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HOLDING DEVICES FOR USE IN DENTISTRY

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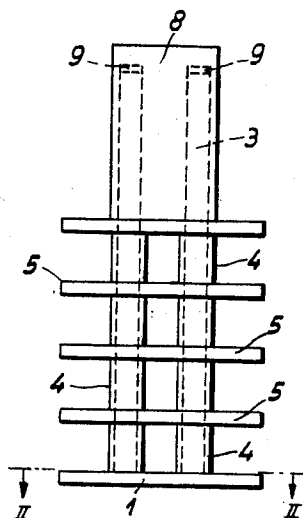


Fig. 1

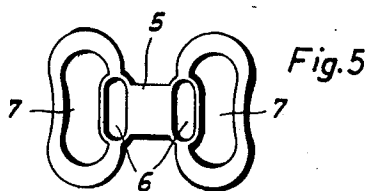


Fig. 5

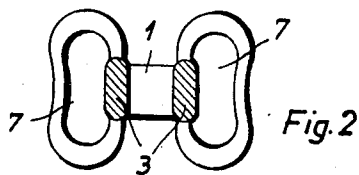


Fig. 2



Fig. 3



Fig. 4

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HOLDING DEVICES FOR USE IN DENTISTRY

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6 Claims. (Cl. 32—5)

The invention relates to holding devices for tooth replacement or artificial teeth, which are suitable for securing individual teeth as well as bridges or the like in the jaw.

The holding devices which have been customary hitherto are usually secured to adjoining teeth or to the gum or palate. In addition, it has also been proposed so to make implantation frames that their holding device fits the jaw bone after the gum has been turned aside and are secured to it by pins, screws or the like inserted into the bone. This method of fastening is, however, unreliable, especially because the implantation frame is lifted by granulation cushions formed of bone, and also the pins or screws as a result of re-absorption do not ensure a secure hold in the jaw for any length of time. The same applies to screws and pins as well as for root-like implantations of metal, ivory, or plastic or other synthetic materials which have been introduced into the tooth sockets.

The main object of the invention is so to construct implantation devices that they lead to a permanent firm seating in the tooth socket. This is achieved according to the invention by providing the implantation device with a frame which can be inserted into the socket of an extracted tooth and has parts forming openings or perforations so that the cell or bone substance or tissue which forms in the socket grows through them. The result of the invention is that the changes and new formations in the jaw, which take place after every extraction, do not interfere with the permanent securing of the implantation device in the jaw, but on the contrary ensure it. As a result of the natural development of the bone, which has the tendency to fill out, by the fresh formation of cells and bone substance, the hollow space which was produced in the jaw by the extraction, the implantation framework made in accordance with the invention grows into the jaw so that a secure fixing is ensured for artificial teeth, crowns or other tooth-replacement or substitutes, and especially also for removable tooth-replacement. A further material feature of the invention resides in the fact that a cap can be put on to the upper free ends of the frame which is insertable into the socket, which cap may be worked on inserted as a mounting head in artificial teeth or in an artificial fitting to be secured in place.

Further features and advantages of the invention may be seen from the following description of one example of a holding device made in accordance with the invention, which is illustrated in the accompanying drawings. In these drawings:

Fig. 1 is a side elevation, on a much enlarged scale, of the example of implantation frame together with head for the securing of the tooth-replacement or substitute;

Fig. 2 is a cross-section on the line II—II of Fig. 1;

Figs. 3 and 4 are side elevation and plan respectively of a sleeve-like spacing member employed in the frame of Figs. 1 and 2;

Fig. 5 is a plan of a transverse plate which can be slid on to the limbs of the framework.

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In the example illustrated, the implantation frame consists of a transverse base plate 1 having two vertical struts or posts 3, which may be made integral with the base plate, or connected to it, for example, by welding. On to each of the two posts are slid alternately a spacing sleeve 4 and further transverse plates 5, which plates are for this purpose provided with openings 6 to suit the section of the supporting posts 3. The base plate 1 and the additional transverse plates 5 are made such that they correspond approximately in their basic form to the cross-section of the tooth socket and are therefore capable of being inserted to a sufficient depth into the socket of an extracted tooth. In order to encourage the subsequent growing-through of the framework, the transverse plates 1 and 5 of the example illustrated are provided with openings 7, so that bone substance or tissue is able to grow through the spaces between adjacent transverse plates and between the supporting struts or posts, as well as through the transverse plates themselves. In many cases it is sufficient if the frame has one or two transverse plates 5 in addition to its base plate 1. These plates may also have shapes which vary as desired from the form illustrated. What is material is that the frame formed by the parts 3, 1 and 5 can be inserted into the tooth socket and is so constructed as to permit bone substance or tissue to grow through it.

The upper ends of the vertical frame posts 3 serve for the application of a head member 8, which is provided with corresponding bores 9, in which the ends of the posts 3 are capable of being inserted. In order to obtain a firm seating of the cap 8, the bores 9 may be arranged so as to diverge somewhat. The tooth is placed directly on the mounting head 8 of the frame. Instead of this, the tooth may also be prepared or made with the mounting head or with the cap 8 and be placed together with the latter on the upper end of the frame.

The implantation frame made in accordance with the invention can be employed as the carrier of a single tooth as well as means for securing bridges and other fittings. Known alloys which do not corrode and do not cause irritation of the body tissue, may be employed as the material of which the frame is made, e. g. an iron-free, chromium-cobalt-alloy, containing about 28% chromium, 67% cobalt, and 5% tungsten. The implantation device made in accordance with the invention may be standardised and mass produced.

A material advantage of the implantation device made in accordance with the invention, resides in the fact that neither clamps nor other securing means are visible. As a result of the possibility of removing the teeth, crowns, or other fittings, ample consideration can be given to the requirements of hygiene. It is of particular importance that the use of the implantation device need not cause damage to natural teeth which are still present. In general, the implantation is carried out immediately following the extraction. However, it is also possible to effect implantation subsequently, if the tooth socket has been appropriately prepared for the reception of the anchoring frame.

I claim:

1. Holding device for use in dentistry, comprising a frame having a perforated base plate for insertion in the socket of an extracted tooth, at least one post secured to said base plate and extending perpendicularly thereto, and at least one perforated plate carried transversely on said post, and means spacing said plates apart on said post.

2. Holding device for use in dentistry, comprising a frame having a perforated base plate for insertion in the socket of an extracted tooth, at least one post secured to said base plate and extending perpendicularly thereto, and at least one perforated plate carried transversely on

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said post, and sleeves on said post spacing said plates apart on said post.

3. Holding device for use in dentistry according to claim 1, comprising a cap applicable to the free end of said post, said cap being capable of incorporation as a mounting head in an artificial dental fitment.

4. Holding device according to claim 3, in which said cap has at least one bore corresponding to at least one of said posts, said bore fitting on the end of said post.

5. Holding device according to claim 3, in which said cap has two bores corresponding to two of said posts, said bores fitting on the ends of said posts and said bores diverging to give a firm seating of said cap on said posts.

6. A holding device for use in dentistry, comprising a perforated base plate for insertion in the socket of an extracted tooth, two posts arranged parallel to one another and perpendicularly to said base plate, each of said

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posts being secured to said base plate at one end of said post, at least one perforated transverse plate having holes corresponding to and passing over said posts, sleeves on said posts spacing said perforated transverse plate from said base plate, a cap applicable to the free ends of said posts, said cap being capable of incorporation as a mounting head in an artificial dental fitment, said cap having two bores corresponding to said posts, said bores fitting on the ends of said posts remote from said base plate, and said bores diverging to give a firm seating of said cap on said posts.

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