

United States Patent

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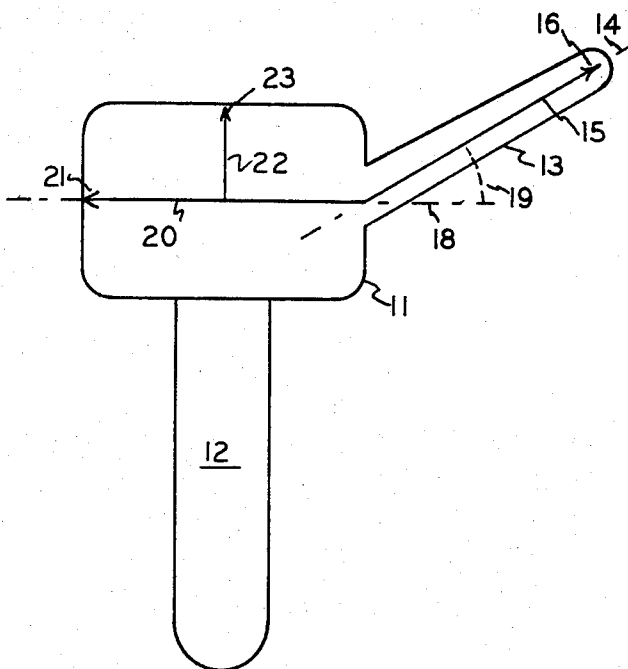
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[54] **HAND HELD X-RAY GUIDE**
5 Claims, 1 Drawing Fig.

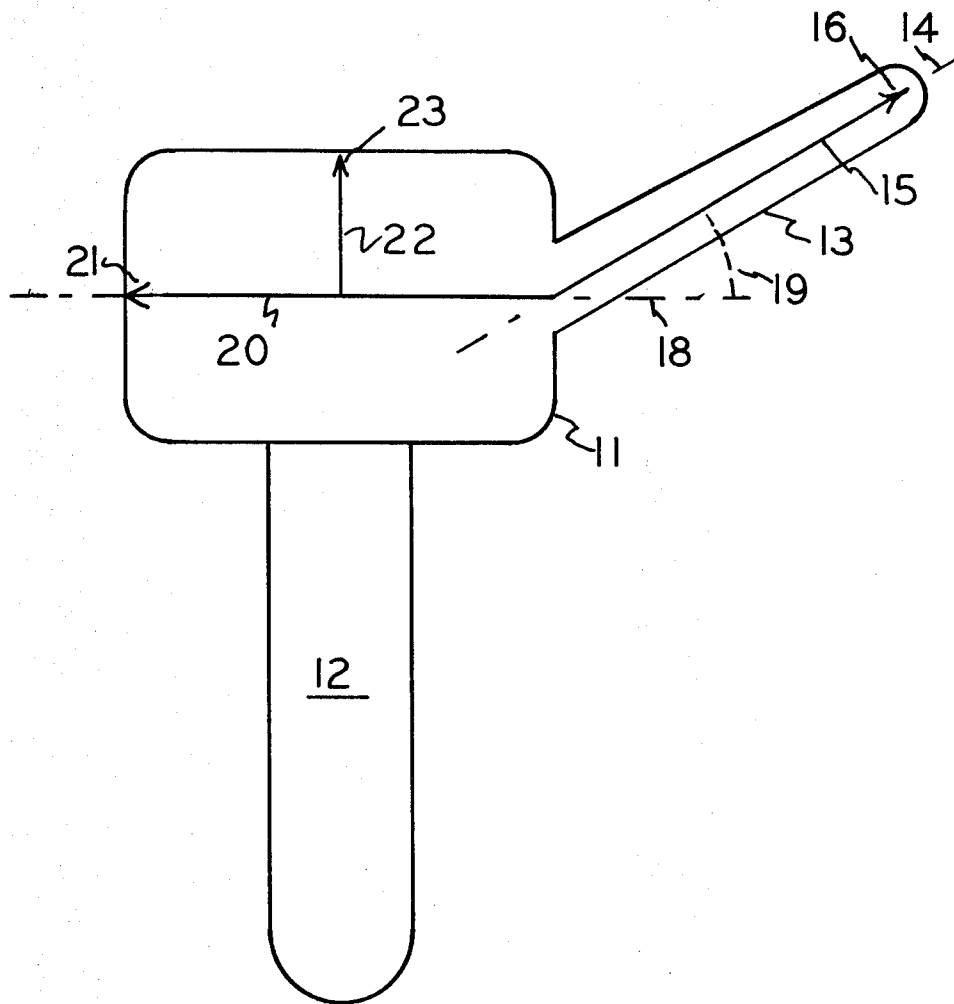
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ABSTRACT: A hand held X-ray guide is provided for the proper exposure and alignment of X-ray photography of dental patients that includes a member having a handle and an extension for an alignment for the film with respect to the patients ear and teeth.



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HAND HELD X-RAY GUIDE

The invention described herein may be manufactured and used by or for the government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

Present day dental radiological techniques stress the importance of reducing the amount of scattered radiation and the production of quality exposures. The stress is emphasized in the use of the Long-Cone technique because it increased central ray columniation, reduces scatter radiation, produces more readily interpretable images, reduces patient radiation to a minimum, and allows a more efficient use of the shadow casting fundamentals with its correlated minimization of distortion. The use of the Long-Cone technique requires extra supportive devices commonly referred to as paralleling instruments or film holders for the proper exposure periapical dental X-rays. These devices aid measurably in the exposure of quality type periapical dental films. However, the use of the bite-wing film requires the patient to close his mouth upon an extending tab in the film so that the teeth of the upper and lower jaw meet evenly or in centric. As a result the use of the intraoral device is impossible and the operator is expected to rely on his skill and judgment in positioning the Long-Cone correctly for an acceptable exposure.

One study showed that at least 50 percent of the bite-wing X-rays were considered to be faulty or of poor exposure quality. These exposures were made at various times and places. The errors that were noted could be classified in three portions: (1) cone-cutting, resulting in missing teeth in the film; (2) horizontal overextensions of the Long-Cone, resulting in overlapping of the teeth so as to make the pictures uninterpretable; and (3) over or under extension of the vertical angle of the Long-Cone, resulting in only partial exposure of either the maxillary or mandibular teeth. These errors would appear singular or have more than one error in any given film.

Therefore, it is an object of this invention to provide an improved hand held X-ray guide for properly positioning and exposing X-ray films taken of dental patients.

It is yet a further object of this invention to provide an improved hand held X-ray guide, comprising a body portion having a longitudinal axis, a handle member extending in a generally downwardly direction connected to the body portion, a longitudinal member having a second axis affixed to the body member, the horizontal axis and the second axis intersecting and forming an acute angle therebetween, a horizontal axis, and a vertical guide line on the body member substantially normal to the horizontal guide line, the angle between the axes being such that when the guide is adjacent to the head of a dental patient the horizontal guide line is substantially parallel to the line of the intersection of the upper and lower teeth and the axes of the longitudinal member points toward the Tragus of the ear.

It is yet a further object of this invention to provide an improved hand held X-ray guide wherein the handle member is positioned so that the patient may hold the guide after a technician has inserted the film in the patients mouth hence the technician is not exposed to multiple dosages of radiation.

It is yet a further object of this invention to provide an improved hand held X-ray guide for the shadow X-ray photography of teeth that is radiolucent, so that the guide may be retained in position during the exposure of the film.

Other objects, advantages and novel features of the invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings wherein:

The FIG. shows an embodiment of the invention.

As set forth in the FIG. there is provided a body member 11 whose general configuration is rectangular and whose corners are rounded to provide a device substantially free from sharp corners and edges that might cause scratches and injuries to patients. A handle portion 12 extending in a downwardly direction is provided so that the patient may hold the guide after it has been placed in position by a technician and thus the technician is not exposed during the actual X-ray photog-

raphy. The handle member should be of such size and configuration that it may be comfortably held by the patient while sitting in a dental chair.

A longitudinal member 13 is provided and is affixed to the body member 11 and has an axis that is designated by the number 14. Longitudinal member 13 has a guide line 15 with an arrowhead 16 that is substantially superimposed upon axis 14.

The body member 11 has a horizontal axis 18 which intersects with axis 14 at an acute angle designated as 19. The axis 18 has placed over it a guide line 20 having an arrowhead 21. A vertical guide line 22, substantially normal to guide line 20, is provided having an arrowhead 23.

In one specific embodiment of the invention the device was constructed of a radiolucent material approximately $\frac{1}{8}$ inch thick, in its overall dimensions was about 4 $\frac{1}{2}$ inches wide by 4 $\frac{1}{2}$ inches long. The body member is approximately 2 $\frac{1}{4}$ inches long and 1 $\frac{1}{8}$ inches wide. The longitudinal member is approximately about 2 $\frac{1}{2}$ inches long and three-fourths of an inch at its widest point and tapered to about one-fourth of an inch at the end. The horizontal line is approximately 2 $\frac{1}{4}$ inches long.

With a bite-wing film in place in a patient's mouth, the teeth centric and the mandibular jaw parallel to the floor, which is a standard requirement for bite-wing photography exposure; the guide is then placed alongside the patient's face in a position so that the horizontal lines 20 points directly to the top of the mandibular cuspid tooth, and at the same time it superimposes the extending film tab. The line 15 points to the vicinity of the Tragus of the ear and then the patient is directed to hold the guide by means of the handle 12 in place and instructed not to distort its placement.

The operator then positions the Long-Cone of the X-ray machine in place by visually superimposing the cone over the guide and using the vertical line 22 as a guide for the vertical positioning of the cone, and the horizontal line 20 for the horizontal positioning of the cone. When completed, the cone approximated the entire area of the device 11. The operator is now ready to make an exposure.

It should be noted that the longitudinal member 13 overlay the "curve of Spee," therefore, aiding in the placing of the device in proper position on the face of the patient. The "curve of Spee" is defined as "imaginary curve line beginning at the top of the cusp of either lower canine (cuspid) tooth and extending posteriorly along the highest point of the buccal cusps of the premolars and molars to a termination in the anterior border of the head of the condyle."

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

I claim:

1. An improved hand held X-ray guide for aiding and the positioning of a long-cone X-ray machine for bite-wing dental X-rays that is held by the patient, comprising:

- a. a body portion having a first horizontal axis;
- b. a handle member extending in a generally downwardly direction connected to said body portion;
- c. a longitudinal member having a second axis affixed to said body portion, said horizontal axis and said second axis intersecting and forming an acute angle therebetween;
- d. a horizontal guide line on said body portion substantially parallel to said horizontal axis; and
- e. a vertical guide line on said body member substantially normal to said horizontal guide line, the angle between said axes being such that when the guide is placed adjacent to the head of the dental patient, the horizontal guide line is substantially parallel to the line of the intersection of the upper and lower teeth, and the axis of the longitudinal member points towards the Tragus of the ear.

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2. The device of claim 1 wherein said handle member is positioned so that it may be held by the hand of the patient without exposing said hand to X-ray radiation.

3. The device of claim 2 wherein said guide is composed of radiolucent material so that the guide may remain in place during X-ray photographs.

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4. The guide of claim 3 wherein said longitudinal member has a tapered structure with the widest portion where it joins said body portion.

5. The guide of claim 4 wherein said handle member is positioned substantially below said vertical guide line.

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