No. 781,617. PATENTED JAN. 31, 1905.

O. B. PRICE.

DENTAL DISK CARRIER.

APPLICATION FILED AUG. 20, 1904.

FIG. 1.

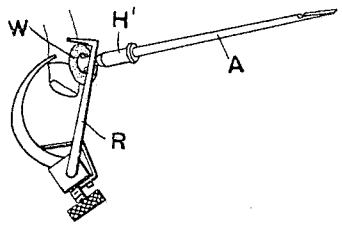


FIG. 2.

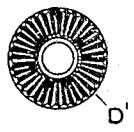


FIG. 3.

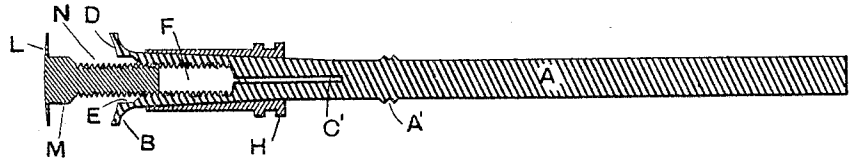
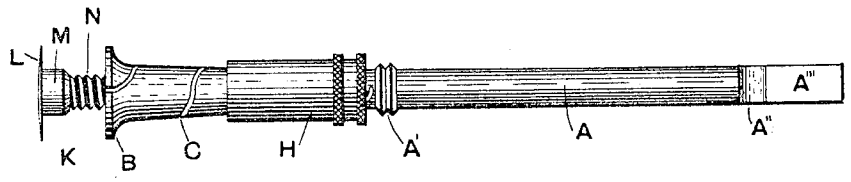


FIG. 4.



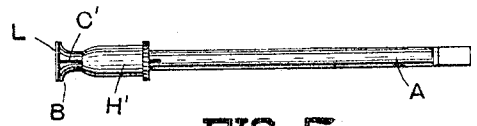


FIG. 5.

WITNESSES.

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No. 781,617. Patented January 31, 1905.

UNITED STATES PATENT OFFICE.

OTTO B. PRICE, OF MONCTON, CANADA.

DENTAL-DISK CARRIER.

SPECIFICATION forming part of Letters Patent No. 781,617, dated January 31, 1905.

Application filed August 20, 1904. Serial No. 221,474.

To all whom it may concern:

Be it known that I, OTTO B. PRICE, a subject of the King of Great Britain, residing at Moncton, in the Province of New Brunswick and Dominion of Canada, have invented a new and useful Dental-Disk Carrier, of which the following is a specification.

My invention relates, broadly, to improvements in that class of mechanical devices generally designated as "tool-holders," and more particularly those which have for their object the grinding and polishing of teeth; and it relates more especially to mechanisms of the type usually designated as "dental-disk carriers;" and it consists in the following construction and combination of parts presently to be set forth.

Every person skilled in the art to which my invention appertains appreciates the great advantages of having a disk-carrier which will permit of the sandpaper or other grinding material carried thereby being brought in close contact with the teeth at all points. Such persons will further appreciate that this will be a result of the improvement embodied in my invention, whereby I make the head of the screw carrying the sandpaper of extreme thinness, still preserving for it sufficient rigidity to firmly grasp the sandpaper.

A principal object of my invention consists, therefore, in the provision of a dental tool which for the purpose of facilitating and simplifying its construction will be of few parts capable of easy assembling into an operative form, which is free from all unnecessary projections, of convenient size and proportions, and which will permit of the sandpaper being easily and readily attached or detached therefrom while the dental tool is in motion and which at the same time will hold such paper firmly and prevent it from any slipping.

A further object of my invention is a construction embodying the foregoing advantages which will possess spring-jaws for clamping the screw, holding the disk rigidly and firmly and still preserve to these jaws a maximum of flexibility.

Further objects and advantages will appear upon reference to the following description and claims when taken in connection with the accompanying drawings, in which like letters of reference denote corresponding parts throughout all the figures, of which—

Figure 1 is a general view in perspective, showing the application of my device to dental purposes, assisted by Hatch's cervical clamp. Fig. 2 is an end view of the shank, showing corrugations on the conical face. Fig. 3 is a sectional view showing the carrying-screw partially inserted in and gripped by the shank. Fig. 4 is a plan view showing the parts in position similar to Fig. 3, but with the clamping-collar in loose position, and, furthermore, illustrating my embodiment of the spiral split. Fig. 5 is a plan view of my device without the shoulder A′ shown in the other modification and also showing the shank as constructed with a uniform diameter throughout its length.

I will now more specifically describe my invention, and upon referring to the above-defined figures it will be seen that my invention comprises two essential elements A and K, the former being a shank constructed in the form of a chuck and the latter being a member adapted for insertion therein. As will be seen by reference to the drawings, the screw K is constructed with a very thin flat head L upon the end of an enlarged smooth portion M, which in turn is reduced and extended into a screw-threaded shaft N. By having these relative proportions it will be clear that the sandpaper or other abrasive carrying body, which is provided with a central perforation having a diameter corresponding to the diameter of M, will readily slide over and along the reduced threaded portion N, so as to be easily mounted upon M.

The chuck member A consists of two elementary parts, the mandrel A and the clamping-collar H. Mandrel A is preferably an integral rod of a desirable length and diameter, having at one end a flattened terminus A‴ and also a semicylindrical notch A″, as will be understood, this latter being for the purpose of attaching the device to the usual dental chuck after the manner of such dental apparatus. At the other end the mandrel A

is gradually enlarged in diameter, terminating in the head B, which may be plane across the end face similar to the screw member L, or, as I have shown in Fig. 3, it may be slightly concaved, as at D, such concaved face being curvilinear, if desired, and provided with radial projections D′.

A′ represents a simple mode of shouldering the shaft A so as to prevent too great a rearward movement of the sliding collar H. This consists of the shoulder A′, which is raised upon the circumference of the shank A by a knurling or spinning action of an appropriate tool, whereby the metal flows up, forming the ridges, as described.

In order that the screw K may be firmly and positively attached to the member A, the latter is recessed and split, as shown in Figs. 3 and 4. The similar recess F corresponds in diameter to the threaded portion N of the screw K, and near the external terminus it is enlarged into a smooth recess E, adapted for reception of the enlarged member M of the screw K. It will now be seen that the screw K can be readily inserted into this cavity, so as to embrace between the clamping-surface D and the thin head L any perforated abrasive substance, which may of course be of various thicknesses. In order to provide means whereby such screw K can be readily removed without the laborious operation of turning the latter through a sufficient number of revolutions to disengage the screw-threads, I adopt the expedient of splitting the end of the mandrel A to a sufficient length, so that spring-jaws will be formed at the end of such member. It will be necessary to employ in this connection a sliding collar H, which when in the position shown by Fig. 3 will embrace such ends and hold them together, thereby effectively clamping and preventing the removal of the screw K without the unscrewing of these parts; but while such collar is in the position shown in Fig. 4 the spring ends will be free to open to a sufficient extent to allow such screw K to be readily withdrawn independently of the threads. While it is ordinarily sufficient to employ one or more straight slots, such as shown by C′, still I find it to be of great advantage to further use spiral splits, such as shown in Fig. 4. Such spiral slots, of which I may use one or more, have the advantage of offering greater flexibility of spring movement to such ends, and, furthermore, as will be seen when the screw is inserted, when the collar is clamping such spring ends against the threaded shaft N a revolution of the screw member N in a direction corresponding to the spiral split C will result in such ends being caused to clamp still tighter the screw N much after the fashion of the ordinary friction-clutch or band-brake. This is of especial benefit, as in case the spiral split runs in the same direction as the screw-threads it will be seen that a rotation, which in the old style would merely unscrew the parts, will in this case cause the ends to further clamp and hold the same very rigidly, while rotation in the opposite direction will merely have the effect of tightening said screw by screwing it into the mandrel. It will thus be seen that I thereby overcome a difficulty ordinarily present in the usual dental-disk carrier, and my peculiar form of chuck will very tightly hold such screw against withdrawal when rotating in either direction.

In some instances I find it desirable that the shank A should be of a substantially uniform diameter throughout its entire length, as shown in Fig. 5. In Fig. 5 I have shown also a collar H′, which is not provided with a knurled grasping-rim. The omission of a roughness, such as is produced by a knurling of the circumference of parts of the mandrel, is highly desirable in work where rubber dam is employed on account of the facility with which such rubber may be kept from wrapping about the rotating tool when in use.

Having thus particularly described the present embodiment of my device, I will now briefly set forth some of the manifold advantages I have secured thereby.

By employing an exceedingly-thin head upon the screw K, I have differentiated from the prior art in such a manner that the abrasive material can be brought into a more intimate contact at all points with the tooth or other material worked upon. All dentists and others skilled in the art to which my invention will be particularly useful will especially appreciate this, as much annoyance and trouble is caused by the old form having a thick head, as the projection of this head beyond the surface of the sandpaper is sufficient to prevent the latter being brought into proper contact with the tooth and militates against the high-class work which professional dentists must necessarily perform. Furthermore, by having the end B slightly concaved in a spherical form, as shown in Fig. 3, the clamping will be done mainly by the extreme outer periphery of such clamping-surface, which is the location at which such will be most effective, as a clamping near the center portion requires to be much heavier in pressure in order to execute the same turning moment upon the sandpaper.

The advantages of employing an enlarged shoulder, thin head, and a spiral split have been enlarged upon now so as to be sufficiently well understood by those skilled in the art to which my invention appertains, and hence I do not deem it necessary to further enlarge upon same.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a dental-disk carrier the combination

of a screw-threaded dental mandrel with curvilinear splits, a screw-threaded dental-disk carrier, and a clamping means for bringing said split mandrel into frictional contact with said disk-carrier.

2. A dental-disk carrier comprising a screw and clamping means therefor said means being split spirally and a clamping-collar upon the exterior of the latter for embracing the same at will, substantially as described.

3. A dental-disk carrier consisting of a screw, gripping means embracing the latter said means divided by a split spirally extending along an axis and a clamping-collar longitudinally movable upon the exterior of the latter for embracing and reducing the same into frictional contact with said screw, substantially as described.

4. In a dental-disk carrier, a detachable abrasive mount having a thin head and a threaded shank in combination with a threaded receiving member therefor which is apertured to correspond with the said detachable member, split longitudinally with said aperture below the threads and has a concaved surface at the end thereof, substantially as described.

5. An attachable abrasive carrier consisting of a screw-threaded shank, terminating at one end in an enlargement having a smooth exterior and having a thin head affixed thereto, and a mandrel having a socketed end, said socket being curvilinearly-concaved and corrugated on such concaved face, said socket being partially threaded interiorly to receive the aforesaid threaded shank and furthermore enlarged to receive said enlargement, the socketed mandrel being divided by splitting into a plurality of spring clamping-jaws, in combination with a slidable collar encircling the split mandrel end whereby a closure and a clamping of such jaws on the aforesaid threaded shank may be effected.

6. A dental tool having an end roughened and concaved and spirally split into two or more parts, said end having a screw-threaded aperture which is enlarged and of smooth bore near its opening into said concaved end and provided intermediate its length with an integral shoulder in combination with a clamping-collar encircling and adapted for closing said jaws at will, and a screw adapted to fit within said aperture said screw having an enlarged smooth shoulder and an extremely thin head.

7. In a dental tool a detachable screw having an extremely thin head and a shank which is enlarged adjacent to such head and is extended and screw-threaded along a normal diameter, a receiving means for said screw having an aperture extending from its roughened concaved end for receiving said screw and being split along said aperture, and a collar sliding upon the exterior of the latter for bringing said split end together to clamp therebetween said screw, substantially as described.

8. In combination in a dental tool a receiving member having an integral shoulder and having an end concaved, corrugated and split into two or more parts spirally, said end having a screw-threaded aperture which is enlarged and unthreaded at its opening into said concaved end, a clamping-collar slidably arranged intermediate said shoulder and said end for closing said jaws and a screw adapted to fit within said aperture said screw having a threaded shank, an enlarged smooth shoulder and an extremely thin head, substantially as described.

9. A dental-disk carrier comprising a screw having a shank threaded along its greater portion and terminating in an adjacent smooth shoulder said shoulder terminating in a head of extreme thinness a receiving means for said screw having a flared end the end face of which is roughened and concaved and centrally extending therefrom has an aperture unthreaded to receive said smooth shoulder and is interiorly reduced and threaded along such reduced portion to receive said screw-threaded shank, said receiving means being split along said aperture whereby it is divided into one or more spring clamping-jaws and a sliding collar upon the exterior of the latter embracing and bringing together such jaws, substantially as described.

In testimony whereof I have signed my name, in the presence of two subscribing witnesses, to this specification.

OTTO B. PRICE.

Witnesses:

WALTER S. BOWRESS,

FRANK L. THOMPSON.