

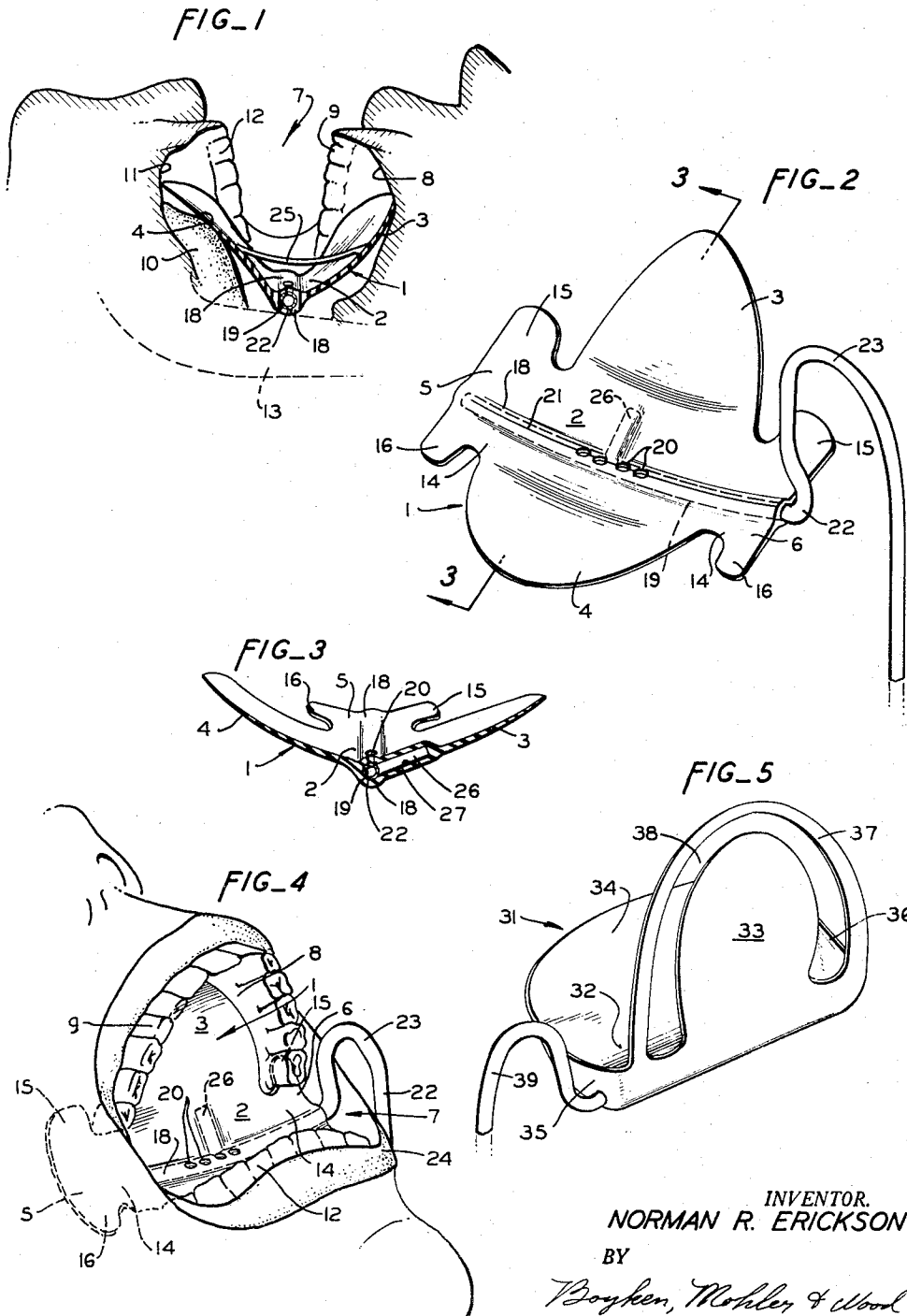
May 24, 1960

N. R. ERICKSON
DENTAL APPLIANCE

2,937,445

Filed Oct. 19, 1956

2 Sheets-Sheet 1



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N. R. ERICKSON
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2 Sheets-Sheet 2

FIG-6

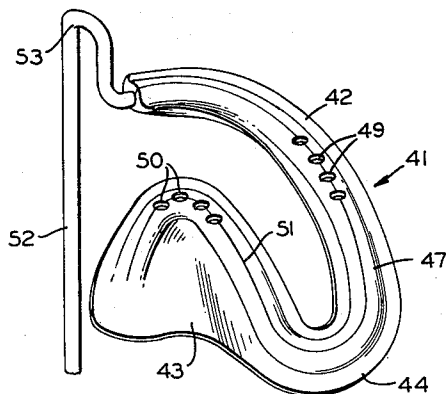


FIG-8

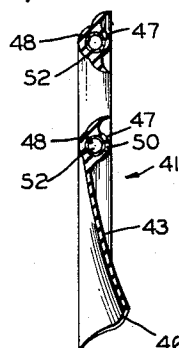


FIG-7

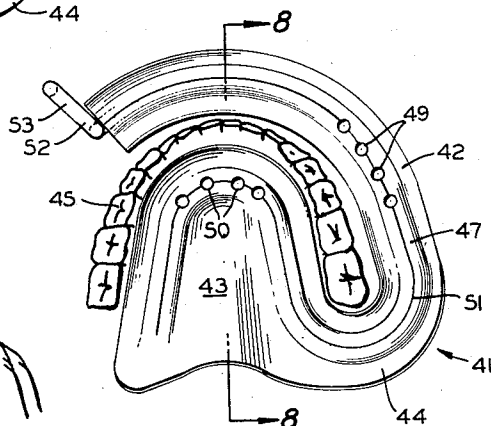


FIG-10

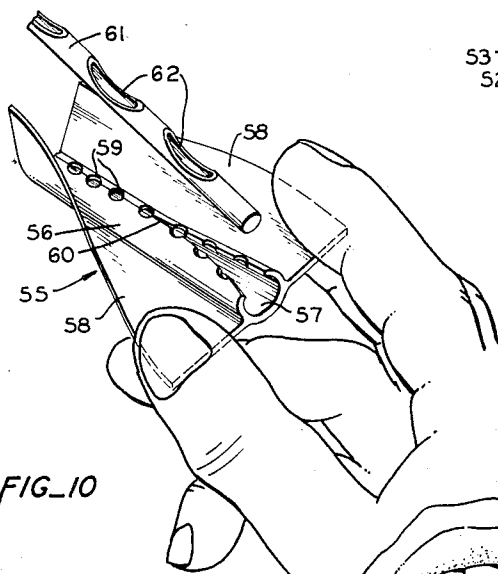
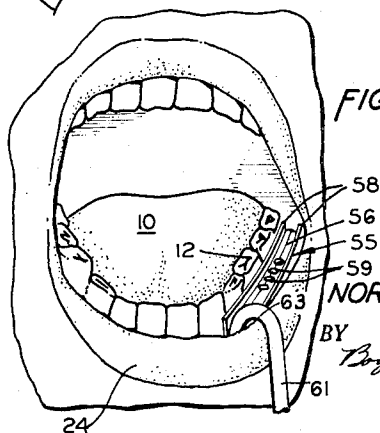


FIG-9



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2,937,445

DENTAL APPLIANCE

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16 Claims. (Cl. 32—33)

This invention relates to dental appliances and more particularly to a device for collecting and removing solid debris and liquid from the mouth of a patient during the conduct of dental operations therein.

The device of this invention, although generally useful in many dental operations, is most particularly suited to operations involving the use of "high speed" cutting tools. It has been found that the time involved in operations such as preparing cavities for fillings can be greatly reduced by using cutting and abrasive tools which operate at a very high rate of speed. Not only is such shortened preparation time advantageous to the dentist but it also benefits the patient in reducing the amount of time he must spend in the dentist chair for a dental operation.

However, the high speed rotation of cutting or abrasive instruments on tooth surfaces generates a tremendous amount of heat through friction, which heat is not only deadly to tooth vitality but is also the dominant contributing factor to the patient's discomfort. Consequently, it has been found necessary to spray coolant, commonly water, on the tooth surface and the instruments during such high speed operations. The use of high speed tools and the required water spray has introduced new problems and magnified old ones not solved by conventional dental appliances.

Chief among these problems is the lack of adequate vision of the operating field (which becomes more and more critical as the speed of cavity preparation is increased) and the removal of natural saliva and the added volume of liquid coolant. In the lower mouth, the use of a coolant spray does not present too great a problem inasmuch as direct vision may be attained while the patient is seated in an upright position, and a conventional saliva ejector functions fairly well to carry away both saliva and liquid coolant. However, solid materials such as enamel, amalgam, or wax trimmings become a problem inasmuch as the patient, if given a local anesthetic, has great difficulty in eliminating them from his mouth because he cannot feel with anesthetized tissues.

The problems arising in conjunction with the use of high speed tools and operative techniques in the upper mouth are of a serious nature to both the patient and the dentist. With "slow speed" instruments, where no continuous water spray was necessary, the dental mirror was used in conjunction with a sense of feel or touch to provide the necessary vision of the operative field. Thus it was possible to seat the patient in a nearly erect position while the dentist remained also in an erect position behind the patient, maintaining the comfort of both. However, introduction of high speed techniques and the necessary continuous coolant spray has rendered the dental mirror of little or no value in the mouth while the cutting operation is in process. The cloud of moisture created in the mouth by the continuous spray fogs the mirror so that it is practically impossible to see anything in same.

Hence, the dentist must rely solely on his sense of touch and observe the work only between alternate

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periods of cutting, which necessarily loses to him most of the advantages inherent with high speed instruments. In order to obtain direct vision of an operating field in the upper mouth, the dentist must position himself with respect to the patient so as to look directly into the upper mouth. In most cases, this means that the water spray being deflected from the rotating instrument and tooth surfaces and saliva issues from the patient's mouth full into the face of the dentist. Not only does the dentist suffer from this, but inasmuch as the water spray is at approximately a sixty degree angle to the plane of occlusion of the teeth, that portion of the spray which is not deflected out of the mouth or into the lower mouth may be thrown onto the palate of the patient thereby coursing down the soft palate and into the oral pharynx to the patient's great discomfort.

It is therefore an object of this invention to solve the above problems by providing a receptacle for collecting liquid and solid material in a patient's mouth during the performance of dental operations therein.

Another object of this invention is the provision of a device for collecting and removing a major portion of natural saliva and introduced liquid from the mouth during the conduct of dental operations therein.

Still another object of this invention is the provision of means for shielding the sensitive areas of the mouth and throat during dental operations.

It is yet another object of this invention to provide an improved liquid ejector for the mouth which is efficient and easy to clean.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a longitudinal sectional view through a patient's mouth showing the preferred form of the device of this invention in place;

Fig. 2 is a perspective view of the preferred form of the dental appliance of Fig. 1;

Fig. 3 is a cross sectional view taken generally along line 3—3 of Fig. 2;

Fig. 4 is a perspective view of the open mouth of a patient showing the appliance of Fig. 2 in place therein;

Fig. 5 is a perspective view of a modified form of the appliance of this invention;

Fig. 6 is a perspective view of another modified form of the dental appliance of this invention;

Fig. 7 is a top plan view of the dental appliance of Fig. 6 shown in relationship to a set of lower teeth;

Fig. 8 is a cross sectional view taken substantially along line 8—8 of Fig. 7;

Fig. 9 is a front elevational view of a patient's open mouth showing a third modified form of the appliance of this invention in place therein;

Fig. 10 is a perspective view of the appliance of Fig. 9 shown in a position in which it is being assembled or disassembled for cleaning.

In detail, referring to Figs. 1—3, the appliance of this invention comprises a member, generally designated 1, formed of a flexible, soft, waterproof material such as rubber or the like. Member 1 is formed with a central depressed portion 2 providing a pocket with longitudinally oppositely projecting palatal and lingual portions 3, 4, respectively extending therefrom. Extending transversely of the direction of projection of portions 3, 4 are a pair of opposed buccal portions 5, 6. Member 1 may be of relatively thin cross section (as shown in Fig. 3) and especially the peripheral edges of the portions 3, 4, 5, and 6 which bound the central pocket portion 2.

Member 1 is adapted to fit within a patient's oral cavity 7 (Figs. 1, 4) with portion 3 overlying the roof of the mouth and the peripheral edge thereof in seal-

ing engagement with the hard palate 8 inside the upper teeth 9. The lingual portion 4 is adapted to overlies the tongue 10 and have its peripheral edge in sealing engagement with the floor 11 of the mouth inside the lower teeth 12.

Buccal portions 5, 6 are adapted to extend between the distal surface of the last molars and the anterior border of the ascending ramus 13 of the mandible or jawbone. It will be noted in Figs. 2, 4 that portions 5, 6 are formed to a narrow neck, as at 14, where they pass through this space between the last molars and the jawbone and are provided with longitudinally extending ears 15, 16 projecting oppositely behind said last molars in the vestibule of the mouth. The vestibule is, of course, that portion of the mouth which is between the teeth and the cheeks or lips.

All of the peripheral edges of the member 1 including the aforementioned palatal, lingual, and buccal portions are adapted to seat in sealing engagement with relatively insensitive tissues in the mouth so as to not contribute appreciably to any discomfort of the patient. Since the member 1 is not only pre-formed to a depressed pocket figuration but is also held in this form in the mouth, it is seen that any liquid in the mouth will be collected in the central portion 2 of said member. In this position member 1 shields the highly sensitive areas of the oral cavity and oral pharynx from any foreign matter introduced into the mouth during a dental operation such as the aforementioned cooling liquids and any solid debris like enamel or trimmings from fillings.

The member 1 is so formed and adapted to be positioned in the mouth that the lingual projection picks up and delivers to the pocket portion 2 most of the secretions of the sublingual and submaxillary salivary glands, the duct openings of which lie adjacent to the frenulum of the tongue where the same is connected to the floor of the mouth. Similarly the buccal projections 5, 6 serve the dual function of supporting the appliance in position by taking advantage of the constant relationship of the ascending ramus of the mandible and the adjacent oral tissues to collect secretions of the parotid salivary glands whose duct openings lie opposite the crown of the second molars in the vestibule of the mouth. Hence, member 1 functions to collect and retain substantially all of the liquid, both naturally secreted and introduced into the mouth, and also solid debris which may result from the dental operation.

Furthermore member 1 allows a patient to be positioned with his head generally horizontal as shown in Fig. 1 so that the dentist may have a direct view of the upper teeth 9 from a comfortable position. If it were not for the fact that member 1 closes off and shields the patient's oral pharynx and throat, performing dental operations in such a position would result in substantial discomfort to the patient.

It will also be noted that since member 1 is formed of a soft flexible material the patient is able to close with the appliance in place, for the purpose of making occlusion checks and the like, while still retaining the foreign material in pocket portion 2. In addition, the palatal portion 4 of the dental appliance helps hold the tongue 10 out of the way from interfering with the operative field. Covering the oral pharynx as it does, the member 1 also prevents the patient's breathing out through his mouth and fogging the dental mirror when in use.

Since the amount of liquid introduced into the mouth during high speed dentistry may be considerable, it is advisable to provide means for continually eliminating the liquid gathering in pocket portion 2. To this end a conventional saliva ejector may be positioned to withdraw the liquid from said pocket portion.

However, the appliance of this invention contemplates the inclusion of the improved liquid ejector shown in Figs. 1 through 4. Member 1 is provided with a

thickened portion 18 of increased cross section extending transversely from buccal portion 5 across pocket portion 2 to the other buccal portion 6 and providing an elongated bore 19 therethrough. Apertures 20 are formed through the upper wall of said thickened portion generally centrally of pocket portion 2 and communicating between said pocket portion and bore 19. These apertures allow the liquid collecting in pocket portion 2 to drain into bore 19 where the same may be withdrawn from the dental appliance by any suitable vacuum means. One reason for forming apertures 20 in the upper wall of portion 18 is to prevent the accumulation of solid materials such as enamel, gold or amalgam trimmings, from collecting in said apertures. Such solid debris will be more likely to collect in pocket portion 2 adjacent thickened portion 18 but will not interfere with the liquid being drawn into apertures 20.

To facilitate cleaning bore 19 portion 18 is longitudinally split along the line of apertures 20, as at 21, so the same may be flexed apart to gain access to the interior of bore 19 by a brush or the like.

It will also be noted that the provision of the thickened portion 18 also aids in stiffening the member 1 in a transverse direction which provides a more stable support of the appliance in the mouth since the ends of the thickened portion 18 will rest against the ascending ramus of the mandible 13 (Fig. 1) to prevent the member 1 from being moved down toward the patient's throat. Even greater stiffening can be provided by inserting a drain pipe 22 into bore 19, which pipe is provided with openings corresponding to the location of apertures 20. Not only does drain pipe 22 perform the function of supporting member 1 in the manner described and shown in Figs. 1 and 4, but said pipe may be attached to a suitable aspirating device for drawing the liquid out of the central pocket portion 2 of the dental appliance. Drain pipe 22 should be bent as shown in Figs. 2 and 4 at 23 so as to extend upwardly out of the mouth and over the lip 24. It will be noted that pipe 22 may be easily removed from bore 19 by merely flexing thickened portion 18 apart at split 21 and lifting pipe 22 therefrom for purposes of cleaning and the like.

Since the appliance of this invention is adapted to assume the position shown in Fig. 1 with its peripheral edges in sealing engagement with various portions of the mouth, it is desirable to provide means for withdrawal of the appliance from the mouth. To this end, the device of Fig. 1 has been provided with a strap 25 extending over pocket portion 2 and secured at its opposite ends to palatal and lingual portions 3, 4, respectively. It will be noted that strap 25 in no way interferes with the function of member 1 nor with dental operations being performed in the mouth, but said strap provides readily accessible means for pulling palatal and lingual portions 3, 4, together away from the roof and floor of the mouth respectively, so that member 1 may be withdrawn. When member 1 is folded in this manner the solid materials collected in pocket 2 will be retained therein and may be easily withdrawn from the mouth with the dental appliance.

Alternative means for facilitating withdrawal of member 1 may be in the form shown in Figs. 2 through 4 in which an axial projection 26 is provided centrally of pipe 22 and received in a pocket 27 (Fig. 3) formed in central portion 2 of member 1. With this structure, rotation of drain pipe 22 causes palatal portion 3 to be folded away from the roof of the mouth toward lingual portion 4. Since the patient's tongue normally tends to lift lingual portion 4 from the floor of the mouth the palatal and lingual portions of the device may be folded together in this manner for removal of member 1 as previously described. The provision of projection 26 also helps to prevent palatal portion 3 being folded back

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into the mouth where the same could cause the patient great discomfort.

The modification illustrated in Fig. 5, generally designated 31, is similar in function to the member 1 and is provided with a central depressed pocket portion 32, with a palatal portion 33 and a lingual portion 34 extending therefrom. Instead of providing the buccal portions of member 1, the pocket portion 32 of appliance 31 may be provided with a pair of end walls 35, 36 joining said palatal and lingual portions. In order to support the appliance 31 in the mouth the same is provided with a curved band 37 secured at its ends to pocket portion 32 and extending in spaced relationship to the edge of palatal portion 33.

Palatal portion 33 is adapted to engage the roof of the mouth inside the upper teeth in a manner similar to that described for palatal portion 3, and band 37 is adapted to be received in the vestibule of the mouth around the outer sides of the upper teeth 9. The upper teeth therefore project through the curved space 38 between band 37 and palatal portion 33 and hold appliance 31 in a fixed relation to the mouth during the performance of a dental operation.

Lingual portion 34 is adapted to overlie the tongue of the patient and the edge margins thereof are adapted to seal with the floor of the mouth inside the lower teeth so that the major portion of liquids and solid debris are drained into and collected in the pocket portion 32. Appliance 31 may likewise be provided with a saliva ejector of the construction described including a drain pipe 39. Band 37 will not only serve to support the appliance in place but will aid in the function of channeling liquids from the vestibule of the mouth into pocket portions 32. In other respects the appliance 31 is similar in function to the member 1. Likewise, appliance 31 is constructed of a soft, flexible, rubber-like material of relatively thin cross section so as to conform to the patient's mouth without causing him discomfort.

Another modified form of the dental appliance of this invention is illustrated in Figs. 6 through 8 and comprises a member, generally designated 41, which is adapted for use primarily in the patient's lower mouth. Member 41 is formed of a soft flexible, waterproof material of relatively thin cross section to provide a curved, depressed buccal pocket portion 42 and a depressed lingual pocket portion 43. These portions are integrally connected with a depressed connecting portion 44 so as to form a continuous channel throughout the extent of member 41.

Member 41 is adapted to fit in the patient's lower mouth with lingual portion 43 overlying the tongue and the forward and side edges thereof in sealing engagement with the floor of the mouth adjacent the inner side of the lower teeth 45 (Fig. 7). Connecting portion 44 is adapted to extend behind the last lower molar (forward of the ramus of the mandible) and the buccal portion 42 is adapted to extend around the front surfaces of the teeth in the vestibule of the mouth. The side edges of both the buccal portion 42 and connecting portion 44 are raised (Fig. 8) so as to form the central channel previously described, and said edges are adapted to be in sealing engagement with the soft tissues of the mouth for collecting liquids and solid debris in such depression or channel. It will also be noted that the rear edge of lingual portion 43 is raised, as at 46 (Fig. 8) so as to prevent liquid from flowing out of pocket portion 43 and down the patient's throat.

Member 41 therefore collects both natural saliva and liquid introduced into the mouth during dental operations as well as most of the solid debris, such as trimming from fillings and the like, in the depressed pocket portions. As in the previous examples a thickened portion 47 is formed extending along the bottom of the depression in portions 42, 43, 44 and provides an elongated

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bore 48 therethrough. Apertures 49, 50 are provided along the top of thickened portion 47 in the buccal and lingual portions 42, 43, respectively, for communicating between said portions and the bore 48. In this manner the liquid collected in buccal pocket portion 42 and lingual pocket portion 43 is drained through apertures 49, 50 into the bore 48 where the same may be withdrawn by a suitable vacuum device.

Splitting thickened portion 47 along the line of apertures 49, 50, as at 51, not only enables easier cleaning of bore 48, as previously described with respect to the device of Fig. 2, but also facilitates the insertion of a drain pipe 52 in said bore. Drain pipe 52 may be provided with openings corresponding to apertures 49, 50 for drawing the liquid into said pipe, and the same should be provided with a bend, as at 53 (Fig. 6) where it extends up over the patient's lip and out of the mouth.

Any suitable suction means may be connected to pipe 52 for withdrawing the liquid out of the buccal and lingual pocket portions through apertures 49, 50 and the opening in said pipe.

Member 41 is adapted for use in the lower mouth similar to member 1 except that the patient is in a generally upright position so that the liquids and other foreign material introduced into the mouth drain into pocket portions 42, 43, and 44. The configuration of member 41 is such that it could be made for either the right or left hand side of the mouth and the placement of said member is such that the majority of natural saliva is picked up therein and drained off in the manner described. In place of drain pipe 52 and thickened portion 47 a conventional saliva ejector may be used with member 41. However, use of the means shown in Figs. 6 through 8 contemplates draining both buccal portion 42 and lingual portion 43 so as to maintain both the vestibule and the lower oral cavity in a relatively dry condition.

The modification illustrated in Figs. 9 and 10 is generally of the same construction as the liquid ejectors previously described except that it is smaller and for use in only localized areas of the mouth. The member, generally designated 55, shown in Figs. 9, 10, is formed of a similar rubber-like material to provide a central tubular portion 56 having a central bore 57 therethrough. A pair of wings 58 extend divergently outwardly from central portion 56 to provide a channel or pocket along such central portion. A plurality of apertures 59 are provided through the upper wall of tubular portion 56 communicating between the pocket formed by wings 58 and the bore 57. Tubular portion 56 is split along the line 60 of said apertures so that tubular portion 56 may be flexed apart, as shown in Fig. 10, for purposes of cleaning and the like.

A tubular drain pipe 61 is adapted to be received in tubular bore 57 and is provided with openings 62 corresponding in location to apertures 59. One end of drain pipe 61 is closed, and the other end thereof extending from member 55 may be bent as at 63 (Fig. 9) to extend over the patient's lip 24.

Member 55 is adapted to be inserted in the patient's mouth, as for instance in the vestibule between lower teeth 12 and the cheek. Wings 58 are adapted to fit in sealing engagement with the soft tissues of the mouth in such a location for draining liquids toward tubular portion 56. Wings 58 also function to prevent the soft oral tissues from being sucked into and clogging apertures 59. The pocket formed by wings 58 will also collect the major portion of the trimmings from fillings and like solid material in the localized area in which it is used. Liquid collected by member 55 will be drawn through apertures 59, holes 62 and into pipe 61 in which the same may be drawn by suitable vacuum means.

It is noted in Fig. 10 that openings 62 are provided of a size larger than apertures 59. With such a structure the larger pieces of solid material which might other-

wise plug drain pipe 61 will be retained in the member 55 because of the relatively small size of apertures 59. The relationship of apertures 59 to the bore of pipe 61 is such that any piece of solid material which is small enough to pass through an aperture 59 will be easily drawn through the larger bore of pipe 61. Even if some of said larger pieces of solid material should plug the apertures 59 the utility of the liquid ejector device will not be destroyed. It is desired to prevent plugging of drain pipe 61 in this manner because of the fact that such drain is generally difficult to clean.

On the other hand, removal of pipe 61 from flexible member 55 may be easily accomplished by merely withdrawing said pipe through the split 60 in tubular portion 56, and the bore 57 and apertures 59 in member 55 may be easily cleaned by merely flexing the member apart, as shown in Fig. 10, and scrubbing the interior of bore 57 with a brush or the like.

The member 55 therefore functions in generally the same manner as the previously disclosed modifications in collecting and removing liquids and solid debris from the mouth during a dental operation. Such member does not interfere with the operating field and may be principally used in localized areas under conditions in which the operative field is restricted.

Although the invention has been described and illustrated in detail it is to be understood that modifications and design changes which would appear necessary or desirable to a person skilled in the art are within the spirit of the invention and the scope of the following claims.

I claim:

1. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a flexible, liquid impervious member adapted to fit within the mouth and having a central depressed portion providing a pocket for receiving debris and liquid, edge portions surrounding and extending slantingly upwardly from said central portion and adapted to be seated in sealing engagement with the soft tissues of the mouth for draining to said pocket, and drain channel means integrally formed in said central portion for facilitating continual removal of liquid therefrom during conduct of dental operations.

2. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a flexible, liquid impervious member adapted to fit within the mouth and having a central depressed portion providing a pocket for receiving debris and liquid, edge portions surrounding and extending slantingly upwardly from said central portion and adapted to be seated in sealing engagement with the soft tissues of the mouth for draining to said pocket, and means for supporting said member in the forward portion of the oral cavity and preventing movement of said member back toward the oral pharynx, said means being an integral portion of said member and adapted to extend from the oral cavity to the vestibule through the space between the last molars and the ascending ramus of the mandible.

3. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a flexible, liquid impervious member adapted to fit within the mouth and having a central depressed portion providing a pocket for receiving debris and liquid, edge portions surrounding and extending slantingly upwardly from said central portion and adapted to be seated in sealing engagement with the soft tissues of the mouth for draining to said pocket, and means for supporting said member in the forward portion of the oral cavity and preventing movement of said member back toward the oral pharynx, said means including buccal projections extending oppositely from said central portion and adapted to be received in the space between the last molars and the ascending ramus of the mandible.

4. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a flexible, liquid impervious member adapted to fit within the mouth and having a central depressed portion providing a pocket for receiving debris and liquid, edge portions surrounding and extending slantingly upwardly from said central portion and adapted to be seated in sealing engagement with the soft tissues of the mouth for draining to said pocket, and means for supporting said member in the forward portion of the oral cavity and preventing movement of said member back toward the oral pharynx, said means being an integral portion of said member and adapted to extend from the oral cavity to the vestibule through the space between the last molars and the ascending ramus of the mandible, and a relatively stiff member extending across said central portion and into said integral portion.

5. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit within the mouth and providing a depressed central pocket portion adapted to extend across the oral cavity forward of the oral pharynx, with longitudinally oppositely projecting palatal and lingual portions respectively adapted to fit in sealing engagement with the roof and floor of the mouth adjacent the teeth, and with transversely oppositely projecting buccal portions adapted to extend between the distal surface of the last molars and the anterior border of the ascending ramus of the mandible.

6. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit within the mouth and providing a depressed central pocket portion adapted to extend across the oral cavity forward of the oral pharynx, with longitudinally oppositely projecting palatal and lingual portions respectively adapted to fit in sealing engagement with the roof and floor of the mouth adjacent the teeth, and with transversely oppositely projecting buccal portions adapted to extend between the distal surface of the last molars and the anterior border of the ascending ramus of the mandible, said buccal portions being provided with longitudinally extending ears projecting oppositely from the ends thereof and adapted to fit in sealing engagement with the soft tissues in the vestibule of the mouth behind the parotid duct openings.

7. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit within the mouth and providing a depressed central pocket portion adapted to extend across the oral cavity forward of the oral pharynx, with longitudinally oppositely projecting palatal and lingual portions respectively adapted to fit in sealing engagement with the roof and floor of the mouth adjacent the teeth, and with transversely oppositely projecting buccal portions adapted to extend between the distal surface of the last molars and the anterior border of the ascending ramus of the mandible, and a relatively stiff element secured to said member and extending transversely thereof from one of said buccal portions across said pocket portion to the other said buccal portion.

8. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit within the mouth and providing a depressed central pocket portion adapted to extend across the oral cavity forward of the oral pharynx, with longitudinally oppositely projecting palatal and lingual por-

tions respectively adapted to fit in sealing engagement with the roof and floor of the mouth adjacent the teeth, and with transversely oppositely projecting buccal portions adapted to extend between the distal surface of the last molars and the anterior border of the ascending ramus of the mandible, and a relatively stiff element secured to said member and extending transversely thereof from one of said buccal portions across said pocket portion to the other said buccal portion, said stiff element being hollow to provide an internal bore, and apertures formed in said element communicating between said pocket portion and said bore.

9. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit within the mouth and providing a depressed central pocket portion adapted to extend across the oral cavity forward of the oral pharynx, with longitudinally oppositely projecting palatal and lingual portions respectively adapted to fit in sealing engagement with the roof and floor of the mouth adjacent the teeth, and with transversely oppositely projecting buccal portions adapted to extend between the distal surface of the last molars and the anterior border of the ascending ramus of the mandible, a thickened portion extending transversely from one of said buccal portions across said pocket portion to the other said buccal portion and providing an elongated bore therethrough, apertures formed through said thickened portion communicating between said pocket portion and said bore, and an elongated, hollow, rigid drain pipe received in said bore and provided with openings corresponding with said apertures, said thickened portion being split along the line of said apertures to facilitate removing said pipe and cleaning said bore by flexing said thickened portion apart at said split.

10. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit within the mouth and providing a depressed central pocket portion adapted to extend across the oral cavity forward of the oral pharynx, with longitudinally oppositely projecting palatal and lingual portions respectively adapted to fit in sealing engagement with the roof and floor of the mouth adjacent the teeth, and with transversely oppositely projecting buccal portions adapted to extend between the distal surface of the last molars and the anterior border of the ascending ramus of the mandible, a thickened portion extending transversely from one of said buccal portions across said pocket portion to the other said buccal portion and providing an elongated bore therethrough, apertures formed through said thickened portion communicating between said pocket portion and said bore, and an elongated, hollow, rigid drain pipe received in said bore and provided with openings corresponding with said apertures, said thickened portion being split along the line of said apertures to facilitate removing said pipe and cleaning said bore by flexing said thickened portion apart at said split, and an axial projection on said pipe extending toward said palatal portion and secured thereto for folding said palatal portion away from the roof of the mouth upon rotating said pipe.

11. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a flexible, liquid impervious member adapted to fit within the mouth and having a central depressed portion providing a pocket for receiving debris and liquid, edge portions surrounding and extending slantingly upwardly from said central portion and adapted to be seated in sealing engagement with the soft tissues of the mouth for draining to said pocket, and means for supporting said member in the forward portion of the oral cavity and preventing move-

ment of said member back toward the oral pharynx, said means including a band secured at its ends to said central portion and extending in spaced relation to said edge portions and adapted to be received in the vestibule of the mouth and surrounding the outer sides of the teeth.

12. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit within the mouth and providing a depressed central pocket portion adapted to extend across the oral cavity forward of the oral pharynx, with longitudinally oppositely projecting palatal and lingual portions respectively adapted to fit in sealing engagement with the roof and floor of the mouth adjacent the teeth, and with transversely oppositely projecting buccal portions adapted to extend between the distal surface of the last molars and the anterior border of the ascending ramus of the mandible, and means for folding said palatal and lingual portions toward each other to facilitate removal of said appliance from the mouth.

13. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit in the mouth and including a depressed buccal pocket portion adapted to be received in the vestibule of the mouth with the edges thereof in sealing engagement with the soft tissues of the mouth, a depressed lingual pocket portion adapted to be received between the lower teeth over the tongue with the edges thereof in sealing engagement with the floor of the mouth adjacent the teeth, and a depressed connecting portion, integral with said buccal and lingual portions and adapted to extend through the space between the distal surface of the last lower molar and the anterior border of the ascending ramus of the mandible, said portions providing a continuous channel from the oral cavity into the vestibule of the mouth, and means for draining liquid from said buccal and lingual pocket portions.

14. A dental appliance for collecting and removing debris and liquid from the mouth during the conduct of dental operations therein, comprising: a soft, flexible, waterproof member of relatively thin cross section adapted to fit in the mouth and including a depressed buccal pocket portion adapted to be received in the vestibule of the mouth with the edges thereof in sealing engagement with the soft tissues of the mouth, a depressed lingual pocket portion adapted to be received between the lower teeth over the tongue with the edges thereof in sealing engagement with the floor of the mouth adjacent the teeth, and a depressed connecting portion, integral with said buccal and lingual portions and adapted to extend through the space between the distal surface of the last lower molar and the anterior border of the ascending ramus of the mandible, said portions providing a continuous channel from the oral cavity into the vestibule of the mouth, a thickened portion extending along the bottom of said depressed portions and providing an elongated bore therethrough, apertures formed through said thickened portion communicating between said buccal and lingual pocket portions and said bore, and an elongated, hollow, rigid drain pipe received in said bore and provided with openings corresponding with said apertures, said thickened portion being split along the line of said apertures to facilitate removing said pipe and cleaning said bore by flexing said thickened portion apart at said split.

15. A dental appliance for collecting and removing liquids from the mouth during the conduct of dental operations therein, comprising: a member formed of soft, flexible, waterproof material to include a central tubular portion providing an elongated bore and a pair of opposed wings extending divergently upwardly therefrom

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to describe a pocket with said tubular portion at the bottom thereof, apertures formed through the top of said tubular portion communicating between said pocket and said bore, said tubular portion being split along the line of said apertures to facilitate cleaning said bore and said apertures by flexing said tubular portion apart at said split, and means for draining liquid from said bore.

16. A dental appliance for collecting and removing liquids from the mouth during the conduct of dental operations therein, comprising: a member formed of soft, flexible, waterproof material to include a central tubular portion providing an elongated bore and a pair of opposed wings extending divergently upwardly therefrom to describe a pocket with said tubular portion at the bottom thereof, apertures formed through the top of said tubular portion communicating between said pocket and

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said bore, said tubular portion being split along the line of said apertures to facilitate cleaning said bore and said apertures by flexing said tubular portion apart at said split, and means for draining liquid from said bore, said means including an elongated, hollow drain pipe received in said bore and provided with openings corresponding in location with but larger than said apertures and adapted to be connected with a vacuum source for drawing liquid from said pocket.

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