T. B. S. WALLACE.

APPLIANCE FOR HOLDING FILMS FOR DENTAL RADIOGRAPHS.

APPLICATION FILED FEB. 24, 1920.

1,398,247. Patented Nov. 29, 1921.

FIG. 1

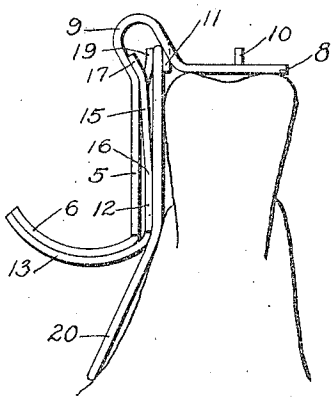
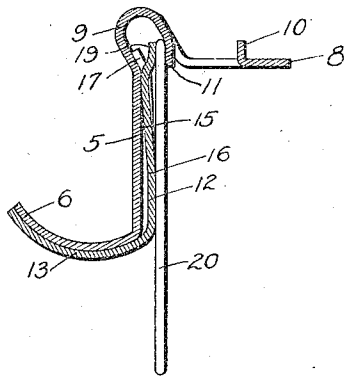


FIG. 2



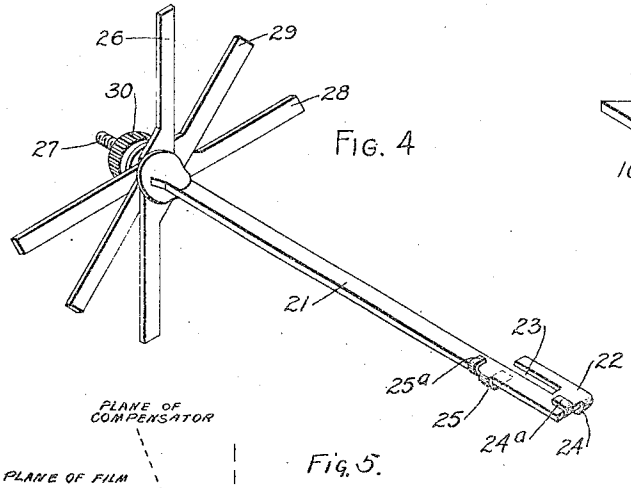


FIG. 4

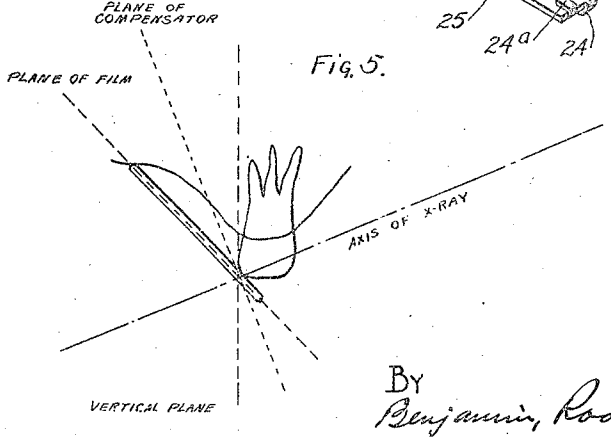
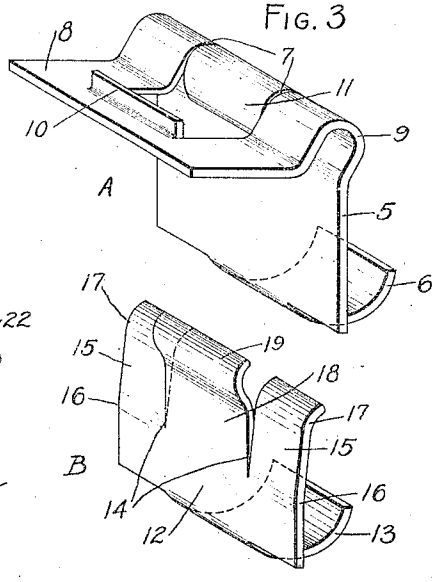


FIG. 5.

FIG. 3



INVENTOR
THOMAS B. S. WALLACE

BY
Benjamin, Roseborne & Lundy ATTYS.

UNITED STATES PATENT OFFICE.

THOMAS B. S. WALLACE, OF CHICAGO, ILLINOIS.

APPLIANCE FOR HOLDING FILMS FOR DENTAL RADIOGRAPHS.

1,398,247. Specification of Letters Patent. Patented Nov. 29, 1921.

Application filed February 24, 1920. Serial No. 360,891.

To all whom it may concern:

Be it known that I, THOMAS B. S. WALLACE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Appliances for Holding Films for Dental Radiographs, of which the following is a specification.

My invention has reference to an appliance for mounting or holding a sensitized film whereby it may be conveniently positioned in the mouth of a patient for making dental radiograms.

As is well known, the film employed in dental X-ray photography is relatively small in size (approximately 33x42 millimeters), and is inclosed in a waterproof and light-proof package that is slightly flexible so as to accommodate itself in the mouth of the person being photographed. Considerable difficulty has always been experienced in conveniently handling the film in the person's mouth as few facilities have been provided to assist in this portion of the X-ray operation. Also there is an uncertainty as to the exact plane in which the film is placed in the person's mouth so that the rays of the apparatus, instead of passing directly to the film on an axis at right angles or substantially right angles to the plane of the film, are not infrequently at a decided acute or obtuse angle thereby giving a distorted or foreshortened image which is so incorrect and inaccurate that mistakes and errors are liable to and often do occur which are really no fault of the operator. Therefore, I have devised a structure that overcomes to a great extent these inherent difficulties whereby true, or substantially true radiographs are made possible and at the same time the subject may hold the film in position with certainty, ease and comparative comfort.

In designing my appliance for holding film of this character, I have several objects in mind, viz:—the provision of a structure that is simple in construction, light in weight and not cumbersome; that is easy to handle in assembling the film package therewith; that has facilities for ready use by the person being photographed, and is dependable when in use; can be manufactured cheaply so that it may be sold for a moderate price; will indicate the proper position for the Crookes tube, and is made of separable parts so that it is capable of being easily taken apart and sterilized.

I prefer to carry out the divers objects of my invention in substantially the manner hereinafter fully described and as more particularly pointed out in the claims, reference being now had to the accompanying drawings that form a part of this specification, in which

Figure 1 is a vertical end edge elevation of my appliance assembled with a film package, and illustrating the manner of using it upon the teeth of the lower jaw.

Fig. 2 is a central vertical section thereof.

Fig. 3 is a perspective view of the two clamping parts separated and in position ready for assembly.

Fig. 4 is a detail view of the structure for determining the approximate or compensated axis upon which the rays of the Crookes tube are projected to the film.

Fig. 5 is a diagrammatic view showing the manner of use for focusing the X-ray tube.

Throughout the several views, I have employed similar reference characters to designate the same parts, and by particular reference to Fig. 3, it will be seen that my appliance preferably comprises a pair of interfitting coacting members A and B, the former, A, of which I will hereinafter designate as the holder member, while the latter, B, I will designate as the locking or clamping member.

These members I prefer to make of sheet metal of a suitable gage so that they will retain their shape and yet be sufficiently yielding to permit the interlocking or coacting parts to readily be assembled. The holder member preferably, comprises a back or main portion 5 of substantially rectangular shape from the lower edge whereof projects an outwardly and slightly upwardly curved lug 6 forming a finger piece and a pair of longitudinally disposed parallel slots 7, 7, are made in the body of the plate extending from near the opposite end edge of the plate comprising the holder member to and past the center thereof.

Intermediate the end edges the plate forming member A is looped laterally at a right angle to itself to provide a horizontally disposed shelf 8 that is adapted when the appliance is in use to be placed upon the top or crown of the teeth it is desired to reproduce by radiograph. The loop just mentioned is not an angular one, and I prefer to extend it, beginning at the ends of slots 7,

outwardly beyond the planes of the back 5 and shelf 8 to provide an elongated channel or socket 9, the purpose whereof will hereinafter more fully appear. The plate between slots 7 on the shelf is cut across transversely near the adjacent ends of said slots and the piece thereof remaining secured to the shelf is turned laterally upwardly to provide a relatively short longitudinal rib 10 that extends parallel with the adjacent outer edge of the shelf. The remaining large piece of the plate between the slots and opposite the portion from which rib 10 is formed is turned downwardly between said slots toward the rear of back 5 providing a yielding lip 11 the curvature whereof is a substantial continuation of the curve forming the channel or socket 9, and its lower edge extends inwardly toward back 5, as seen in Fig. 2 of the drawings.

The locking member B that coöperates with the holder member, just described, comprises a metal plate forming a body 12 of substantially the same general dimensions as back 5, and its lower longitudinal edge has an outward and slightly upwardly curved lug 13 providing a finger piece that corresponds with lug 6 on the holder member and is disposed below and closely adjacent the latter when the parts are assembled. This body 12 is provided with vertical parallel slots 14, 14 that extend downwardly from its upper edge a suitable distance; said slots being disposed upon said body 12 in substantially the same planes thereon as slots 7 are positioned upon the holder member. These slots 14 divide the plate into three parts, the two outer parts forming spring fingers 15, 15 that are bent at 16, or about midway their height, obliquely outwardly toward back 5 of the holder member, and at their upper portions are again bent in the same direction at the places 17 so as to fit into the adjacent lower portions of the channel 9, as seen in Fig. 1. The part of the plate intermediate the slot provides a yielding finger 18 extending upwardly in the same plane as said plate, but its upper portion is bent in a curve 19 oppositely to the upper portions of fingers 15, but conforming substantially to the curvature of lip 11 with which it is adapted to register when the parts are in coöperation.

In assembling a film package 20 with the hereinbefore described coacting members, the package is placed with its upper edge in channel 9 and against lip 11 of holder A with the back of the package toward the rear of the back member 5. The locking member B is then held in the position shown in Fig. 3 and fingers 15 and 18 thereof are inserted between the package 20 and back member 5 of the holder. The locking member B is forced inwardly until the lugs or finger pieces 6 and 13 come together during which movement upper deflected portions of the yielding fingers 15 will have snapped into channel 9 to lock the parts against separation and the upper edge portion of the film pack 20 will be securely clamped between the spring lip 11 and the upper curved portion 19 of finger 18, as seen in Figs. 1 and 2 of the drawings.

When the film package and holding appliance have been placed in the mouth of a subject, it is inconvenient and sometimes difficult for the operator to ascertain in which position the X-ray apparatus should be placed in order to accurately reproduce the parts it is desired to photograph, and for the purpose of assisting in determining an approximate or compensated axis for the rays, I have provided my appliance with an adjustable and removable indicator device. This structure preferably comprises an elongated bar 21 one end whereof is adapted to detachably assemble with portions of the holder member A and to project longitudinally therefrom out of the mouth of the subject. The attaching end of bar 21 is preferably widened, as at 22, and provided with a longitudinally disposed slot 23 the function whereof is to receive the upstanding rib 10 of the shelf when the end portion of bar 21 is placed upon the top of the shelf between the longitudinal edge thereof and the rib. A downwardly and back-turned tang 24 is provided upon the edge of the widened portion 22 of the bar to fit around the adjacent end edge and a portion of the under side of shelf 8. Also to further assist in retaining bar 21 on the shelf, I have provided a downwardly and transversely bent tang 25 on one of the longitudinal edges of the bar that is adapted to fit around the adjacent side or longitudinal edge of the shelf and engage the underside thereof in substantially the same manner as tang 24 is employed on the end edge of the shelf. To permit the reversal of the structure when the appliance is used upon the opposite side of the person's mouth, I have placed tangs 24^a and 25^a adjacent and corresponding with tangs 24 and 25, just described, except that the former tangs are bent back toward the other surface of bar 21, as seen in the drawings, so that the bar need only be turned over or reversed to permit its use on the opposite side of the mouth.

This bar, when mounted upon the shelf, is in a plane parallel with the horizontal axis of the film package and upon the outer end of the bar I mount a pointer 26 to be adjusted to the plane in which the film is found to be positioned. A small threaded stud 27 projects from the bar 21, and upon this stud is carried pointer 26, a movable indicator 28 and a compensator 29 that are free to be rotated on the stud and which

may be secured in any adjustable position by a lock nut 30 screwed onto the end of stud 27.

When the structure is in use it is placed in the person's mouth (the lower jaw teeth are indicated herein), the shelf resting upon the crown of the teeth with the film package on the lingual side and facing outwardly toward the teeth and is retained in this position by the pressure of the person's finger on lug 6. The operator then observes the plane or tilt of the film package and adjusts pointer 26 to a plane that will touch the upper and lower edges of the bent package which will be in a plane similar to the plane shown in the drawings, he then sets indicator 28 parallel to the long axis of the tooth. Then by bisecting the angle formed by the pointer and the indicator with the compensator the parts are clamped together. The compensator plane is now the nearest or approximate plane in which a nearly true radiograph may be made, because the average plane of the bent package having been determined by pointer 26 and the compensator plane being at a right angle thereto, a minimum convergence or distortion is possible in the finished radiograph. Now, by adjusting the indicators or gages of the X-ray instrument so that when focused by the operator they will register with bar 21 and compensator 29, the operator can determine the axis for the rays from the tube and thereby locate his X-ray apparatus, as shown diagrammatically in Fig. 5 of the drawings.

It is obvious from the foregoing that modifications of the precise structure shown may be made, and I desire it understood therefore that such changes are contemplated as capable of being made without departing from the scope of the appended claims.

What I claim as new is:—

1. A holder for film packs for dental X-ray photography comprising separable cooperating members provided with spring elements adapted to engage a film pack and having elements for positioning the holder with reference to the teeth and for manually holding said structure in desired positions.

2. A holder for film packs for dental X-ray photography comprising coöperating members adapted to engage a film pack and having elements for positioning the same with reference to the teeth and for manually holding said structure in desired positions, and detachable means coacting with said holder and provided with adjustable elements for indicating the plane of the film pack in the mouth and the direction for positioning the source of the rays.

3. A film holding appliance for X-ray photography comprising a plate bent intermediate its ends to provide a channel with members extended from the edges thereof at substantially right angles to each other, said plate being slotted transversely of said channel to form a tongue, a second plate slotted to provide a plurality of fingers adapted to coöperate respectively with the channel and tongue of said first-mentioned plate for securing the edge of a film pack within said channel.

4. A film-holding appliance comprising a plate bent intermediate its ends to provide members extended at substantially right angles to each other, a tongue extended from one of said members, and a second plate having a finger coöperating respectively with said tongue whereby the film pack is secured in position by said plates.

5. A film holding appliance comprising a plate bent intermediate its ends to provide a channel adapted to receive the edge of a film pack and providing angularly disposed members upon opposite sides of said channel, a tongue extended from one of said members, and a second plate having a plurality of fingers coöperating respectively with said tongue and channel whereby the film pack is secured in position in said channel.

6. A film holding appliance comprising a plate bent to provide members disposed at substantially right angles and provided with means for securing the end of a film pack at the juncture of said members, a bar provided with tangs at one end adapted to interchangeably fit one of said members, and a plurality of indicators adjustably secured to the opposite end of said bar.

7. A film-holding appliance for X-ray photography comprising a plate bent intermediate its ends to provide a channel with members extended from the edges thereof at substantially right angles to each other; said plate being slotted transversely of said channel to form a tongue, a second plate slotted to provide a plurality of fingers adapted to coöperate respectively with the channel and tongue of said first-mentioned plate for securing the edge of a film pack within said channel, and handle members extended from said plates which interfit when said plates are assembled.

8. A film holding appliance comprising a plate bent to provide a body member and a shelf projecting laterally therefrom, a longitudinal rib projecting from the upper surface of said shelf, a second plate having members coacting with said first-mentioned plate whereby a film pack is held between said plates, a bar having a slotted end portion coöperable with said shelf and rib, and an indicator upon the opposite end of said bar.

9. A film holding appliance comprising a plate bent to provide a body member and a shelf projecting laterally therefrom, a longi-

tudinal rib projecting from the upper face of said shelf, a yielding tongue on said body member, a second plate having a tongue coacting with the first-mentioned tongue whereby a film pack is held between said plates, a bar having a slotted portion engageable with said rib, tangs on the adjacent portion of said bar and coactable with said shelf, and a plurality of adjustable elements upon the opposite end of said bar.

10. A film holding appliance comprising a plate bent to provide members disposed at substantially right angles and provided with a lip for securing an edge of a film pack at the juncture of said members, a bar provided with tangs at one end that interchangeably fit one of said members, and a plurality of indicators adjustably secured to the opposite end of said bar.

Signed at Chicago, county of Cook and State of Illinois, this 20th day of February, 1920.

THOMAS B. S. WALLACE.

Witnesses:
P. J. HARMON,
F. A. CLARKE.