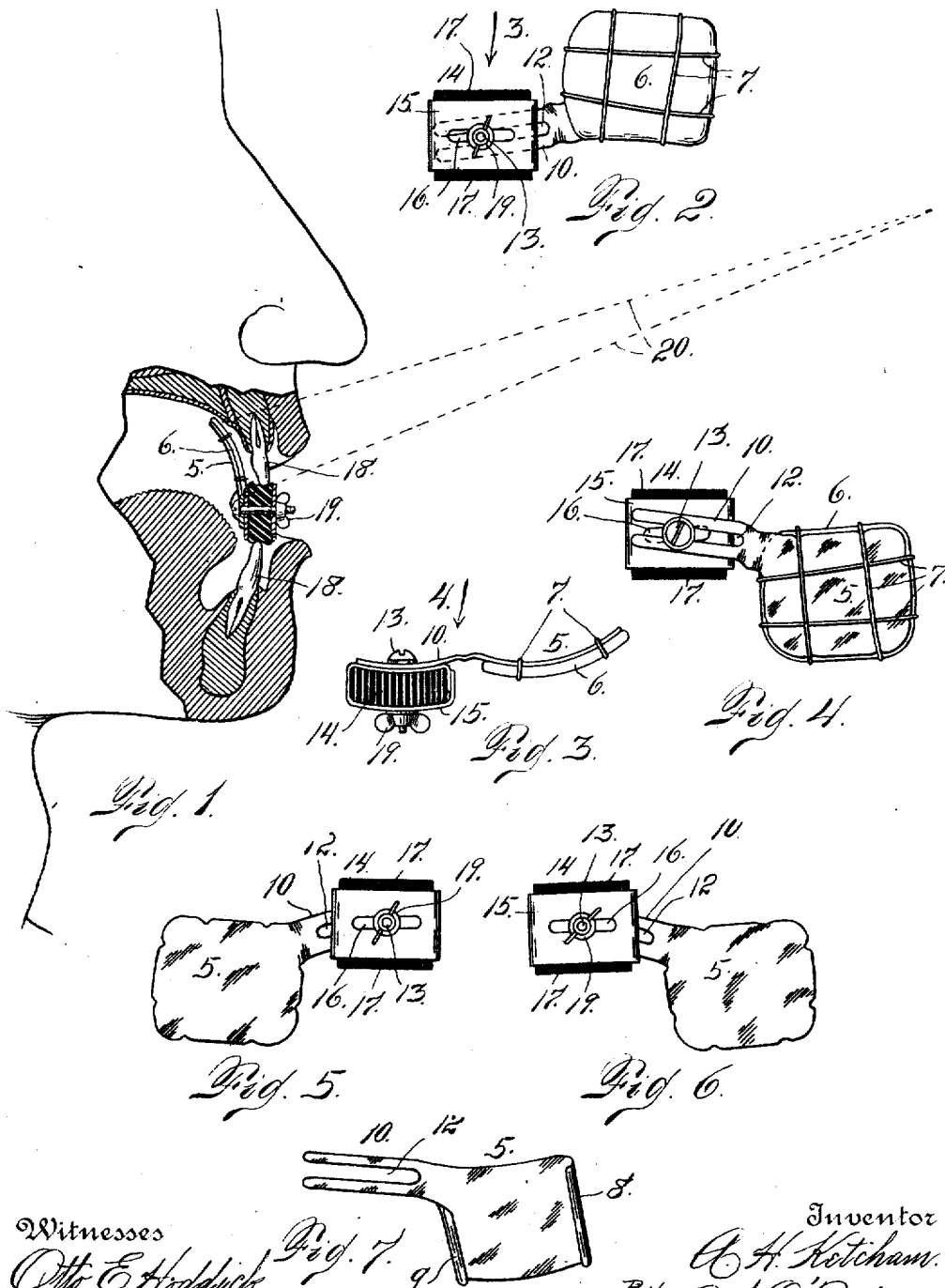


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MOUTH FILM HOLDER FOR ROENTGEN RAY SKIAGRAPHS.
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MOUTH FILM-HOLDER FOR ROENTGEN-RAY SKIAGRAPHS.

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To all whom it may concern:

Be it known that I, ALBERT H. KETCHAM, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Mouth Film-Holders for Roentgen-Ray Skiagraphs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in mouth film-holders for taking skiagraphs by the use of the Roentgen or X-rays. The particular use which I have in mind for this film-holder, is the production of skiagraphs of tooth-roots in the practice of orthodontia or the straightening of irregular teeth. Heretofore, so far as I am aware, these film-holders have been of such construction that they must be held by the fingers in the mouth of the patient during the use of the said rays. This practice on the part of the orthodontist, subjects the fingers to the repeated action or influence of these peculiar rays and has proved very serious in some instances, causing a sort of cancerous condition of the flesh.

The object of my improvement is to overcome this difficulty and to produce a film-holder which may be easily and accurately retained in the mouth of the patient without the interposition of the operator; and to this end I equip the film-holder with an extension containing a piece of rubber or other suitable material adapted to be easily held between the teeth of the patient. This rubber or other suitable material is exposed at the top and bottom of the film-holder extension, whereby one or more of the upper and lower teeth may be employed for retaining it in place. The film-holder proper is adjustably connected with the block of rubber or other material, whereby when the latter is held between the teeth in the front part of the mouth, the portion of the holder carrying the film may occupy a position in the rear portion of the mouth when it is de-

sired to skiagraph the roots of the rear teeth.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a sectional view of the front part of the upper and lower jaws, showing my improved device in place. Fig. 2 is an elevation of the same shown in detail. Fig. 3 is a top plan view or a view looking in the direction of the arrow 3, in Fig. 2. Fig. 4 is a view similar to Fig. 2 but adapted for use in a different position. Fig. 5 is an elevation of the structure shown in Fig. 2 but viewed from the reverse side. Fig. 6 is a similar view of the construction shown in Fig. 4, viewed from the reverse side. Fig. 7 is a detail view of the soft metal part of the film-holder, showing a slightly modified form of construction.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a soft metal plate forming a support for the film which is inclosed in a soft rubber covering 6 and may be attached to the plate 5 by means of small rubber bands 7 or in any other suitable manner. In the construction shown in Fig. 7 the soft metal plate 5, is provided with flanges or upturned edges 8 and 9, which may be pressed tightly upon the rubber covering inclosing the film, whereby the latter may be held in place without the use of the rubber bands or other retaining devices. The plate 5 is provided with an arm 10 projecting from one corner thereof and having a slot 12 adapted to receive a retaining screw 13 which is passed through a rubber block 14 and a metal covering 15 which is wrapped around the block and slotted as shown at 16 to receive the fastening screw. By slotting both the arm 10, together with the rubber block and its metal covering, a greater degree of adjustment is permitted. The metal covering for the rubber block is of less width than the vertical depth of the block, whereby the latter is exposed at the top and bottom as shown at 17, allowing it to be engaged by the teeth 18 (see Fig. 1), without causing the patient

to bite upon metal. As shown in the drawing, a wing-nut 19 is applied to the screw for retaining the connected parts in the assembled relation.

5 While the construction of the film-holder is practically the same for all parts of the mouth, it should be made in two styles, which may perhaps best be termed "rights" and "lefts," and they are illustrated in Figs. 2, 10 4, 5 and 6. The arrangement shown in Figs. 5 and 6 best illustrates the use of the device. For instance Fig. 5 is the style adapted for use in the upper left and lower right side of the mouth; while Fig. 6 shows the style employed in the lower left and upper right side 15 of the mouth.

It is evident that by loosening the nut 19 on the fastening screw, the film-holding member 5 may be adjusted to bring it nearer 20 the rubber block or farther away from it, as may be desired, depending upon the location of the tooth or teeth whose roots must be skiagraphed.

As the metal member 5, as well as the slotted arm 10, is pliable, it may be shaped to fit any part of the mouth of the patient.

It must be understood that my improved device is not limited to the specific construction illustrated in the drawing, since it is evident that many modifications may be employed without departing from the spirit of 30 the invention.

When the device is in use, the film-holding member 5 is placed inside the mouth and in 35 range with the tooth-roots to be skiagraphed, and it is held in place by the patient who holds the rubber block between his upper and lower teeth. The operator then directs the Roentgen or X-rays 20 toward the face 40 of the patient on the outside and so that these rays shall be in line with the film carried by the holder inside the mouth, and it is in this manner that skiagraphs of the tooth-roots are obtained, thereby informing 45 the operator as to the exact condition of these roots, which is necessary in order that he may proceed intelligently with the straightening operation.

While I have referred to the invention as particularly adapted for use by orthodontists, it is evident that it may be advantageously employed in other forms of dentistry, since it is often necessary in filling teeth to have skiagraphs made of the tooth- 50 roots, in order to disclose conditions that are not otherwise visible.

While I have spoken of making the film-holders "rights" and "lefts" for use in connection with either upper or lower teeth on 60 either side of the jaw, it is evident that the device may be used to equal advantage in skiagraphing the roots of the front teeth, since the device may be held in any posi-

tion in the mouth by the teeth more or less remote from the portion of the mouth where 65 the skiagraph is to be taken.

Having thus described my invention, what I claim is:

1. A film holder of the class described, comprising a member upon which the film is 70 mounted, and an extension adapted to be held between the teeth of the patient when the film-holder is in the proper position for skiagraphing the tooth-roots.

2. A film-holder of the class described, 75 comprising a body member to which the film is applied, and an auxiliary portion projecting therefrom and adapted to be held between the teeth of the patient.

3. A film-holder of the class described, 80 comprising a soft metal plate to which the film may be applied, the said plate having an arm projecting therefrom, and a block attached to the arm and which may be held between the teeth of the patient when the 85 film-holder is in position for skiagraphing the tooth-roots, substantially as described.

4. A film-holder of the class described, comprising a body member upon which the 90 film is mounted, the said body member having a slotted arm projecting from one corner thereof, a holding-block applied to said arm, and a fastening screw passed through the slot of the arm and also through the block, whereby the film-holder proper is adjustably 95 connected with the block, for the purpose set forth.

5. A device of the class described, comprising a soft metal film-holder, having an arm projecting from one corner thereof, a block 100 applied to said arm, and a fastening device for connecting the block with the arm, for the purpose set forth.

6. A device of the class described, comprising a soft metal body member adapted 105 to hold a skiagraph film, the said body-holder having an arm projecting therefrom, and a block adjustably connected with the arm and adapted to be held between the teeth of the patient during the operation of taking 110 dental skiagraphs, substantially as described.

7. A film holder of the class described, comprising a body member upon which the 115 film is mounted, the said body member having a slotted arm projecting from one corner thereof, a rubber holding block applied to the said arm and adapted to be gripped between the teeth, and a fastening screw passed through the slot of the arm and also through the block, whereby the film holder proper is 120 adjustable with the block, for the purpose set forth, substantially as described.

8. A device of the class described, comprising a soft metal body member adapted 125 to hold a skiagraph film, the said body member having an arm projecting therefrom, and

a relatively soft block connected with the arm and adapted to be held between the teeth of the patient during the operation of taking the skiagraphs, the arm of the body member being slotted, and a screw pressed through the block and the slot of the arm, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT H. KETCHAM.

Witnesses:

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