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2,245,395

X-RAY ANGULATOR INSTRUMENT

Filed May 2, 1940

FIG. 1.

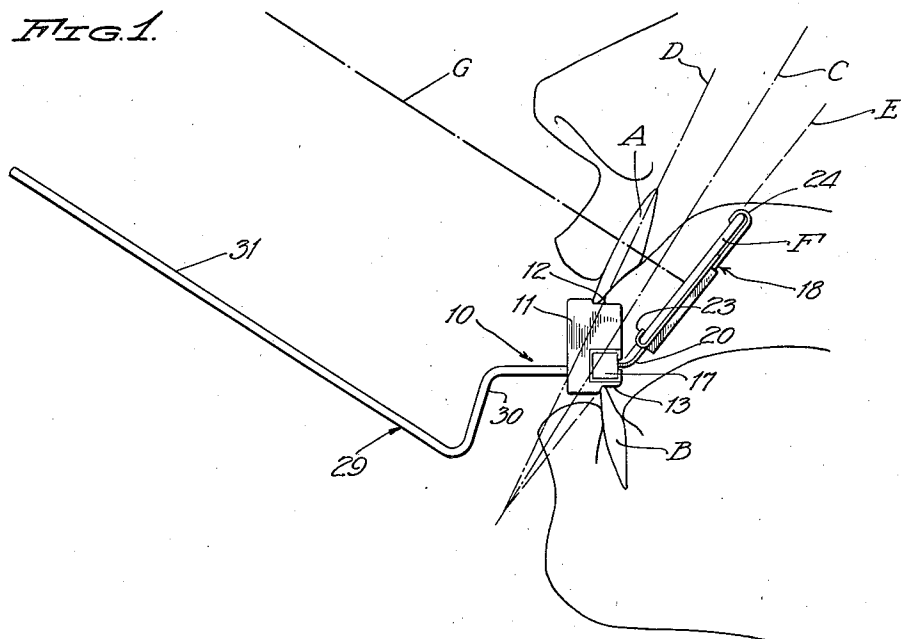


FIG. 2.

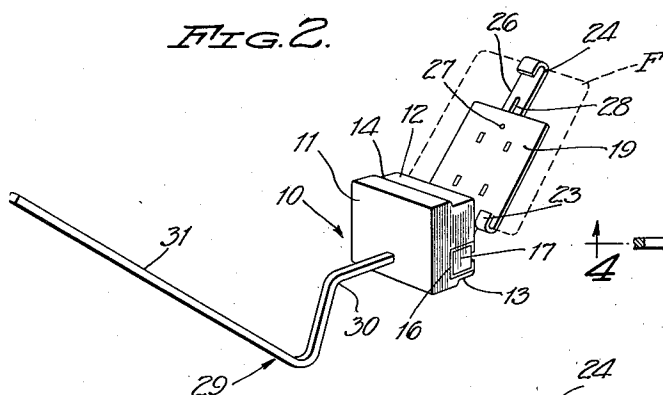


FIG. 3.

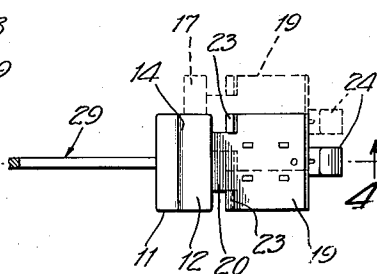


FIG. 4.

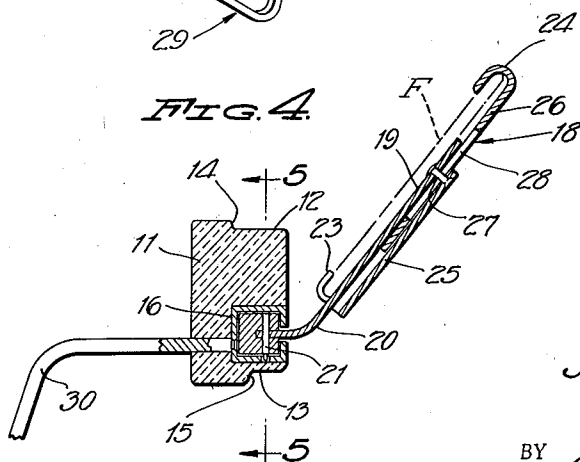
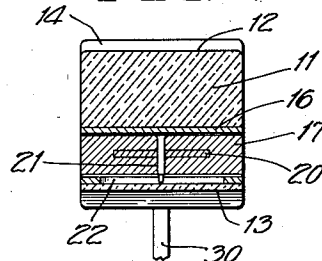


FIG. 5.



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UNITED STATES PATENT OFFICE

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X-RAY ANGULATOR INSTRUMENT

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4 Claims. (Cl. 250-64)

This invention relates to improvements in instruments for holding intra-oral X-ray film packets during the taking of X-ray pictures of teeth and for guiding the central X-ray onto the film packet so held.

The main feature of this invention is to overcome guesswork in the taking of X-ray pictures of the teeth by the novel construction of an instrument which may be referred to as an X-ray angulator for holding intra-oral X-ray film packets and for directing the central ray thereon.

Another feature of the invention resides in an instrument which may be rigidly held by the bite of a patient which accurately positions the X-ray film packet within the mouth and behind the tooth being X-rayed, there being a directional finder guide extending angularly from the patient's mouth with which the central ray of the X-rays is projected in parallel relation.

Another feature of the invention is to provide an X-ray film packet holder which may be shifted relative to the bite block held between the teeth of a patient to facilitate the convenient placement of the holder in the mouth when back teeth are to be X-rayed.

A further feature of the invention is the provision of an intra-oral X-ray film packet holder which is simple and inexpensive of construction, easy to maintain in a sanitary condition, and which is not objectionable to a patient when positioned in the mouth during the taking of a tooth X-ray.

Other features of the invention will become apparent as the following specification is read in conjunction with the accompanying drawing, in which:

Figure 1 is a side elevational view of the X-ray angulator instrument in use for the taking of an X-ray of an upper tooth, the outline of the mouth of a human being is illustrated diagrammatically.

Figure 2 is a perspective view of the X-ray angulator instrument per se, the X-ray film packet being illustrated in dotted lines.

Figure 3 is a top plan view illustrating the film holder in a central position in full lines and in a laterally shifted position in dotted lines.

Figure 4 is an enlarged vertical longitudinal sectional view on the line 4-4 of Figure 3, the X-ray film packet being illustrated in dotted lines.

Figure 5 is a vertical sectional view on the line 5-5 of Figure 4.

Referring to the drawing by reference characters, the numeral 10 designates my X-ray angu-

lator instrument in its entirety, and which includes a rectangular shaped bite block 11, which may be made of "Lucite," "Bakelite," or other like plastic substances. Opposed sides 12 and 13, constitute bite surfaces for the upper and lower teeth of a patient, the surface 12 being provided with a shoulder 14, and the surface 13 being formed with the shoulder 15, the shoulders tending to act as stops to prevent the block from sliding into the mouth of the patient when the upper and lower teeth are gripping the surfaces 12 and 13, and to assist in holding the bite block in the desired position relative to the longitudinal axis of the tooth to be X-rayed.

Mounted in the block 11 at the rear thereof is a metal channel 16 in which an elongated block 17 is slidably mounted. The block 17 rigidly supports an intra-oral X-ray film packet holder 18 which includes a plate 19 having an angularly extending tongue 20 which fits into the recess in the block 17 and is anchored by a pin 21. One end of the pin 21 extends into a slot 22 provided in one of the walls of the channel 16, the opposite closed ends of the slot acting as stops for engagement of the pin 21 for limiting the lateral sliding movement of the block 17 and the film holder 18 which the block supports. The inner end of the plate 19 is provided with stationary jaws 23 which coact with a movable jaw member 24 which is slidably supported upon the rear of the plate 19. The U-shaped guide plate 25 is fixedly mounted at the rear of the plate 18 and the elongated body 26 of the jaw member 24 slides between the member 25 and the plate 19, the sliding movement being lifted by engagement of a pin 27 with the ends of an elongated slot 28 provided in the body portion 26 of the movable jaw member 24. By reason of the angularity of the tongue 20, the holder member 18 is supported at an angle at the rear of the bite block 11.

Fixedly mounted to the bite block 11 and extending forwardly at an angle therefrom, is a directional finder guide 29 which includes a goose neck portion 30 which is attached to the bite block 11 and an elongated finder or guide portion 31 which is set at a predetermined angle with respect to the angularity of the film holder member 18 for reasons to be hereinafter appreciated.

In Figure 1 of the drawing, I have illustrated my X-ray angulator in use for the taking of an X-ray picture of an upper tooth A, which tooth is in biting contact with the surface 12 of the bite block, whereas the lower teeth B

are in biting contact with the surface 13 of the said bite block. Before inserting the bite block between the teeth of a patient, an intra-oral X-ray film packet F is inserted into the holder member 18. These packets are of rectangular shape, and by reason of the movable jaw 26, the film packet F may be positioned lengthwise or crosswise in the holder member 18. The movable jaw member 24 coacts with the stationary jaws 23 for rigidly holding the film packet rearward of the tooth being X-rayed, and if necessary, the holder 18 may be shifted laterally relative to the bite block when taking X-rays of rear teeth. With the bite block 11 held between the upper and lower teeth of the patient, the directional finder guide 29 will extend forward beyond the mouth at an angle so that the portion 31 of the guide member is perpendicular or at right angle to the plane C which bisects the angle formed by the longitudinal axis D of the tooth A, and the plane E of the film packet F. Thus it will be seen that the instrument holds the intra-oral X-ray film packet F in a fixed relation to the tooth A being X-rayed, and the X-ray specialist or dentist focuses the X-rays so that the central ray G thereof parallels the directional finder portion 31 of the guide member 29, and focuses it upon the tooth A being X-rayed. By projecting the central ray of the X-ray parallel to the portion 31 of the guide member 29, an accurate shadow image of the tooth A is cast on the X-ray film packet F, thus eliminating any guess work on the part of an X-ray specialist or dentist in the taking of an X-ray picture of a tooth.

Although I have illustrated in the drawing, the taking of an X-ray picture of an upper tooth, it will be understood that the bite block 11 may be reversed and the holder member 18 will extend downwardly at an angle behind the lower jaw. Also the bite block 11 may be removable from the channel member 16 to facilitate the interchanging of bite blocks to compensate for abnormal bite arrangements.

While I have shown and described what I consider to be the most practical embodiments of my invention, I wish it to be understood that such changes in construction as come within the scope of the appended claims may be resorted to if desired.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. An instrument for use in the taking of X-ray pictures of teeth comprising in combination, a solid bite block having opposed upper and lower teeth engaging surfaces, an X-ray film holder member, means for slidably mounting said holder member at the rear of said bite block for lateral

adjustment and at an upwardly extending angle therefrom, and a directional finder guide element carried by said bite block and extending forwardly and upwardly from the front thereof at an angle, said directional finder guide element being at a predetermined angle to the angle of the holder member so that a central ray of an X-ray beam projected toward said holder member in parallel relation to directional finder guide will be disposed in a path at right angle to the angle of a plane bisecting the angle formed by the longitudinal axis of a tooth and the plane of an X-ray film held by said holder member.

2. An instrument for use in the taking of X-ray pictures of teeth comprising a block of rigid material having opposed flat top and bottom bite surfaces, an elongated central ray directional finder guide fixedly mounted on and extending forwardly at an angle from the front of said block, an intra-oral X-ray film packet holder, and means for slidably mounting said holder upon said block at the rear thereof for lateral adjustment relative to said block.

3. An instrument for use in the taking of X-ray pictures of teeth comprising in combination, a substantially rigid rectangular shaped bite-block having flat top and bottom teeth engaging surfaces, a channel track extending transversely of the rear side of said bite block, a member slidable on said channel track lengthwise thereof, an X-ray film packet holder fixedly attached to said member and extending upwardly at a rearwardly inclined angle, and an X-ray directional guide element having one end portion secured to said bite block and its other portion freely extending forwardly and upwardly at an angle relative to the angle of inclination of the X-ray film packet holder.

4. An instrument for use in the taking of X-ray pictures comprising in combination, a solid bite block of substantially rectangular shape having its top and bottom faces recessed inwardly from their rear edges to provide teeth engaging surfaces and stop shoulders at the front ends thereof, a channel track provided in said bite block at the rear thereof and extending transversely of the bite block, a slide member slidable along the channel track, means for limiting the length of sliding movement of the slide member, an X-ray film packet holder fixedly attached to said slide member and extending rearwardly and upwardly at an inclined angle relative to said bite-block, and an X-ray directional guide comprising a rod having a gooseneck portion intermediate its ends to provide an attaching end which is secured to the bite block to extend from the front thereof and a free forwardly and upwardly extending guide portion.

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