Aug. 21, 1923. 1,465,516

A. HALLENBERG

X-RAY FILM HOLDER

Filed Dec. 9, 1921 2 Sheets-Sheet 1

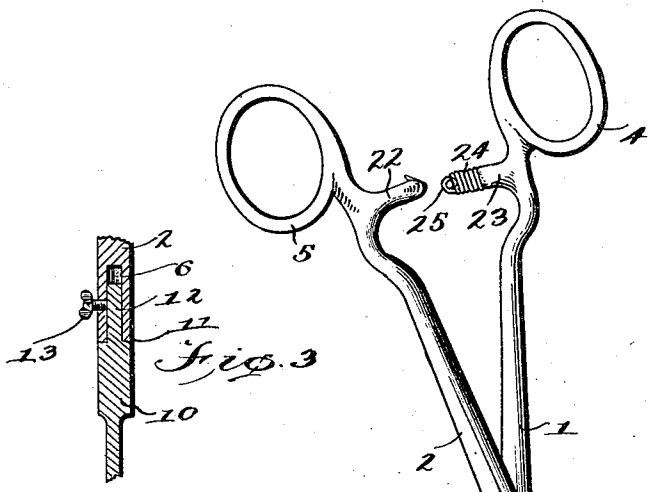


Fig. 3.

Fig. 1.

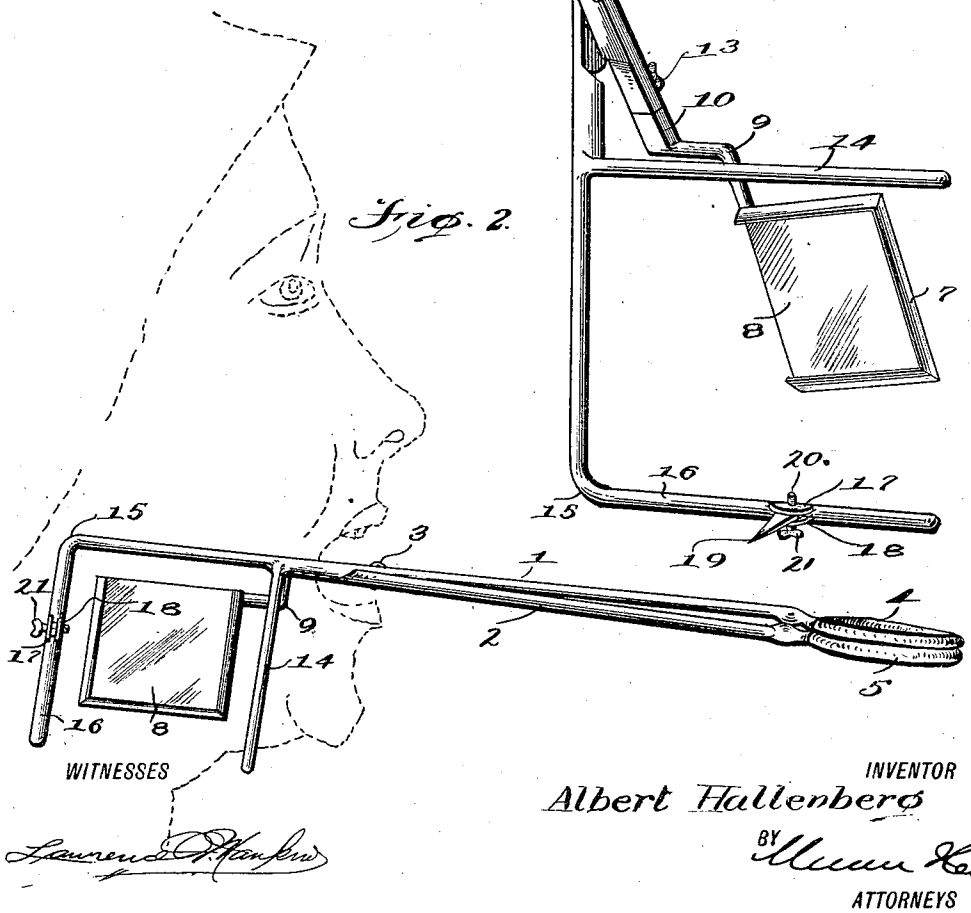


Fig. 2.

WITNESSES

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Fig. 4.

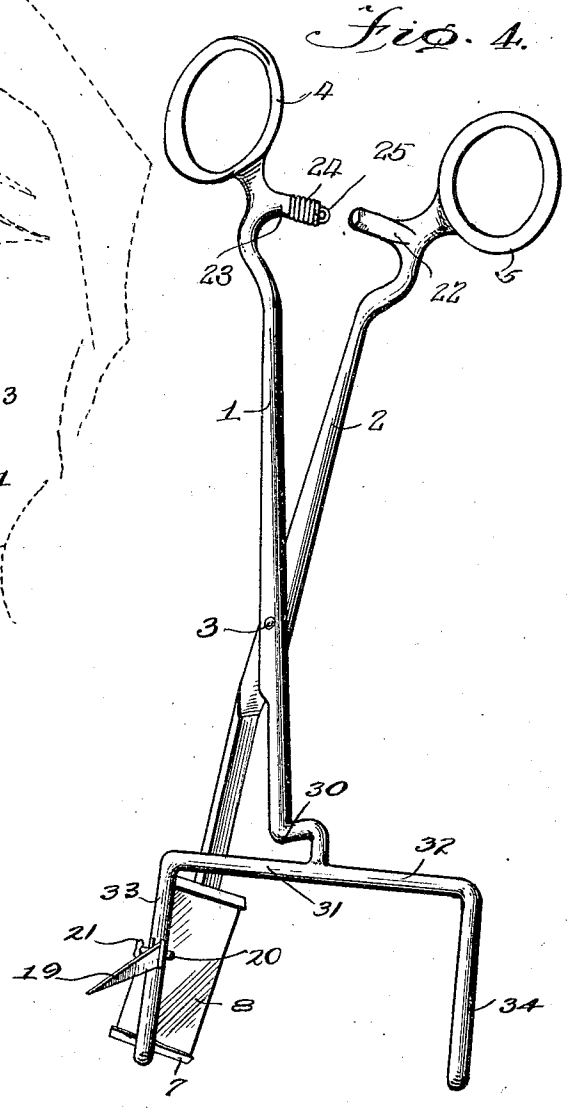
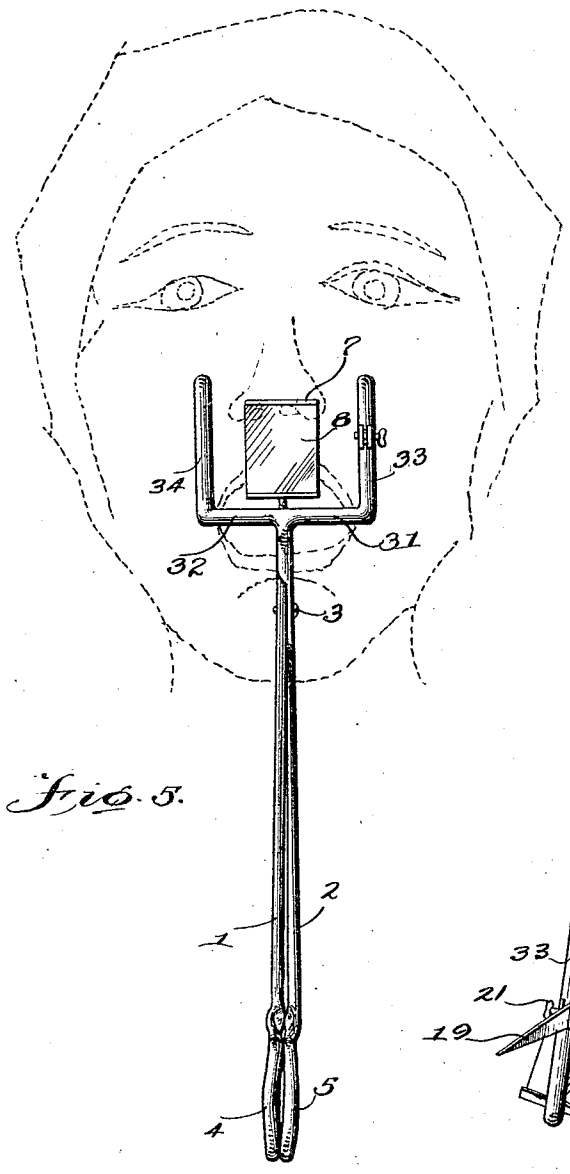


Fig. 5.



WITNESSES

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Patented Aug. 21, 1923. 1,465,516

UNITED STATES PATENT OFFICE.

ALBERT HALLENBERG, OF FARGO, NORTH DAKOTA.

X-RAY-FILM HOLDER.

Application filed December 9, 1921. Serial No. 521,179.

To all whom it may concern:

Be it known that I, ALBERT HALLENBERG, a citizen of the United States, and a resident of Fargo, in the county of Cass and State of North Dakota, have invented certain new and useful Improvements in X-Ray-Film Holders, of which the following is a specification.

My invention relates generally to X-ray apparatus, more particularly to devices for supporting an X-ray film or plate in desired positions, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device having means for holding a film in a desired position within the mouth of a patient and for indicating to the operator the exact position of the film in the mouth, whereby the rays can be so directed that the shadow cast on the film will conform in contour to the selected object or portion of the body which is opaque to the rays.

A further object of my invention is to provide means having members relatively arranged for gripping a portion of the body to position a film as desired, and means for yieldingly and releasably maintaining such members in gripping position.

A further object of my invention is to provide a device of simplified construction for attaining the objects set out in the foregoing.

Other objects and advantages will appear in the following specification and the novel features of the invention will be outlined in the appended claims.

My invention is illustrated in the accompanying drawings, forming a part of this application, in which:—

Fig. 1 is a perspective view of one embodiment of the invention,

Fig. 2 is a view in side elevation, showing the device in applied position with respect to the lower jaw of a patient,

Fig. 3 is a sectional detail of a fragmentary portion of the device illustrated in the preceding views,

Fig. 4 is a view showing another embodiment of the same invention, and

Fig. 5 is a view in front elevation, showing the embodiment of the invention illustrated in Fig. 4 in applied position with respect to the upper jaw of a patient.

Referring now to Figs. 1 to 3 inclusive, the numerals 1 and 2 respectively denote arms crossed and pivotally connected together at 3 intermediately of their length. The arms 1 and 2 are formed with loop portions 4 and 5, respectively, at corresponding ends thereof, which loop portions are adapted to receive the thumb and fingers of a hand of an operator to permit of adjustment of the arms relatively or manipulation thereof as a unit.

The arm 2 is considerably shorter than the arm 1 and is formed with an axially extending bore or socket 6 in the end thereof opposite that provided with the loop portion 5 (see Fig. 3). A frame 7 adapted to receive and releasably hold a film or plate 8, has a shank 9 formed to provide an offset end portion 10 reduced at 11 adjacent to its extremity to provide a portion 12 of circular contour in cross section and adapted to slide and rotate in the socket 6. A set screw 13 may be operated to hold the shank 9 against movement relatively to the arm 2.

The arm 1 is formed with a lateral extension 14 at a distance from the end thereof provided with the loop 4 and is bent laterally at a distance beyond the juncture of the extension 14 with the arm proper, as at 15, to provide an end portion 16 which extends substantially parallel with the extension 14 and is substantially equal in length therewith. The end portion 16 is provided with a pair of upstanding lugs 17 and 18 which are preferably formed integrally therewith and which extend at right angles to the plane common and tangent to the extension 14, the end portion 16 and the portion of the arm 1 joining the end portion 16 to the extension 14. An indicator which may be a pointed arm 19, is pivotally secured between the lugs 17 and 18 to swing between said lugs, whereby the outer end of said indicator will describe an arc of a circle. It is desirable that means be provided for releasably locking the indicator 19 in desired angular relations to the end portion 16. Any suitable means for effecting this result may be provided, and in the embodiment of the

invention illustrated, the pin 20, which is the pivot pin for the indicator 19, threadedly engages the lug 17 and is formed with a head 21 at its other end, whereby the indicator 19 will be clamped between the lugs 17 and 18 when the head 21 of the locking pivot pin is turned in such a manner as to force the lugs 17 and 18 toward each other. It will be understood, of course, that the lugs 17 and 18 are formed of a material having sufficient inherent resiliency to permit of the functioning thereof in the manner just described.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. The embodiment of the invention described so far is designed particularly for application to the jaws of a patient in order that radiographs may be available for use in connection with dental surgery. The arms 1 and 2 are manipulated to position the frame 7 within the mouth against a portion of the afflicted jaw, as for instance against the inner wall of the lower jaw, as illustrated in Fig. 2. The branches 14 and 16 of the arm 1 are disposed in contact with the outside of the jaw. When the looped end portions of the arms 1 and 2 are drawn together, the selected portions of the jaws will be clamped between the frame 7, which is disposed within the mouth, and the branches 14 and 16, which are pressed against the outside of the jaw. The arm 2 is provided with an integral hook portion 22 extending laterally thereof adjacent to the loop 5 and the arm 1 has an integral lateral extension 23 adjacent to the loop 4 having a spiral spring portion 24 terminating in a loop 25 adapted to engage the hook portion 22 of the arm 2 to yieldingly and releasably hold the arms in adjusted position.

It will thus be manifest that the frame 7 will be supported in a desired position in the mouth of a patient and will be maintained in such position so long as desired, by the action of the elements described without injury to the jaw. As pointed out in the foregoing, the shank 9 has an end portion 12 slidable and rotatable in the socket 6 of the arm 2. It will therefore be understood that the shank 9 is adjusted before the device is applied, to position the frame 7 at a desired angle to the plane common to and tangent to the branch 16 and the branch 14 of the arm 1. The indicator 19 is then adjusted to indicate the angle at which the frame 7 extends to the said plane. It is to be observed also that the extension 14 and the parallel branch portion 16 of the arm 1 are disposed at opposite ends of the frame 7 when the ends of the arms 1 and 2 are moved together, as illustrated to advantage in Fig. 2 In consequence, the operator will at all times be apprised of the position of the frame 7 and of the film or plate held thereby, whereby the X-rays may be so directed that the shadows of portions of the jaw opaque to the rays will be truly indicative of the contour of such portions when reflected on the film or plate held by the frame.

Referring now particularly to Fig. 4, I show another embodiment of the same invention. Like reference numerals have been used to designate like parts of the two forms of the device illustrated in the several views of the drawings, and I shall confine my description of the form of the device illustrated in Fig. 4 to a description of the parts thereof that vary in details from similar parts of the form of the device illustrated in Figs. 1 and 2 and hereinbefore described.

It will be observed that the arm 1 is offset adjacent to the end thereof opposite that provided with the loop 4, as at 30 and is formed to provide oppositely extending integral end portions or branches 31 and 32. Each of the branches 31 and 32 is angular in shape and the extreme end portions thereof, 33 and 34 respectively, extend in parallelism. The indicator 19 is attached to the portion 33 of the branch 31 in the manner hereinbefore described to extend at right angles to the branch 31.

The frame member 7 is carried at the end of the arm 2 in position to contact the inner side of the upper jaw of a patient between the points at which the branches 31 and 32 are pressed against the outer side of the upper jaw, as illustrated in Fig. 5. As indicated by the illustration in Fig. 5, the form of the device illustrated in Figs. 4 and 5 is particularly well adapted for use in connection with the production of images of opaque portions of the upper jaw on a film or plate held within the mouth. The operation of the two forms of the device which have been described are identical in essential respects and consequently a statement of the operation of the form of the device illustrated in Figs. 4 and 5, is believed to be unnecessary.

Obviously, modifications and adaptations of the forms of the device illustrated in the accompanying drawings may be provided and I consider all such adaptations and modifications as my own which do not depart from the spirit and scope of the invention as disclosed in the foregoing specification, and as outlined in the appended claims.

I claim:—

1. An X-ray film holder comprising a member having an end portion thereof adapted to be inserted in the mouth of a patient, means carried by said end portion for supporting a radiographic element, and other means swingingly supported on said member for engaging the outer side of a jaw of a patient to hold the radiographic

element supporting means pressed against the inner side of the jaw.

2. A device of the character described comprising a member having an end portion adapted to be inserted in the mouth of a patient, means supported on the said end portion of the member for holding the radiographic element within the mouth of the patient in a desired position, and means pivotally attached to said member for clamping against the outer side of a portion of a jaw to hold the radiographic element supporting means pressed against the inner side of the jaw.

3. In combination, a pair of intermediately crossed and pivotally connected members, one of said members having an end portion insertable within the mouth of a patient and provided with means for supporting a radiographic element, and the other of said members having the end portion thereof corresponding to the end portion of the first member formed for clamping against the outside of a portion of the jaw when the radiographic element carrying end of the first member is pressed against the inside of the jaw.

4. In combination, a pair of intermediately crossed and pivotally connected members, means carried by one of said members at one end thereof for supporting a radiographic film or plate, said means being of a size to be placed within the mouth of a patient when the end of the supporting member is projected thereinto, the other of said members being formed to provide portions adapted to be clamped to the outer side of a jaw when the radiographic plate is supported contiguous to the inner side of the jaw, and means carried by said clamping member for indicating the position of the radiographic plate with respect thereto.

5. In combination, a pair of intermediately crossed and pivotally connected members, means carried by one of said members at one end thereof for supporting a radiographic film or plate, said means being of a size to be placed within the mouth of a patient when the end of the supporting member is projected thereinto, the other of said members being formed to provide portions adapted to be clamped to the outer side of a jaw when the radiographic plate is supported contiguous to the inner side of the jaw, and adjustable means carried by said clamping member for indicating the position of the radiographic plate with respect thereto.

6. In combination, a pair of intermediately crossed and pivotally connected longitudinal members, said members being formed with loop portions at corresponding ends thereof, means supported at the other end of one of said members for holding a radiographic film or plate, and means formed integrally with the other of said members at the end thereof opposite the end provided with the loop portion for clampingly engaging the outer side of a portion of the jaw of a patient when the radiographic element holding member has been pressed against the inner side of the jaw.

7. In combination, a pair of intermediately crossed and pivotally connected longitudinal members, said members being formed with loop portions at corresponding ends thereof, means supported at the other end of one of said members for holding a radiographic film or plate, and means formed integrally with the other of said members at the end thereof opposite the end provided with the loop portion for clampingly engaging the outer side of a portion of the jaw of a patient when the radiographic element holding member has been pressed against the inner side of the jaw, said members having integral portions adjacent to the loop portion thereof and adapted to coengage to releasably hold the members in adjusted position with respect to each other.

8. In combination, a pair of intermediately crossed and pivotally connected longitudinal members, said members being formed with loop portions at corresponding ends thereof, means supported at the other end of one of said members for holding a radiographic film or plate, means formed intergrally with the other of said members at the end thereof opposite the end provided with the loop portion for clampingly engaging the outer side of a portion of the jaw of a patient when the radiographic element holding member has been pressed against the inner side of the jaw, and an indicator pivotally attached to said clamping means for indicating the angular relation of the supported radiographic element thereto.

9. In combination, two intermediately crossed and pivotally connected longitudnal members, one of said members being formed with a loop portion at one end thereof and being provided with two branch portions at the other end thereof, portions of said branches being parallel with each other and disposed substantially in the same plane, the other of said longitudinal members being provided with a loop portion at one end for cooperating with the loop portion of the first longitudinal member and being formed with a socket in its other end, and a frame adapted to releasably hold a radiographic plate, said frame being provided with a shank having a portion removably secured in said socket.

10. In combination, two intermediately crossed and pivotally connected longitudinal members, one of said members being formed with a loop portion at one end thereof and being provided with two branch portions at the other end thereof, portions of

said branches being parallel with each other and disposed substantially in the same plane, the other of said longitudinal members being provided with a loop portion at one end for cooperating with the loop portion of the first longitudinal member and being formed with a socket in its other end, a frame adapted to releasably hold a radiographic plate, said frame being provided with a shank having a portion removably secured in said socket, and means carried by one of said branches for indicating the angular relation of said frame to the plane of said branches.

ALBERT HALLENBERG.