spindle 10 is such that the spindle section 13 will wedge or pinch when inserted in the recess 14. In other words, the recess is somewhat smaller than the size of the seating spindle section 13 so that the outer surface of the spindle section 13 engages the walls of the recess 14 before the extreme end portion 15 of the spindle has reached the inner end wall 16 of the recess 14.

It will be seen that a tight and immovable fitting of the stone to the seating spindle section 13 can thus be provided. In addition, and this is an important feature of the invention, the fitting of the tapered recess to the larger tapered seating section insures the invariable centering of the grinding element with relation to the central axis of rotation of the spindle 10. The result is that the grinding element 11 or 12 is concentric with the shaft 10 so that there is no eccentric motion or vibration of the grinding or polishing elements when in operation.

In order to attach the grinding elements securely to the seating sections of the spindles a suitable cement is made use of in the assembling operation.

Not only is the centering of the grinding element on the seating section of the shaft facilitated by the construction described, but the assembly or mounting of the stones along the spindler is greatly facilitated. Furthermore the interengagement of the vanes or ridges on the spindle section 13 with the corresponding grooves in the grinding elements 11 and 12 insures the interlocking of the parts against relative rotation.

I claim:

1. In a mounting for dental grinding elements, a grinding element having a tapered recess formed partway therethrough, a rotatable spindle having a tapered end section contacting with the sides of the recess but spaced from the bottom of the recess, and means to prevent relative rotation between the grinding element and the spindle.

2. In a mounting for dental grinding elements, a rotatable spindle having a tapered and logitudinally fluted end section, a grinding element having a tapered recess formed partway therethrough, said recess being grooved to cooperate with the fluted spindle and being formed on a smaller diameter than the spindle whereby to produce a wedging action.

In testimony whereof I affix my signature.

AUGUST P. JURGENSEN.