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DENTAL X-RAY FILM HOLDER WITH PLURAL GROOVES OPENING IN OPPOSITE DIRECTIONS TO SUPPORT X-RAY FILMS

Filed March 30, 1965

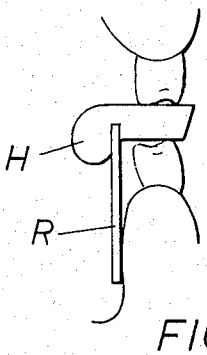


FIG. 1.
PRIOR ART

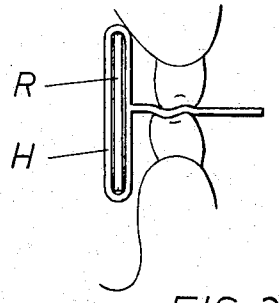


FIG. 2.
PRIOR ART

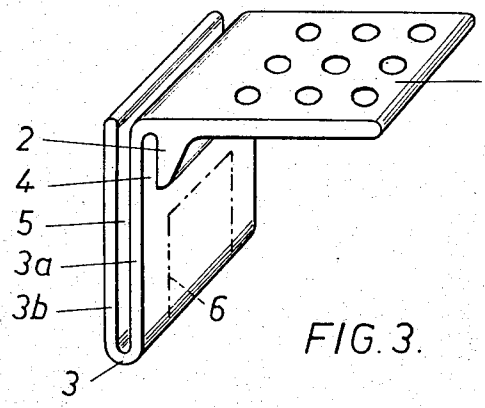


FIG. 3.

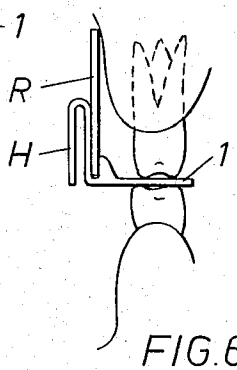


FIG. 6.

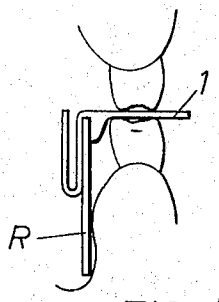


FIG. 4.

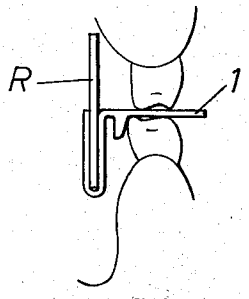


FIG. 5.

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DENTAL X-RAY FILM HOLDER WITH PLURAL GROOVES OPENING IN OPPOSITE DIRECTIONS TO SUPPORT X-RAY FILMS

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ABSTRACT OF THE DISCLOSURE

A combination dental X-ray film holder for retaining dental film in both a position for examination of the roots of a tooth and the crown of a tooth.

This invention refers to a holder for positioning a dental X-ray film in the mouth of a patient, said holder being adapted to be clamped between the lower and upper jaws of the patient, clenching the teeth against the same.

For X-ray investigations of the roots of the molar teeth, more particularly of the lower jaw, generally a holder of the type illustrated in FIG. 1 of the accompanying drawing is used, this holder H consisting of a thick plate having a groove in the underside of the same, the X-ray film R being inserted and held by friction in said groove. Modifications of this holder have been suggested, in which the thick plate is provided with a substantially right-angled thick flange and a rib forming between themselves the groove for holding the X-ray film. Holders of this type are adapted for repeated use and it is difficult to sterilize the same, whether they are made of wood, plastic or rubber. Also, in a holder of this type the X-ray film will lie too high in relation to the teeth of the lower jaw so that the tip of the root will not always be included in the X-ray photograph or picture. Moreover, it is difficult to place these holders in the proper position because they are rather thick.

For X-ray investigations of the crowns of the molar teeth, when caries is to be localized, generally a different holder is used, viz, a holder of a type illustrated in FIG. 2 of the accompanying drawing, this holder H consisting of flattened paper sleeve, which is provided with a "bite"-flap, and in which the X-ray film R is introduced by sliding the film into the same. After being used the holder is thrown away. This holder, which usually is termed "bite-wing" is very weak and cannot always keep the X-ray film in a determined position or in a plane shape. Moreover, the "bite"-flap can be deformed according to the depressed and raised portions of the chewing surface of the teeth between which the "bite"-flap is clamped, so that within one and the same area of the X-ray film overlapping pictures of the teeth of both jaws are obtained and consequently it will not be possible to know in which one of the teeth the defect actually is located.

The primary object of the invention is to create a single-use holder, which can be utilized not only for X-ray investigations of the crowns of the molar teeth, when caries is to be localized, but also for X-ray investigations of the molar teeth, when the roots are to be examined.

Features of the holder according to the invention in a preferred embodiment are as follows. A relatively thin but relatively rigid plate is provided for being clamped between the lower and upper jaws of the patient by clenching the teeth against the same. Said plate has a substantially right-angled flange and a rib forming between themselves a groove for holding a dental X-ray film for examination of a root of a tooth. Said flange, which also is relatively thin, is provided with a deep groove extending substantially in parallel to the plane of said flange from a bottom near the free edge of said flange and being open in a direction opposite to the first-mentioned groove for holding a dental X-ray film for examination of a crown of a tooth, the rather thin walls on each side of this deep groove preferably allowing a resilient clamping of the film as inserted. Said deep groove has its bottom located at a distance from the plane of said plate allowng the film as inserted to occupy a position substantially centralized with respect to the plane of said plate.

Further objects and features of the invention will appear from the following description, when read with reference to FIGS. 3, 4, 5 and 6 of the accompanying drawing, in which a preferred embodiment of the holder according to the invention is illustrated by way of example and in which:

FIGURE 1 is a side view of a typical prior art dental film holder;

FIGURE 2 is a side view of another typical prior art dental film holder;

FIG. 3 is a perspective view of the holder according to the invention on a somewhat enlarged scale;

FIG. 4 illustrates the utilization of the holder in use for examination of roots of teeth of the lower jaw;

FIG. 5 illustrates the utilization of the holder in use for examination of crowns of teeth of both jaws;

FIG. 6 illustrates the utilization of the holder in use for examination of roots of teeth of the upper jaw:

In FIG. 3, the reference numeral **1** indicates the holder plate, which is adapted to be clamped between the teeth of the lower and upper jaws, **2** is the rib on the underside of said plate, **3** is the right-angled flange directed downwards in FIG. 3 of the drawing, **4** is the downwards directed groove formed between the rib and the flange, and **5** is the upwards directed deep groove formed between the two parallel walls **3***a* and **3***b* constituting the flange **3**. The plate **1**, the rib **2** and the flange **3** are an integrally moulded (compression-moulded, die-cast) piece of a plastic of somewhat elastic nature, allowing a resilient action of the wall **3***b* in relation to the wall **3***a*, but rendering the plate **1** sufficiently rigid not to be essentially deformed between the teeth. Both the plate **1** and the flange **3** are relatively thin, when compared with the well-known holder according to FIG. 1 (on a smaller scale), but the plate **1** is thicker than each wall **3***a* or **3***b*. For instance, the plate **1** can be made with a thickness of about **2** millimeters and each wall **3***a* or **3***b* can be made with a thickness of about 1 millimeter.

When used according to FIG. 4 or FIG. 6, the X-ray film R inserted in the groove **4** is resting against the wall **3**α. A comparison of FIG. 4 with FIG. 1 will reveal that the X-ray film occupies a lower position so that the tip of the root will be included in the picture. When used according to FIG. 5 the X-ray film R is inserted between the walls **3***a* and **3***b*, and in this position the horizontal central line of the X-ray film is approximately in level with the horizontal central plane of the plate **1**. The teeth of the lower and upper jaws are well separated by the rigid plate **1**. In both cases (FIGS. 4 and 6; FIG. 5) a reliable holding of the X-ray film in a predetermined position and in a plane shape is secured. If desired, the rib **2** can be formed to constitute a spacing member between the flange **3** and the row of teeth.

In order to reduce the consumption of plastic material, recesses or openings can be provided in the holder, such as in the flange **3**, as indicated by the dashed line **6** in FIG. 3, or the perforation of the plate **1**, as shown in FIG. 3, and for the same reason the wall **3***b* must not extend upwards to the level of the plate **1**.

The invention is not restricted to the embodiment described above and illustrated in the drawings, modifications being possible without departing from the principles of the invention, the main feature being the provision of two oppositely directed holding grooves for alternative use.

What I claim is:

1. A holder for retaining a dental X-ray film in the desired position in the mouth of a patient comprising:

(a) a plate having first and second portions, said first portion being engageable between the teeth of the upper and lower jaws of the patient with said second portion disposed within the mouth of said patient;

(b) a channel-shaped flange having a pair of spaced resilient walls and a base portion connecting said walls, one of said walls having an edge portion opposite said base connected to said second portion of said plate, said walls and base defining a first groove therebetween, said groove opening in a first direction, said base, defining the bottom of said first groove, being spaced from said plate so that a dental X-ray film clampingly retained by said resilient walls in said first groove occupies a position substantially centralized with respect to the plane of said plate for effecting an examination of the crown of a tooth;

(c) a rib connected to the second porion of said plate and spaced from said one wall of said flange connected to said plate, said rib and said one wall defining a second groove, said second groove opening in a second direction opposite that of said first groove so that a dental X-ray film clampingly engaged in said second groove, may be employed for examination of the root of a tooth.

2. A holder as recited in claim 1, wherein said channel shaped flange defines an opening through its base portion and the portion of each of its spaced walls adjacent said base whereby the outer extremity of said flange is comprised of a pair of spaced, generally U-shaped, portions for supporting a dental X-ray film.

3. A holder as recited in claim 1, wherein said plate defines a plurality of openings therethrough.

4. A holder as recited in claim 1, wherein said plate is relatively thin and rigid.

5. A holder as recited in claim 1, wherein said plate, rib and flange are an integrally moulded piece of plastic.

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WILLIAM F. LINDQUIST, *Primary Examiner.*