

[54] TOOTH ISOLATING SHIELD

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[58] Field of Search..... 32/14, 17, 34, 40 R

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[57] ABSTRACT

A tooth isolating shield constructed with semi-rigid dentition bridge conforming members connected to a soft deformable apron of material. A cushion deformable material is within the dentition conforming members and can be molded or fitted to conform closely to a dental patient's upper and lower teeth. The dentition conforming members, apron and cushion material can be sectionally cut away to provide access through which a dentist can work on a selected tooth or teeth. The shield then isolates the tooth or teeth being worked on, keeping the area worked on dry, uncontaminated and effectively exposed. It also effectively protects mouth tissue and other teeth from injury and contamination during the dental procedure. A fitting is provided for connection to an aspirator and the fitting connects to intake ports located to collect moisture and some solids accumulating on or under the sheet material.

11 Claims, 2 Drawing Figures

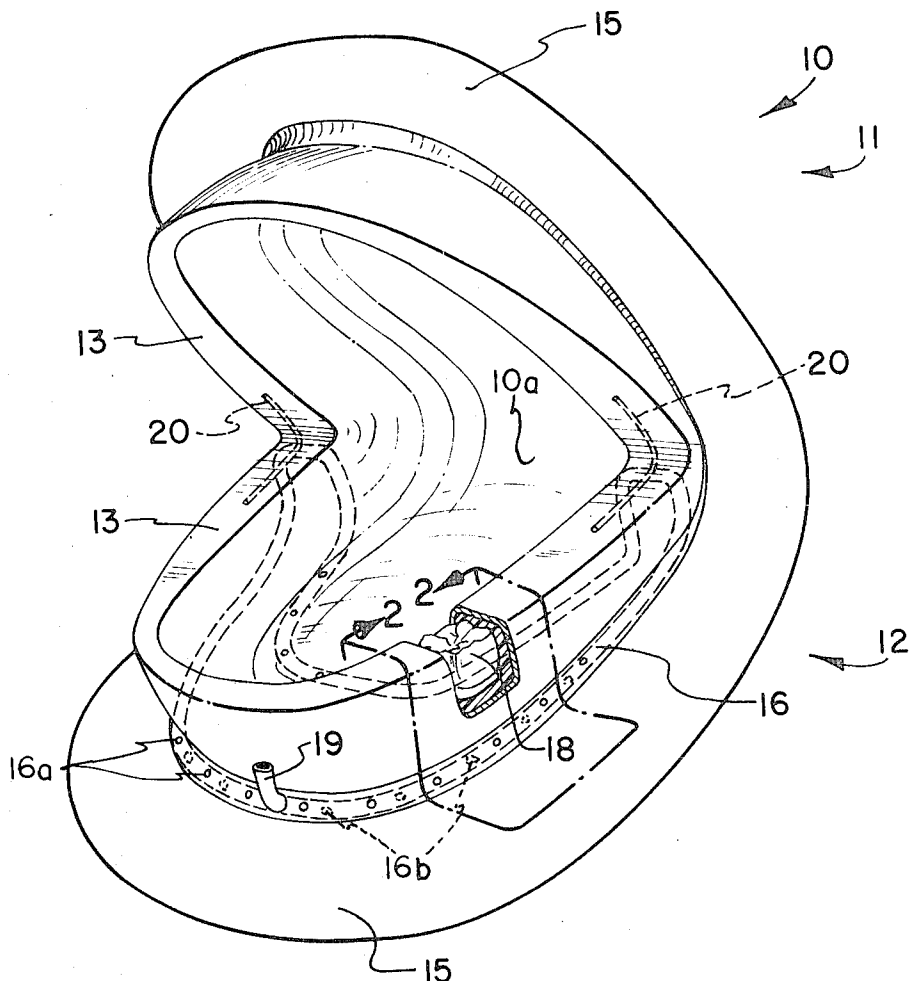


FIG 1

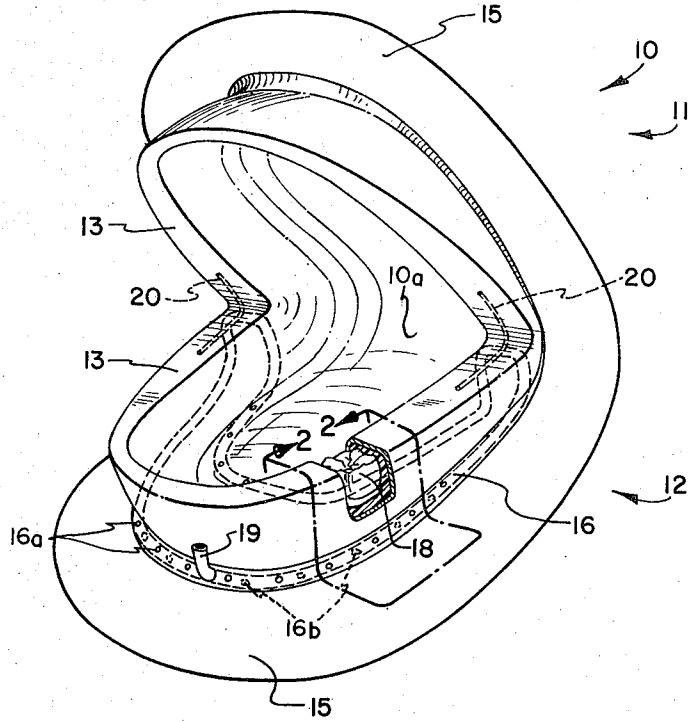
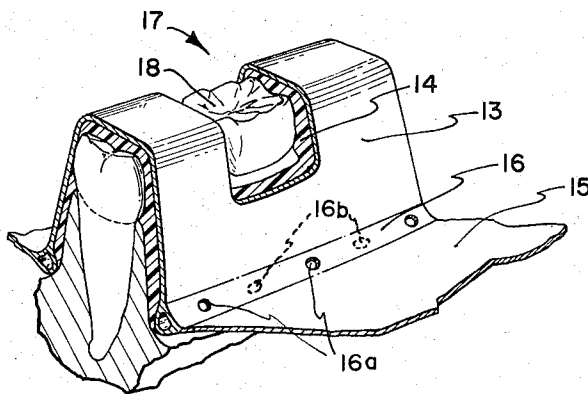


FIG 2



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TOOTH ISOLATING SHIELD

BRIEF DESCRIPTION OF THE INVENTION

1. Field of the Invention

This invention relates to apparatus for protecting mouth tissue and healthy teeth of a dental patient from contamination and inadvertent accidental damage during a dental procedure, while isolating one or more of the patients teeth such that they are fully presented during the dental procedure.

2. Prior Art

It has long been recognized that there is a need for a device that can be used to effectively isolate one or more teeth being worked on from the other teeth and from mouth tissues during dental procedures. Without such isolation the field of the tooth being worked upon may be repeatedly contaminated by the tongue or saliva. Also, there is always a possibility that an instrument may slip to injure tissue or teeth, and there is always a possibility that during an operation uninfected tissue and teeth can be contaminated. At the same time, it is desirable that the dentist not be exposed to patients breath, coughs or other germ carrying expulsions. In the past, various types of partial coverings and absorbent pad bridges have been used in attempts to reduce the possibilities for damage and contamination. So far as we are aware however, none have incorporated a total mouth coverage, such as is provided by the present invention and none have given the degree of protection against impact or the work area isolation afforded by the present invention.

SUMMARY OF THE INVENTION

It is a principal object of the present invention to provide a low cost, disposable shield which will cover and protect the entire mouth area, while providing complete access to a selected tooth or tooth area necessary for treatment. Other objects are to provide such a shield constructed to constantly allow for removal of accumulated liquids and solids and to provide a good cushion-type protection for teeth not exposed for a dental operation.

Principal features of the present invention include a shield which is constructed with a deformable shock absorbent, cushion material that can be molded or fitted to closely conform to a patient's teeth; a non-porous somewhat bendable covering over the deformable material. Both the cushion material and the bendable covering are made of easily cut material so that openings can be readily cut to provide a means whereby one or more teeth can be exposed.

A fitting is provided in the front of the lower section, whereby a low pressure suction source can be applied to remove materials which accumulate within the mouth. Ports are provided through the lower portion of the shield to connect with a discharge tube from which the fitting projects.

The shield may be constructed in different sizes to accommodate various basic mouth sizes and may be formed to be permanently open or to be biased open so that it assists the patient in holding his mouth open during a dental procedure.

Further objects and features of the invention will become apparent from the following detailed description taken together with the accompanying drawings, disclosing what is presently contemplated as being the best mode of the invention.

THE DRAWINGS

In the drawings:

FIG. 1 is a perspective view of the shield of the invention;

FIG. 2, an enlarged sectional perspective view taken within the line 2—2 of FIG. 1, and showing a section of the shield cut away to provide access to a tooth, a patients teeth and jaw area being shown fragmentarily.

DETAILED DESCRIPTION

Referring now to the drawings:

The shield 10 of the invention, consists of an upper shield portion 11, and lower shield portion 12, preferably formed integral with the upper shield portion. As illustrated, the shield portions are contacted to be hinged together at 10a and are shaped such that when the shield is in a patients mouth, the hinge 10a is at the rear of the mouth. A somewhat flexible, but semi-rigid covering 13 overlays a layer of cushion material 14 and is connected to a flexible apron 15 which may be made a resilient latex or plastic type material, for example. The covering 13 and material 14 of the upper and lower shield portions are shaped to respectively fit over the upper and lower teeth of a patient. A tube 16 has holes 16a above apron 15 and hole 16b below apron 15. The holes are spaced along the tube 16, and the tube is positioned at the junction of the lower shield portion and the apron 15. The tube 16, in addition to serving as a conduit to waste materials, as will be further explained, provides rigidity to the overall assembly and helps to hold the shield portions in place as they are placed over the teeth of a patient.

The materials from which the shield is made are readily cut to provide an opening at any desired location, such as is shown at 17. Through the opening a dentist can have complete access to a tooth or teeth to be worked on while at the same time the covering 13 and cushion material 14, which are molded tightly against the teeth, and the apron 15 which radiates away from, and that interconnects spaced portions of the covering 13, protects the remainder of the patients mouth from contamination during dental procedures. Alternatively, the covering 13 can be somewhat resilient so that it will clamp the cushion material tightly over the teeth.

A fitting 19 extends outwardly from tube 16 and provides a means whereby a low pressure suction applied through tube 16 and the holes 16a and 16b will remove water, saliva, etc. that may collect on the lower portion of the shield or beneath the shield.

Spring wires 20 are preferably embedded in the material 14 at the junction of the upper and lower shield portions. The spring wires bias the sections apart and thus assist a patient in holding his mouth open, while at the same time holding the upper and lower portions on the upper and lower teeth of the patient, respectively. While the shield could be made with permanently open sections to forcefully hold a patients mouth open, the spring biased arrangement preferred so that the mouth can be closed, if desired, without removing the shield.

In operation, the opening 17 is cut to fit over the tooth or teeth to be worked on and the upper and lower shield portions are respectively fitted onto the upper and lower teeth of a patient, with the material 14 formed tightly against the teeth. The apron 15 extends fully between the legs of the generally U-shaped upper and lower dentition conforming members formed by

covering 13 and cushion material 14 and outwardly thereof and is spread to protect mouth tissues from contamination and the dental procedure is practiced.

During the procedure, an aspirator, not shown, draws waste materials that may accumulate out through holes 16a, tube 16 and fitting 19. Thus, the patients tooth being operated upon is maintained uncontaminated, uninfected teeth and mouth tissues are fully protected, and the dentist has a clean area in which to work.

The entire assembly is preferably made from low cost plastics or other low cost materials, such that the shield can be economically thrown away after use.

Although a preferred form of our invention has been herein described, it is to be understood that the present disclosure is made by way of example and that variations are possible, without departing from the scope of the hereinafter claimed subject matter, which subject matter we regard as our invention.

We claim:

- 1. A tooth isolating shield comprising interconnected upper and lower shield portions having generally U-shaped upper and lower dentition conforming members comprising a covering of non-porous, bendable material overlying a deformable material adapted to be conformed to the teeth of a dental patient, said covering and said deformable material being readily cut; and an apron of flexible sheet material forming a solid barrier extending fully between the leg portions of both of the generally U-shaped dentition conforming members and also radiating outwardly therefrom.
- 2. A tooth isolating shield as in claim 1, wherein the upper and lower shield portions are integrally formed.
- 3. A tooth isolating shield as in claim 1, further including a tube on the lower shield portions at the junction of the dentition conforming member and the apron, said tube having holes extending from the interior

- thereof to below the apron; an aspirator; and a fitting connected to the interior of the tube, and providing means for attachment of an aspirator, whereby waste materials collected on the lower shield portions can be removed.
- 4. A tooth isolating shield as in claim 3, further including holes through the tube extending from the interior thereof to above the apron.
- 5. A tooth isolating shield as in claim 1, wherein the upper and lower shield portions are hingedly interconnected.
- 6. A tooth isolating shield as in claim 5, further including means at the hinge connection between the upper and lower shields portions to bias them apart.
- 7. A tooth isolating shield as in claim 5, further including a tube on the lower shield portions at the junction of the dentition conforming member and the apron, said tube having holes extending from the interior thereof to below the apron; an aspirator; and a fitting connected to the interior of the tube, and providing means for attachment of an aspirator, whereby waste materials collected on the lower shield portions can be removed.
- 8. A tooth isolating shield as in claim 7, further including holes through the tube extending from the interior thereof to above the apron.
- 9. A tooth isolating shield as in claim 8, wherein the upper and lower shield portions are integrally formed.
- 10. A tooth isolating shield as in claim 9, further including means at the hinge connection between the upper and lower shield portions to bias them apart.
- 11. A tooth isolating shield as in claim 10, wherein the means at the hinge connection to bias the upper and lower shield portions apart comprises spring wires embedded in the deformable material.

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