

Dec. 31, 1929.

H. R. JONES

1,742,080

DENTAL APPLIANCE

Filed April 28, 1924

2 Sheets-Sheet 1

Fig. 1.

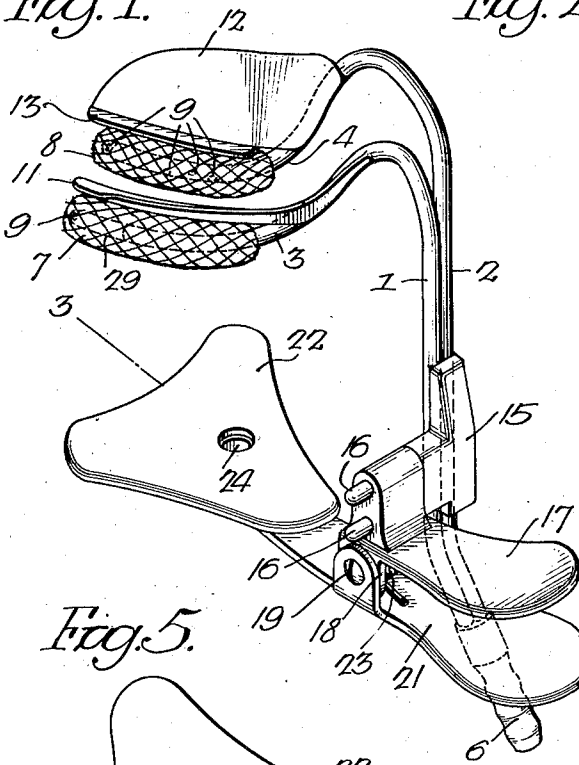


Fig. 2.

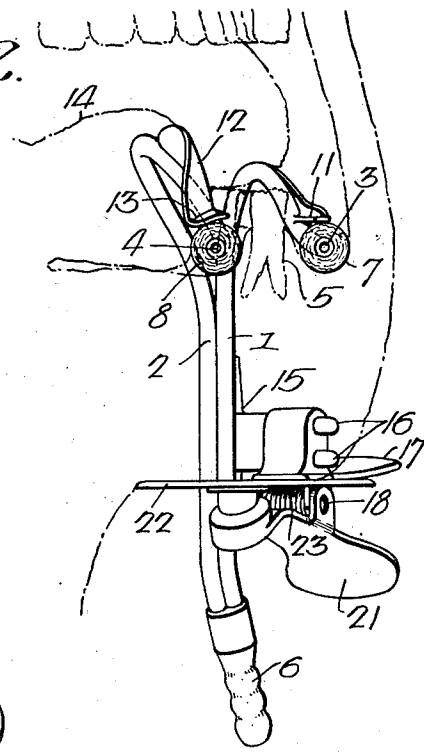


Fig. 5.

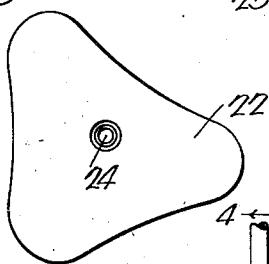


Fig. 6.

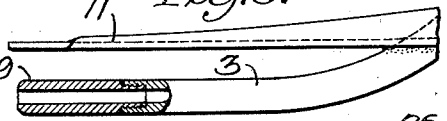


Fig. 8.

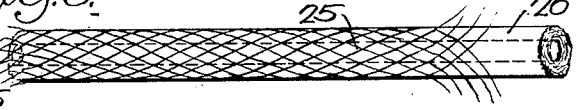


Fig. 3.

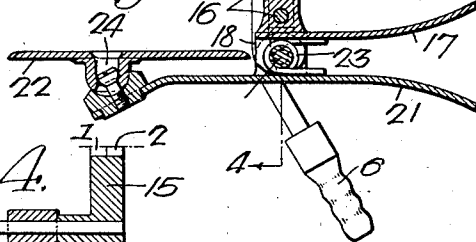


Fig. 9.

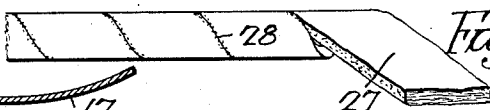


Fig. 4.

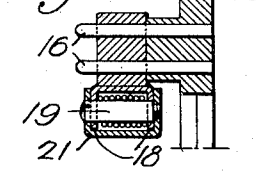
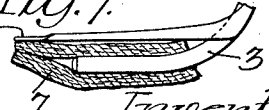


Fig. 7.



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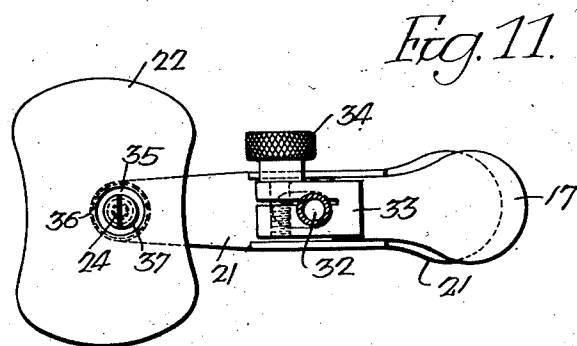
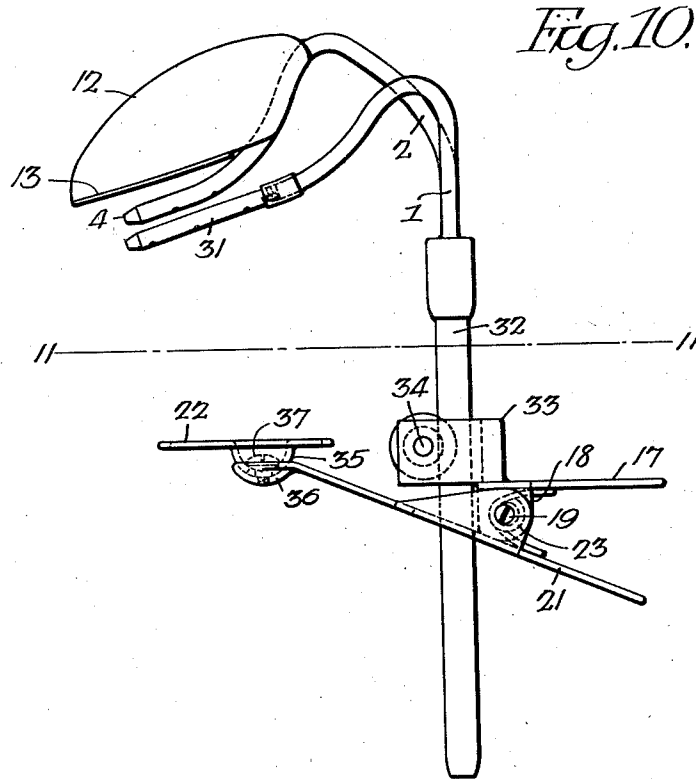
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DENTAL APPLIANCE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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DENTAL APPLIANCE

Application filed April 23, 1924. Serial No. 709,591.

This invention relates to devices adapted for freeing the mouth of a patient, undergoing dental work, of saliva or other accumulating liquid. It is customary to employ rubber dams and cotton pads in order to keep the teeth upon which the operations are performed free from this accumulating moisture, and it is also customary to employ hollow tubes connected with a suitable source of suction. The use of these devices has not, however, proved satisfactory owing principally to the fact that the pads soon absorb to capacity and are thereafter useless, it being necessary to frequently renew these pads with consequent interruption to the operation and danger of flooding the work.

It is the principal object of the present invention to provide a device which is capable, without the use of rubber dams or the like, of keeping the mouth free from excessive accumulations of moisture over comparatively protracted periods of time, the invention further residing in certain novel structural details constituting a material improvement over other devices of a similar nature.

The invention contemplates a novel combination of absorbent pads and suction elements whereby the natural absorption of the pad is utilized to collect the moisture, which is thereafter carried away from the pad by suction means, the pad also constituting means for preventing the clogging of the suction elements with mucous or other heavy substance which might otherwise tend to put these elements out of operation.

In the attached drawings:

Figure 1 shows a device made in accordance with my invention;

Fig. 2 is a front view of the device indicating the manner in which it is applied to the human mouth;

Fig. 3 is a section on the line 3—3, Fig. 1;

Fig. 4 is a section on the line 4—4, Fig. 3;

Fig. 5 is a plan view of the chin plate;

Fig. 6 is a fragmentary view showing, partly in section, the extremity of one of the suction tubes with its detachable tip;

Fig. 7 is a view of the end of one of the suction ducts illustrating a means for holding the absorbent roll in a normal position;

Fig. 8 is a view of a section of an absorbent roll made in accordance with my invention;

Fig. 9 is a view of a section of another form of roll;

Fig. 10 is a side elevation of a preferred form of the device, and

Fig. 11 is a section on the line 11—11, Fig. 10.

With reference to the drawings, my device comprises a pair of suction tubes or ducts, 1 and 2, whose upper ends 3 and 4, respectively, project laterally and in such manner that as shown in Fig. 2 they may be adapted to extend in substantial parallelism on opposite sides of the teeth of the lower jaw, which teeth are indicated in Fig. 2 by the reference numeral 5. As clearly illustrated, the tubes 1 and 2 communicate with a common base duct 6, which in the present instance is adapted to receive a rubber or other flexible tube extending to a source of suction (not shown).

Also as clearly illustrated, the upper lateral ends 3 and 4 of the tubes 1 and 2 are perforated, and these perforated sections of the tube are adapted to receive tubular rolls 7 and 8 of cotton or other suitable absorbent material, the said absorbent material covering the said perforations 9. The tube section 3 in the present instance is provided with an arm 11 which extends directly over the perforated section of the tube and functions as best shown in Fig. 7 to hold the absorbent material in a normal position, particularly where the latter projects beyond the extremity of the said tube. Under these circumstances, the projecting end of the pad has a tendency to curl upward, and this is prevented by the arm 11. The tube section 4 also carries a guard element in the form of a vertical plate 12, the lower edge of which is provided with a flange 13 overlying the pad or absorbent element 8, functioning in a manner similar to the arm 11, previously described. The vertical plate 12 constitutes a tongue guard preventing the tongue from pressing over against the absorbent element 8 or against the tooth upon which the operation is being performed. The manner in which this plate 12 functions is best shown in Fig. 2, in which the tongue

is designated by the reference numeral 14. It has been found that a vertical guard plate of this character is far more effective than the usual horizontal plate which theoretically is adapted to hold the tongue down in the floor of the mouth.

Secured to the tubes 1 and 2 is a support element 15 which, in the present instance, comprises two horizontal and parallel projecting pins 16, 16. These pins are adapted to project through correspondingly positioned apertures in a handle member 17, and provides means for detachably mounting this handle upon the support 15. As clearly illustrated, the handle member 17 is provided at each side and directly under the pins 16, 16, with downwardly projecting perforated lugs 18. A screw or other securing element 19 projects through the apertures in these lugs 18 and constitutes a pivot support for an arm 21, the outer end of which underlies the main portion of the handle element 17 and the inner end of which has swivelly mounted thereon a chin plate 22. A spring 23 on the pivot member 19 exerts a pressure upon the arm 21 tending to hold the said inner end in a normal elevated position.

The manner in which the plate 22 is mounted upon the arm 21 is best shown in Fig. 3, where it will be seen that the mounting is practically a universal one, permitting free rotation of the plate and also a swivel movement allowing the plate to assume a position in practically any plane which may be found suitable, irrespective of the position of the arm 21. The plate 22 is in the present instance a substantially triangular one, and the point 24 at which the pivotal connection between the plate and the arm 21 is made is eccentric of the plate 22, and this eccentric positioning of the swivelling point provides different distances between the said point and the three extended edges of the plate. The distance, therefore, between the pivot 19 and the extreme outer edge of the plate 22 may be varied to suit chins of different width, and the practically universal adjustment provided for the said plate 22 makes it easily applicable to chins of practically any contour and size.

Obviously, the absorbent material which covers the perforated ends of the tubes 1 and 2 may be of any form that may be found suitable, but I prefer to employ a tubular roll of absorbent cotton or like substance, as shown in Fig. 8. In rendering these tubes free from a tendency to lose their form, I prefer to employ, instead of the adhesive substance commonly employed in the manufacture of the usual solid cotton roll, a retaining element which while not seriously interfering with the absorbent qualities or characteristics of the tube will yet maintain the tube in its normal compact form. For

this purpose, I have found that a very coarse fabric used as a jacket, as shown in Fig. 8, in which the said jacket is designated by the reference numeral 25, and the tubular cotton roll by the reference numeral 26, is satisfactory. Or I may form the roll as illustrated in Fig. 9, out of a flat strip 27 of the material arranged spirally in the form of the hollow roll, and may secure the seams 28 by means of an adhesive or other suitable substance, this adhesive while tending to hold the roll in its normal shape in no material way interfering with the absorbent characteristics of the material.

To suit the varying conditions under which this instrument may be employed, I have found it desirable to provide absorbent rolls of different lengths, and it may also be desirable to form the perforated ends of the tubes 1 and 2 in such manner as to render them capable of adjustment to different lengths. One method of doing this is shown in Fig. 6, in which I have shown at one end of one of the tubes a section 29 which may be threaded into the end of the tube, and which is, therefore, detachable to vary the length of the latter.

A simplified construction and one which is perhaps more desirable than that previously described I have illustrated in Figs. 10 and 11. The construction in this case while essentially the same as that previously described is modified in part by the use of a perforated tip 31 on one of the tubes, which is detachable as a whole and replaceable by tips of different lengths. In this case also, the tubes 1 and 2 merge into a common larger tube 32 at a point near the offset upper ends of said tubes, and the chin clamp in this instance is carried by a member 33 which is adjustable on the duct 32 both longitudinally and circumferentially of the latter. The member 33, as best shown in Fig. 11, is divided, and is provided with a set screw 34 by means of which it can be clamped tight on the stem 32. The clamp otherwise is essentially the same as that previously described, and the corresponding parts have been designated by the same reference characters. The arrangement whereby the clamp is adjustable vertically and circumferentially of the stem 32 not only affords a greater range of adjustment to suit various shapes of chins, but also permits the entire removal of the clamp from the instrument for cleaning purposes.

Instead of utilizing the triangular plate 22 previously described, I have in this instance made the plate 22 more or less rectangular in form, with the long sides concave, and in this instance also as in the previous case, the pivot point 24 is eccentric of the plate 22 to provide the varying required adjustments. It will be noted in this instance that the construction has been simplified.

5 fied by forming the spherical recessed portion 35, which fits within the spherical recess or socket 36 in the inner end of the arm 21, integral with the plate 22 and pressed out of the plate, a screw 37 passing through an enlarged aperture in the bottom of the recessed portion 35 and into the arm 21 securing the parts together.

10 It will be apparent that the invention is subject to quite considerable modification without departure from the essential features of the invention as defined in the appended claims.

I claim:

15 1. In a suction device for dental work, the combination with a tubular body of absorbent material, of a suction tube having a perforated portion adapted for insertion within said absorbent body.

20 2. A suction device for dental work comprising a tubular cotton roll, and a suction tube having a perforated portion adapted for insertion within said roll.

25 3. In a dental suction device, the combination with a perforated rigid tube, of a tubular body of cotton adapted to be fitted over the perforated portion of the tube, and means for maintaining all parts of said tubular body in a normal position substantially concentric with the said perforated portion of said tube.

30 4. In a dental suction device, the combination with a plurality of suction tubes having perforated portions adapted to lie in substantially parallel relation, a tubular body of absorbent material adapted to be fitted over the perforated sections of said tubes, and a plate carried by one of said tubes adjacent and substantially parallel to the perforated portion thereof, said plate lying substantially in a plane perpendicular to the plane occupied by the parallel perforated sections of the said tubes.

35 45 5. In a dental suction device, the combination with a perforated tube, of an absorbent element adapted to be fitted around the perforated section and to project beyond the extremity of said tube, and an element carried by said tube for retaining the projecting end of the absorbent element in substantial alignment with the said perforated section.

50 6. In a dental suction device, the combination with a suction tube having a laterally projecting perforated end section, a member adjustable longitudinally of said tube, an arm hinged to said member, a spring tending to elevate the arm toward the said perforated end section, and a plate universally adjustable about a point of said hinged member.

55 60 7. In a dental suction device, the combination with a suction tube having a laterally projecting perforated end section, a member adjustable circumferentially of said tube, an

arm hinged to said member, a spring tending to elevate the arm toward the said perforated end section, and a plate universally adjustable about a fixed point of said hinged member.

70 8. In a dental suction device, the combination with a suction tube having a laterally projecting perforated end section, a member adjustable longitudinally and circumferentially of said tube, an arm pivotally secured to said member, a spring tending to elevate the arm toward the said perforated end section, and a plate universally adjustable about a fixed point of said hinged member.

75 8. In a dental suction device, the combination with a suction tube having a laterally projecting perforated end section, a member adjustable longitudinally and circumferentially of said tube, an arm pivotally secured to said member, a spring tending to elevate the arm toward the said perforated end section, and a plate universally adjustable about a fixed point of said hinged member.

80 9. The method of eliminating moisture in dental operations, which consists in applying to the mouth a perforated tube, creating a suction on said tube, and protecting the suction tube from clogging by covering the perforations with an absorbent material.

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