

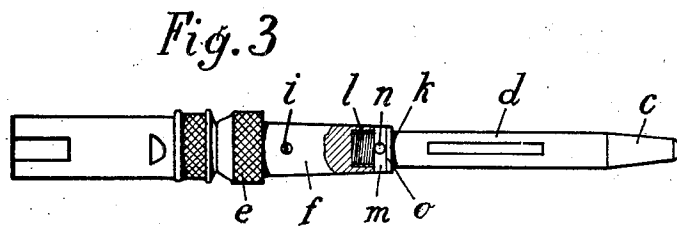
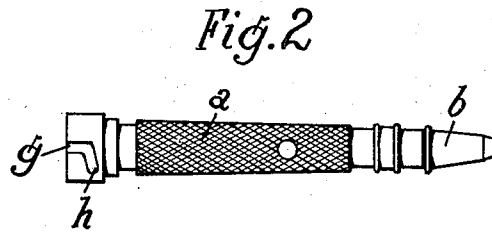
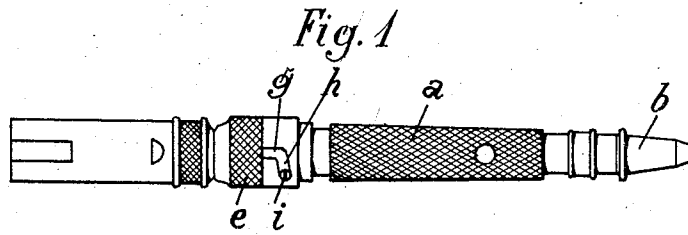
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HANDPIECE FOR TOOTH BORING MACHINES

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HANDPIECE FOR TOOTH-BORING MACHINES.

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The hand-pieces of tooth-boring-machines must, whether they are rigid with the flexible shaft or removably connected with the same, be cleaned very frequently, often several
 5 times a day and sterilized, as the work to be executed with the hand-piece requires a perfectly clean tool in order to avoid infection of the cavity of the mouth. To perfectly clean the hand-piece, it has to be
 10 partly taken to pieces and at least the sleeve of the hand-piece has to be removed to render accessible the inner elements of the same.

Removing of the hand-piece-sleeve is comparatively difficult and requires time, as
 15 either a tiny clamping screw has to be unscrewed, which is difficult to find, or as the hand-piece-sleeve screwed onto the shifting element, has to be unscrewed.

Owing to these inconveniences it frequently happens that cleaning of the hand-piece,
 20 after the work is finished is omitted and that the hand-piece is used again without having been cleaned.

A further inconvenience of the hand-pieces of known type consists in the construction of the shoulder-bearing, of the rotatable axle and in the auxiliary means for adjusting this shoulder-bearing which must be always in a quite accurate position, as
 25 otherwise the drill will rotate centrally but run out of true. At the boring a pressure will always be exerted in the hand-piece upon the shoulder of the axle and upon the stationary counter-bearing formed by
 30 the corresponding edge of the shifting element, so that the axle is rapidly worn at this point, wherefrom results finally that the axle runs untrue in its upper conical bearing which is formed by the hand-piece-sleeve.

In order to avoid the running untrue of the drill and of the axle the shoulder-bearing must be re-adjusted accordingly. This is effected either by means of a vertical adjusting screw arranged on the lower side of
 35 the edge of the hand-piece sleeve or by means of a special screw-connection acting upon the hand-piece-sleeve.

These adjusting means are also not easy to manipulate and the adjusting requires a certain skill and much time, so that the re-adjusting of the shoulder-bearing is sometimes omitted, this being evidently very prejudicial. In the commonly used hand-pieces the
 40 adjusting means are arranged freely accessible on the hand-piece-sleeve wherefrom results the further essential inconvenience that they are exposed to influences from the outer side and which might cause accidental displacement. It happens, for instance, frequently that at the cleaning of the hand-piece, when the same has to be partly taken to pieces, the adjusting screw is accidentally
 45 adjusted so that the axle is either too loose in the upper bearing or too tight, so that the hand-piece has to be taken to pieces again for re-adjusting the shoulder-bearing. The improved hand-piece according to this invention obviates all these inconveniences in the simplest manner.

According to the invention the rear end of the hand-piece-sleeve is constructed to form a conical clamping sleeve which tightly fits on the conical shifting element without the aid of any separate auxiliary means, a bayonet-joint being provided for locking the two parts together. The shoulder-bearing is further constructed like a bushing, adjustable in axial direction, arranged at the lower end of the shifting element, so that it is covered by the hand-piece-sleeve.

A hand-piece according to the invention is shown, by way of example, in the accompanying drawing, in which

Fig. 1 shows in elevation the whole hand-piece.

Fig. 2 shows in elevation the hand-piece-sleeve alone and

Fig. 3 shows the hand-piece without the sleeve.

The hand-piece sleeve *a* has at its front end a conical bearing *b* for the conical end *c* of the axle *d*. The shiftable element *f* which at its rear end has a roughened handle *e*, has the shape of a truncated cone on which tightly fits the inner wall of the hand-piece-sleeve *a* which has also the shape of a truncated cone, so that these two elements are securely held together by jamming. A bayonet-joint, consisting of an angular slot *g*, *h* in the hand-piece-sleeve and of a stud *i* engaging with said slot and fixed in the shifting element *f*, serves for securely connecting said two elements. The inner arm *h* of the bayonet slot is slightly rearwardly inclined from below upward, so that the stud *i* will strongly push back the hand-piece sleeve and thus effect the maximum clamping.

The bearing for the shoulder *k* of the axle *d* consists, according to the invention and as can be seen from Fig. 3, of a bushing

l mounted on the front end of the shifting element f, so that it can be adjusted in axial direction, said bushing being threaded. The axle d extends through this bushing to the rear. The bushing l has a collar m at the front end which bears against the edge of the shifting element f said collar being flattened at one or several points to hold a spanner; or it has a transverse bore n designed to receive a pin by means of which the bushing l can be rotated. Between the collar m and the shoulder k of the axle a thin washer o is located which forms the real bearing-surface. The threaded socket of the shifting part f which receives the threaded bushing l is slotted to render its walls resilient in order to ensure a secure retention of the bushing in adjusted position.

To take to pieces the hand-piece shown in Fig. 1 the bayonet-joint is disconnected by rotating the hand-piece-sleeve to the right with a short jerk whereupon the same is pulled off, which can be done instantaneously and without any difficulty. When the shoulder-bearing has to be re-adjusted for any reason, this can be done without any difficulty by turning the bushing l with the aid of a convenient spanner or pin. The bushing is covered by the hand-piece-sleeve, when the hand-piece is ready for work, so that it is not accessible from the outer side and cannot get out of adjustment accidentally. The mounting with the aid of a tightly screwed-in threaded bushing cannot be displaced accidentally when the hand-piece is being taken to pieces.

I claim:—

1. A dental hand-piece comprising a body member having a conical outer end portion, a spindle journaled in said body member, and having a conical outer end portion, and a sleeve enclosing the projecting portion of the spindle and conical end portion of the body member and having its bore of conical form at its ends for reception of and engagement with the conical end portions of the body member and spindle, said sleeve having a fastening connection with the body member operative in the fastening and unfastening movements to move the sleeve endwise inward and outward on the body member and spindle.

2. A dental-hand-piece comprising a body member having a conical outer end portion, a spindle journaled in said body member, and having a conical outer end portion, and a sleeve enclosing the projecting portion of the spindle and conical end portion of the body member and having its bore of conical form at its ends for reception of and engagement with the conical end portions of the body member and spindle, said sleeve and

body having a bayonet joint connection operative in the fastening and unfastening movements of said connection to move the sleeve endwise inward and outward on the body member and spindle.

3. A dental hand-piece comprising a body member having a conical outer end portion, a spindle journaled in said body member and having a conical outer end portion and a bearing shoulder, a thrust bearing engaging said bearing shoulder of the spindle and adjustably connected with the body member, and a sleeve enclosing the projecting portion of the body member and having its bore of conical form at its ends for reception of and engagement with the conical end portions of the body member and spindle, said sleeve having a fastening connection with the body member operative in the fastening and unfastening movements to move the sleeve endwise inward and outward on the body member and spindle.

4. A dental hand-piece comprising a body member having a conical outer end portion provided with a socket, a spindle journaled in said body member and having a conical outer end portion and a bearing shoulder, a thrust bearing member engaging said bearing shoulder of the spindle and adjustably engaging the socket in the body member, and a sleeve enclosing the projecting portion of the spindle and conical end portion of the body member and having its bore of conical form at its ends for reception of and engagement with the conical end portions of the body member and spindle, said sleeve having a fastening connection with the body member operative in the fastening and unfastening movements to move the sleeve endwise inward and outward on the body member and spindle.

5. A dental hand-piece comprising a body member having a conical outer end portion provided with a threaded socket, a spindle journaled in said body member and having a conical outer end portion and a bearing shoulder, a bearing bushing adjustably engaging the threaded socket in the body member, a bearing washer disposed between said bushing and the bearing shoulder on the spindle, and a sleeve enclosing the projecting portion of the spindle and conical end portion of the body member and having its bore of conical form at its ends for reception of and engagement with the conical end portions of the body member and spindle, said sleeve having a fastening connection with the body member operative in the fastening and unfastening movements to move the sleeve endwise inward and outward on the body member and spindle.

In testimony whereof I affix my signature.

MARTIN BAUER.