DENTAL ANGLE HANDPIECE FOR ROOT CANAL TREATMENT
Hans Loge, Biberach an der Riss, Germany, assignor to...to an embodiment thereof will now be described, by way of example with reference to the accompanying drawing, in which:

FIG. 1 is a side view of a head with a canal instrument inserted therein, and part of an angle handpiece, and FIG. 2 is a sectional view taken through the head and the angle handpiece along the line 1—1 of FIG. 1.

In FIG. 1, the reference 1 designates the lower part of an angle handpiece, on which a head 3 is fitted. A head sleeve 2 having locking holes 2a adapted to be engaged in known manner by a locking pin (not shown), is arranged to prevent inadvertent displacement of the head 3 from the lower part 1 of the angle handpiece. A canal instrument 4 is inserted in the head.

FIG. 2 shows details of the aforementioned parts. A shaft, part of which is shown at 5, is mounted in the lower part 1 of the angle handpiece for rotation by a suitable drive e.g. an articulating sliding joint (not shown). A gearwheel 6 is mounted on the shaft 5. The lower part 1 of the angle handpiece terminates at the head side in a knee 1a. An intermediate bearing element 8 is screwed at 15 into this knee 1a. A shaft 9 is arranged for rotation in this intermediate bearing element in two bearings of which one is shown in cross-section at 10. At the drive input end, the shaft 9 carries a gearwheel 7 which meshes with the gearwheel 6 in such a manner that driving power can be transmitted at an angle. At the drive output end, the shaft 9 carries a wobble plate 11 whose end face 11a inclined at a specific angle relative to the longitudinal axis carries out a rotating tumbling movement when the driving shaft rotates. The angle of the inclination enclosed by the end face and the longitudinal axis is conveniently between 50 and 60°.

It is known per se to use such wobble plates as control means. In the present case, the wobble plate 11 cooperates with two push rods 12 and 13 which are arranged to be axially displacable in the head part 14. The push rods have conically tapered ends and the ends of such rods remote from the wobble plate 11 bear against the surfaces 16a of a driving sleeve 16 mounted in the head between two bearings. The canal instrument 4 has a fixing shank shown at 15 in FIG. 2.

The mechanism situated in the head part 14 operates as follows: as the driving shaft 5 rotates, the gearwheel 6 transmits its rotational movement by way of the gearwheel 7 to the shaft 9 mounted in the intermediate bearing element 8.

With it there also rotates the wobble plate 11 which owing to the circulating wobbling movement of the end face 11a, axially displaces the push rods 12 and 13 alternately. E.g. the push rod 13 pushes against the left-hand part of the surface 16a of the bottom of the groove in the driving sleeve and rotates the driving sleeve towards the right through an angle of from about 60 to 80°. The right-hand part of the surface 16a at the same time pushes the push rods 12 back. The push rod can slide back since the space for this has been freed by rotation of the inclined end face 11a. This operation is repeated as long as the rotation of the shaft 9 is maintained. The driving sleeve 16 oscillating thus also imparts a similar movement to the canal instrument 4.

The advantage of this arrangement consists on the one hand in that the head part is very simple from the constructional point of view and on the other hand in that the wobble plate always has to move equal masses in the form of the two push rods i.e. a desirable mass equilibrium is obtained to a certain extent. This means that the angle handpiece with the head part attached lies very steadily in the dentist's hand, which is also to the patient's advantage.

I claim:

1. A dental angle handpiece including a head comprising a drive sleeve pivotably supported in said head, said drive sleeve being adapted for securely receiving a dental
3. A dental angle handpiece as claimed in claim 1 wherein said inclined face of said wobble plate is inclined at an angle between 50 and 60° relative to said shaft connected to said wobble plate.

4. A dental angle handpiece as claimed in claim 1, wherein said other end portion of said shaft includes a gear, said gear including a plurality of teeth in circumferential array, and said means for rotating said other end portion of said shaft includes a rotatable gear including a plurality of teeth in meshing relation with the gear of said shaft, whereby a continuous rotary movement is imparted to said shaft, and which continuous rotary movement is converted into an oscillatory movement imparted to said drive sleeve.

5. A dental angle handpiece as claimed in claim 4 wherein said rotatable gear is inclined relative to the gear of said shaft.

References Cited
UNITED STATES PATENTS
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