G. S. WHITAKER.

DENTAL SUCTION PLATE.

APPLICATION FILED AUG. 19, 1919.

1,343,950. Patented June 22, 1920.

Fig. 1.

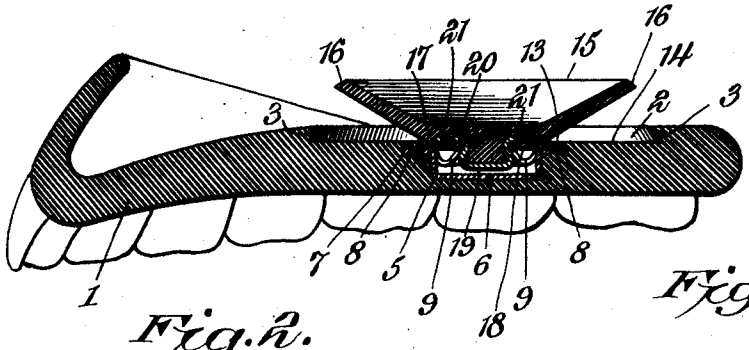


Fig. 2.

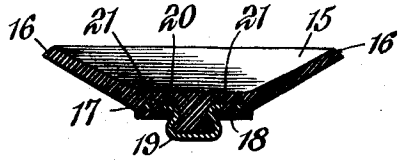


Fig. 5.

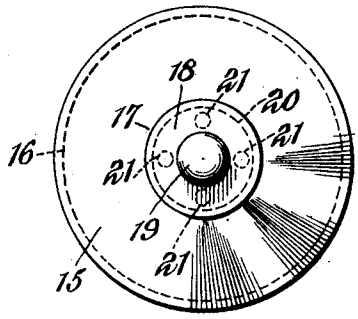


Fig. 3.



Fig. 4.

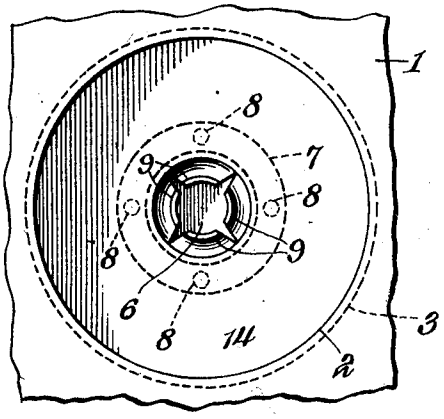
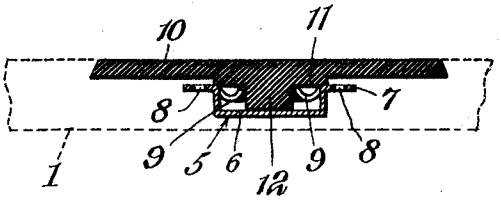


Fig. 6.



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GEORGE S. WHITAKER, OF GLOVERSVILLE, NEW YORK.

DENTAL SUCTION-PLATE.

1,343,950. Specification of Letters Patent. Patented June 22, 1920.

Application filed August 19, 1919. Serial No. 318,520.

To all whom it may concern:

Be it known that I, GEORGE S. WHITAKER, a citizen of the United States, residing at Gloversville, in the county of Fulton and State of New York, have invented a new and useful Dental Suction-Plate, of which the following is a specification.

This invention has reference to dental suction plates, and its object is to provide a flexible suction device such as a cup disk, the invention having particular reference to a structure whereby the cup disk is readily separable from and replaceable on the denture, and all metal parts, of which some are used, are protected in a manner preventing contact with any of the tissues of the mouth.

In accordance with the invention a flexible suction cup disk, which may be made of soft rubber, has one member of a fastening device embedded in it in a manner to avoid any chance of contact of any of the metal with the tissues of the mouth and particularly with the roof of the mouth. The metal member of the cup disk is vulcanized in the latter and projects from the disk on the side thereof remote from the concavity of the cup, while the body of the denture is formed with a cavity to receive the cup disk, especially when flattened out by contact with the roof of the mouth and in the cavity in the denture the other member of the fastening device is lodged and anchored by vulcanization. The fastening device is of the readily separable type so that the cup may be removed at any time for cleansing or renewal purposes and be easily replaced.

The invention is along the same general lines as that disclosed in my Letters Patent #1,253,654, for dental retainer and process of making same, granted Jan. 15, 1918.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Figure 1 is a longitudinal vertical section of a set of upper teeth, with the suction device and the fastening means therefor in position.

Fig. 2 is a diametric section of the cup device, with one member of a two-part fastening device permanently united thereto.

Fig. 3 is a cross section of a portion of the denture, with the other member of the fastening device permanently secured thereto.

Fig. 4 is a top plan view of the structure shown in Fig. 3.

Fig. 5 is a bottom plan view of the structure shown in Fig. 2.

Fig. 6 is a cross section of the denture member of the fastening device, showing a mold in operative relation thereto for the production of the denture with the second member of the fastening device permanently secured therein.

Referring to the drawing, the proportions of which are exaggerated, there is shown an upper dental plate 1 provided with a recess 2 constituting a suction cavity on that side toward the roof of the mouth. The recess has undercut beveled marginal walls 3 and a central depression 4 in which there is lodged a pan-like metallic member 5 having a closed bottom 6 and at the top provided with an outstanding marginal flange 7 having a series of perforations 8 through it. Extending into the member 5 in spaced relation to the bottom 6 thereof is a circular series of tongues 9 suitably shaped in accordance with a known type of snap-button, the tongues 9 constituting the button-receiving and locking portion of the snap-button, said tongues being sufficiently elastic to answer the purpose.

In order to produce the recess 2 and seat the member 5 of the snap-button, there is provided a mold 10 shown in Fig. 6. This mold comprises a disk with a beveled periphery, a central thickened portion 11 and a central stem 12 of a size to extend through the space inclosed by the approaching ends of the tongues 9 sufficiently snugly to hold the member 5 to the mold. By treating the mold 10 in such manner that the rubber forming the denture 1 will not stick there-

to during the process of vulcanization, such treatment being such as described in the aforesaid Letters Patent or any other suitable treatment, the member 5 is properly lodged during the procedure of forming the denture 1 and vulcanizing it. The thickened portion 11 spaces the flanges 7 a short distance from the inner face of the mold 10 so that there is room for the material of the denture to entirely surround and inclose the flanges 7 up to the enlargement 11 and also to traverse the openings 8. In this way the member 5 becomes wholly embedded in the denture 1 with portions 13 of the denture covering the flanges 7. The enlargement 11 is of sufficient diameter to slightly overlap the member 5, thereby producing the upper or open end of the cavity 4 with the tongues 9 a short distance below the floor 14 of the recess 2. When the denture 1 is formed and vulcanized the mold 10 is removed, leaving the denture with the recess 2 and cavity 4 formed therein and the member 5 thoroughly embedded and anchored in the denture 1, the bottom 6 of the member 5 preventing any access of the rubber into the member 5 where containing the tongues 9.

There is also provided a suction member 15 of cup-like conformation and of flexible material such as soft rubber. The outer diameter of the cup 15 is such that when flattened out it is slightly less than the diameter of the recess 2 and the outer margins 16 of the cup 15 are suitably beveled or otherwise shaped to conform to the undercut margins 3 of the recess 2.

The cup 15 is provided with a double wall basic portion 17 of about the thickness of the recess 2 and that portion of the cavity 4 above the flange 7 so that the bottom part 18 of the base 17 will extend into the cavity 4 and engage against the flanges 7, the inner edges of which are exposed where the tongues 7 project inwardly from the side walls of the member 5. Embedded in and vulcanized to the central portion of the bottom of the cup and projecting away from the cup itself, is a button member 19 adapted to enter between and be locked by the tongues 9. The button member 19 has outstanding flanges 20 with perforations 21 traversed by portions of the rubber forming the basic part 17 of the cup, and the button is vulcanized in place with the flange 20 wholly embedded in the basic portion of the cup, wherefore there is no exposed metal to come in contact with the tissues of the mouth. Moreover, the cup is so formed that the bottom wall of the inside of the cup does not actually engage the roof of the mouth, the holding action of the cup being due to vacuum conditions caused by the flattening out of the cup so that the vacuum cup so produced holds firmly to the roof of the mouth over a relatively large area which may be less than the full area of the concave portion of the cup.

The vacuum cup 15 is secured to the denture by the simple expedient of forcing the button 19 into engagement with the button-receiving tongues 9 and the parts are so proportioned that such engagement is a firm one. The bottom wall 18 of the base of the cup sets snugly in the upper end of the cavity 4, wherefore all metal parts are thoroughly protected from any possibility of contact with any of the tissues of the mouth. The manner of fastening the vacuum cup to the denture is such that, in practice, separation of the cup from the denture does not occur and the denture is held firmly in the mouth of the possessor. If, however, it be desired to remove the cup at any time this is readily accomplished when the denture is out of the mouth and the cup may then be replaced almost instantly or a new cup may be provided with the assurance that for practical purposes the cup is as firmly retained as though formed in one piece with the denture.

The invention is not necessarily confined to the use of a snap-button for holding the cup to the denture, since other fastening means may be employed. For instance, a screw socket and stem may replace the snap-button, such socket and stem forming the subject-matter of another application, Serial No. 318,519, for Letters Patent for vacuum cup fastening means for dental suction plates, filed by me on even date herewith.

What is claimed is:—

1. A dental plate provided with a suction cavity and a separate, readily removable vacuum cup to coact therewith, and a two-part fastening device for securing the cup to the plate with one part of the fastening device vulcanized in the plate at the suction cavity and the other part vulcanized in the vacuum cup and protected by the material of the latter from metallic contact of the tissues of the mouth.

2. A dental plate having a suction cavity in the roof thereof, a vacuum cup for causing the plate to adhere to the roof of the mouth of the user, and separable fastening means for securing the cup and plate together, one part of the fastening means being embedded and anchored in the material of the plate in the suction cavity below the bottom surface of said cavity, and the other part of the fastening means being embedded in the basic portion of the cup and protected by the material of the latter from contact with the tissues of the mouth of the user.

3. A dental plate provided with a detachable suction cup and means for detachably securing the suction cup to the dental plate

comprising a snap button of which one member is embedded and vulcanized in the dental plate below the mouth-engaging surface thereof, and the other member of the button being embedded and vulcanized in the basic portion of the suction cup with the material of the suction cup protecting the mouth of the user from direct contact therewith.

In testimony that I claim the foregoing as my own I have hereto affixed my signature.

GEORGE S. WHITAKER.

Witness:

EDWARD FONDA.