Claims

1. A device for cleaning surfaces such as teeth, interdental spaces, and adjacent gums, characterized in that the cleaning device (1) comprises at least one shuttle (2), which is embodied as U-shaped or C-shaped in order to encompass a subregion of a dental arch quadrant, wherein the shuttle (2) defines a cleaning space (8), wherein filaments (7) or filament bundles (7) extend into the cleaning space (8) in brush-like fashion from the regions (6, 13, 21) that define the cleaning space (8).

2. The device according to claim 1, characterized in that a shuttle (2) is embodied with at least one base strut (3) and two side struts (6) protruding from the latter as regions defining the cleaning space (8), wherein the filaments (7) or filament bundles (7) are embodied on at least the side struts (6), wherein in the use position, the filaments (7) or filament bundles (7) are oriented toward the lateral tooth surfaces and the adjacent gums or that in the base strut (3) or the base plate (11), the shuttle (2) has filaments (7) or filament bundles (7) in order to achieve a cleaning of the occlusal surfaces.

3. The device according to claim 1, characterized in that a shuttle (2) is embodied with at least one base plate (11) and two side plates (13) protruding from the latter as regions defining the cleaning space (8), wherein the filaments (7) or filament bundles (7) are embodied on at least the side plates (13).

4. The device according to one of the preceding claims, characterized in that the at least one shuttle (2) is able to move in a limited way around the vertical axis of the tooth and in particular, is able to oscillate around the vertical axis of the tooth.

5. The device according to one of the preceding claims, characterized in that in order to encompass the respective dental arch quadrants of the upper and lower jaw, two shuttles (2) are provided on the cleaning device (1), whose cleaning spaces are oriented diametrically away from each other or that the side struts (6) or side plates (13) of a shuttle (2) are positioned on the base strut (3) or base plate (11) in an elastic or rubber-elastic fashion.

6. The device according to one of the preceding claims, characterized in that the side struts (6) or side plates (13) of a shuttle (2) are embodied as elastic or rubber-elastic.

7. The device according to one of the preceding claims, characterized in that the shuttle (2) has a drive fitting (4) that is embodied to be mechanically coupled to a drive unit wherein the device for cleaning surfaces has at least one drive unit, which is embodied to produce a first reversing swiveling of the shuttle (2) around the vertical axis of the tooth or the device for cleaning surfaces has at least one drive unit, which is embodied to produce a second eccentric rotating motion of the shuttle (2) around the longitudinal axis of the tooth and along the transverse axis of the tooth or that the device for cleaning surfaces has at least one drive unit, which is embodied to produce a third reversing swiveling motion of the shuttle (2) around the longitudinal axis of the tooth.

8. The device according to one of the preceding claims, characterized in that the amplitude of the first, second, and third movement is adapted to previously measured tooth widths and in particular, is adapted so that the base strut (3) and the side struts (6) do not collide with the teeth wherein the drive unit is embodied so that the reversing of the movement directions occurs with a predetermined frequency or with changeable frequencies and/or the drive unit is embodied so that all three movements are superimposed or executed successively.

9. The device according to one of the preceding claims, characterized in that filaments (7) or filament bundles (7) of different lengths, hardnesses, or rigidities are positioned in the filament assembly.

10. The device according to one of the preceding claims, characterized in that selected filaments (7) or filament bundles (7) have a different hardness or rigidity than the other filaments (7) or filament bundles (7), i.e. are softer or harder, or have a different diameter, or their filament ends have a different shape, curvature, or contour.

11. The device according to one of the preceding claims, characterized in that the filaments (7) or filament bundles (7) are positioned so that first filaments (7) or filament bundles (7) execute a plunging movement during the first approaching movement of the shuttle (2) and other filaments (7) or filament bundles (7) do this during the second retracting movement, wherein filament assemblies composed of a plurality of filaments (7) or filament bundles (7) have a V shape, which, relative to the surface to be cleaned, opens toward the surface.

12. The device according to one of the preceding claims, characterized in that the base strut (3) or the base plate (11) is approximately dimensioned so that it reaches across a tooth to be cleaned transversely from an inside of the oral cavity to an outside of the oral cavity, wherein the orientation is basically such that when in use, the shuttle (2), the base strut (3), or the base plate (11) is in an orientation, which extends approximately parallel to the crown of a tooth, but protrudes beyond it laterally.

13. The device according to one of the preceding claims, characterized in that a drive fitting (4) is centrally positioned in the middle of the base strut (3) or base plate (11) and can be used to connect the base strut (3) or base plate (11) to a drive apparatus so that the base strut (3) or base plate (11) can be rotated or oscillated around the vertical axis, which extends concentrically in the middle of the drive fitting (4).

14. The device according to one of the preceding claims, characterized in that the cleaning device (1) is embodied with two base struts (3) and correspondingly four side struts (6), wherein the base struts (3) are embodied as crossing each other in an X shape, wherein the drive fitting (4) is positioned at the center of the X-shaped embodiment.

15. The device according to one of the preceding claims, characterized in that the drive fitting (4) is positioned in the vicinity of the base plate (11), wherein the base plate (11) is in particular embodied in the form of an elongated rectangle.