

[54] ARRANGEMENT FOR SEPARATING AN AREA OF OPERATION OR TREATMENT IN THE ORAL CAVITY

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[58] Field of Search..... 32/34, 35, 36

[56]

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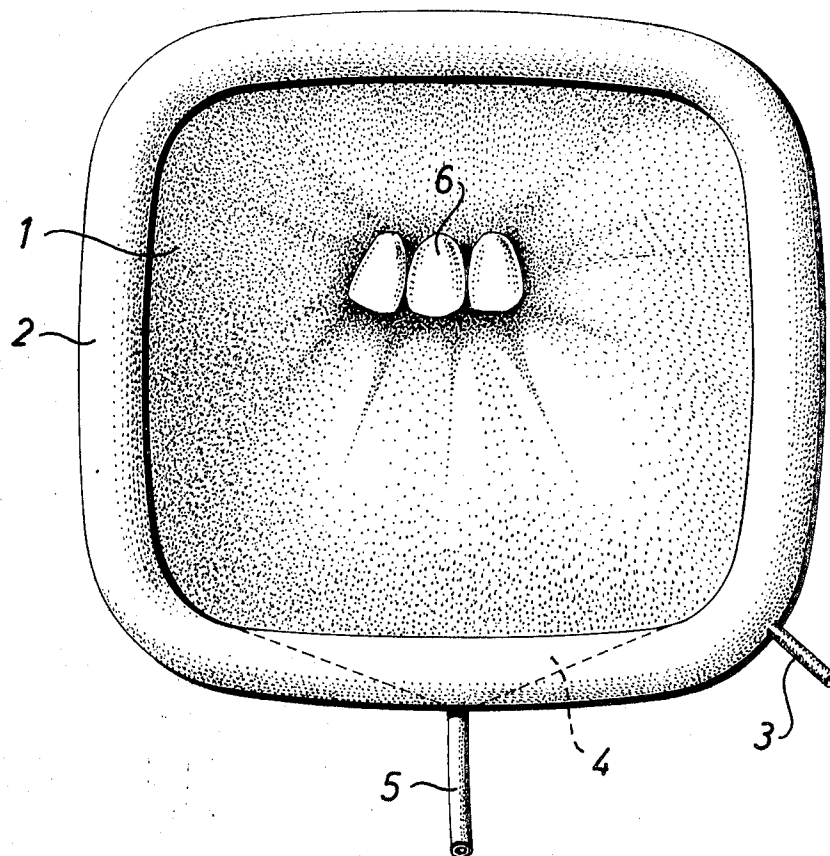
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[57]

ABSTRACT

A device for separating a larger or smaller area, i.e., teeth, of the oral cavity for dental treatment consisting of a dam of an elastic material intended to be applied over said area and to be fixed in its position by a stretching means, whereby said dam is surrounded by and connected to an inflatable frame piece.

6 Claims, 2 Drawing Figures



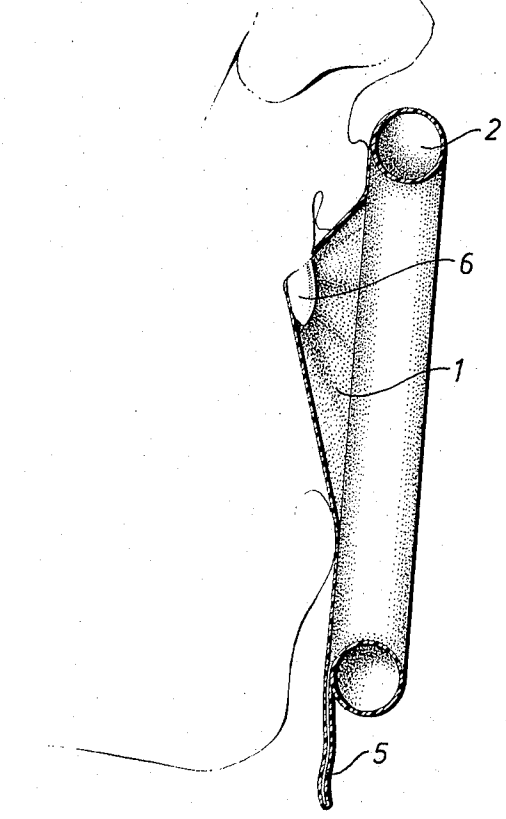
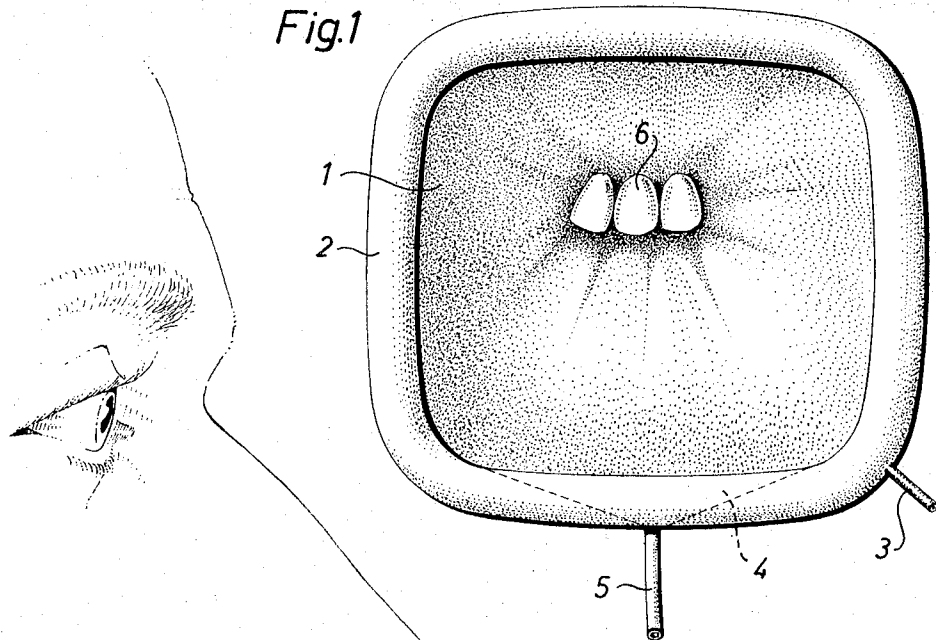


Fig. 2

ARRANGEMENT FOR SEPARATING AN AREA OF OPERATION OR TREATMENT IN THE ORAL CAVITY

The present invention relates to a device for separating a larger or smaller area of the oral cavity for preferably dental treatment consisting of an elastic material dam slipped on to the area in question and held applied by a stretching frame.

As is well-known so called rubber-dam technique is frequently used in dental practice by certain types of procedures. This technique is used by for instance root canal treatment and restorative therapy in order to separate a treatment area in the mouth in such a way that it makes possible aseptic work with no contamination from the saliva. Hereby a rubber-dam is normally used and applied by slipping a punched hole in the dam over the tooth or teeth to be treated. The rubber-dam is then held in place in the cervical area by special rubber-dam clamps, ligatures or the like, and is consequently an effective barrier for contamination with saliva in the treatment area. The tooth that thus protrudes out of the rubber-dam may also be treated with antibacterial agents in such a way as to obtain a sterile working field.

The free areas of the rubber dam are usually supplied with elastic retention devices that are placed around the ears or the back of the head of the patient. It is easily understood that such a conventional fixation with a following stretching of the free ends of the rubber dam for instance around the ears of the patient can be both bothersome for the operator and uncomfortable for the patient. Moreover, from the operator's point of view it can be unsatisfactory as touching unsterile objects outside the operation field makes impossible a strict aseptic technique. In order to partly eliminate the above-mentioned disadvantages an other type of retention mechanism has been used in which the free ends of the rubber dam are stretched over a stretching frame with sharp pointed corners. It has been found, however, that also this type of stretching frame may lead to considerable inconvenience as its sharp points are very irritating for the patient.

On occasions when X-ray analysis must be made during treatment with rubber-dam the mentioned retention devices cause further inconvenience as they must be completely or partially removed in order to enable an introduction of the X-ray film into the mouth and keeping it immovable at the right place during exposure.

An other inconvenience by the use of earlier rubber-dam devices is that an overflow of irrigation liquids and medicaments for instance by rinsing of the root canal or other cavities will spread out over the rubber-dam and down over the patient unless special precautions are taken.

The bacteria-containing spray mist formed by the use of water-cooled, air-driven drills by the preparation of infected hard tissues is not evacuated by the use of ordinary rubber dam types but is inhaled by the operator and assisting personnel with a risk for infections in the respiratory tracts as a consequence.

The object of the invention is to provide a device of this type that can be easily applied and that when applied to a great extent eliminates the abovementioned disadvantages. This is obtained by the device described in the attached claims.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views;

FIG. 1 shows a frontal projection of the device according to the invention in an applied position, and

FIG. 2 shows a partially cut side projection of the device shown in FIG. 1.

It is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring to the drawings, a preferred embodiment of the present invention is illustrated by way of example consisting of a cloth of rubber, plastic or similar elastic material indicated generally by the numeral 1. Along the peripheral edges of the rubber dam 1 a hollow inflatable space 2 is attached. The inflation of the space 2 is obtained through an inflation nipple 3 in communication with the hollow space 2, and preferably formed as a non-return valve or in such a way as not to allow a leak back when the frame piece 2 has been inflated. Along the edge of the rubber dam 1 a collecting pocket 4 has been formed between the frame piece 2 and the rubber dam 1 whereby the pocket 4 is supplied with one or several drain nipples 5 that for instance can be coupled to the ordinary evacuation tube or any other evacuation device common in dental offices.

By the use of the device shown in the drawing the teeth to be treated - in the actual example three teeth - are slipped through small openings in the rubber dam 1 whereafter the rubber dam is moved down over the teeth to the cervical area where it is retained in the conventional way by means of springy so called rubber dam clamps or ligatures. Because of the elasticity of the rubber dam an effective sealing is obtained against the teeth 6. Thereafter the frame piece 2 is inflated by compressed air or such through the nipple 3 in such a way that the rubber dam is stretched out forming a bowl or funnel.

In contrast to earlier devices of similar types no special retention mechanisms in the form of stretching frames or stretching devices on the free ends of the rubber dam around the ears or the back of the head of the patient are necessary. Furthermore, the device constructed according to the invention is soft and flexible and therefore causes a minimum of inconvenience when applied to the patient.

On occasions when the oral cavity is to be reached as for X-ray control during the treatment the flexibility of the described device makes easy such a procedure. No retention mechanisms need be removed and the whole device may be easily pushed aside if desired. Furthermore the treatment area on the inside of the frame piece 2 can be readily connected to an evacuation device (for instance a saliva ejector) through the nipple 5 which easily and effectively removes an overflow of different liquids and at the same times serves as a drainage for bacteria-containing air (aerosol).

The inflatable frame piece 2 may be preferably made in one piece with the rubber dam or the rubber dam may be applied in a known manner on the back side of

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it. As an alternative the frame piece 2 may also be made to only partially enclose the rubber dam edges for instance forming a horse-shoe shape.

The dam is usually made in rubber but can also be made in any type of elastic material as for instance special laminates, plastic coated cloth or other suitable types of foil.

I claim:

1. A device for separating a region of the mouth during dental treatment comprising a dam formed of a sheet of elastic material having at least one hole to be slipped over the teeth and area of said mouth to be treated, and a hollow frame integral with said sheet surrounding at least a portion of the periphery of said sheet, said frame being extendible to stretch said sheet

to fix said sheet in position in said mouth.

2. The device according to claim 1 wherein said frame is an inflatable hollow tubular member.

3. The device according to claim 1 wherein said sheet is removably attached around said inflatable tubular frame.

4. The device according to claim 1 wherein said frame forms a collecting pocket about said sheet.

5. The device according to claim 2 including conduit means communicating with the interior of said frame by which said frame may be inflated.

6. The device according to claim 4 including at least one nipple communicating with said pocket for connection with means to evacuate said pocket.

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