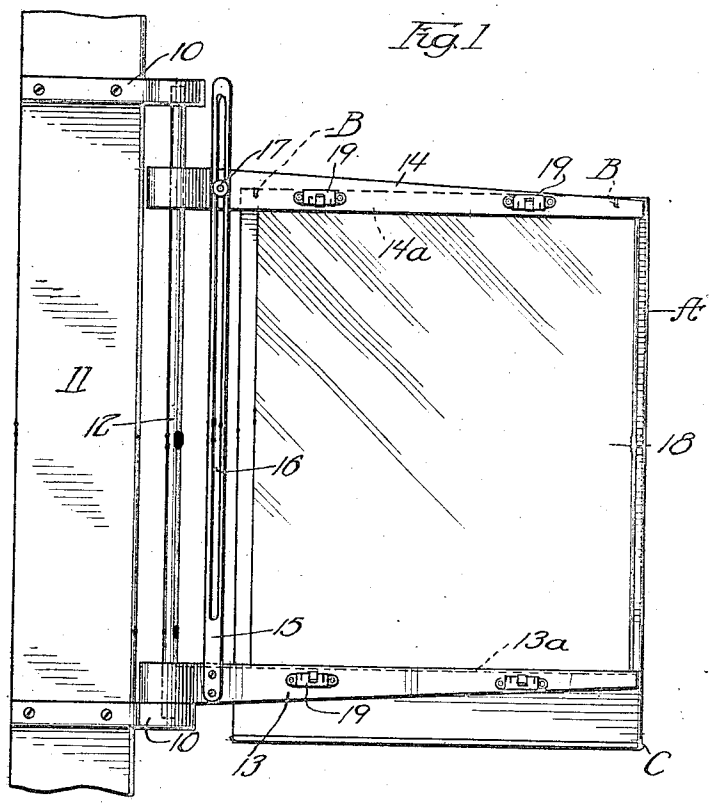
Feb. 6, 1923.

1,444,077

F. W. KOEHN.
HOLDER FOR X-RAY PLATES.
FILED JUNE 4, 1921

2 SHEETS-SHEET 1

Fig. 1



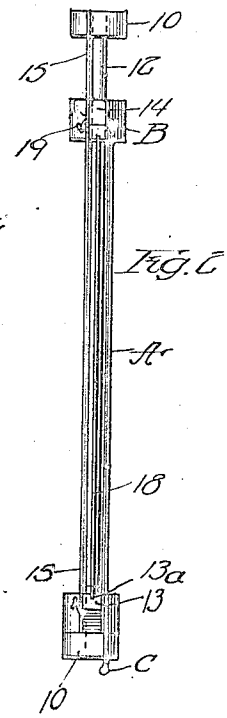


Fig. 3

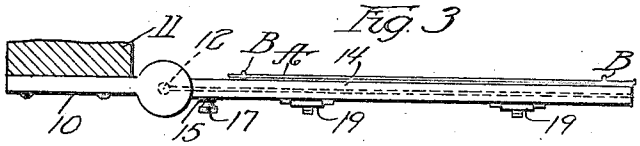


Fig. 4

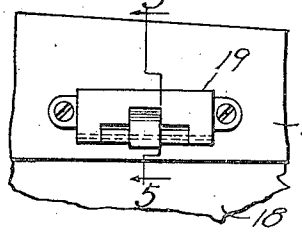


Fig. 5

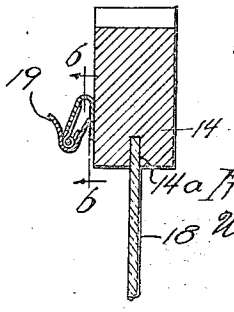
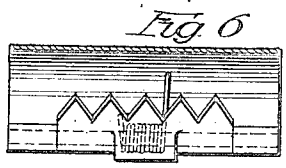


Fig. 6



Inventor
Fred W. Koehn
Williams, Bradbury, Lee & McCabe
Attys.

Feb. 6, 1923.

1,444,077

F. W. KOEHN.
HOLDER FOR X-RAY PLATES.
FILED JUNE 4, 1921.

2 SHEETS-SHEET 2

Fig. 7.

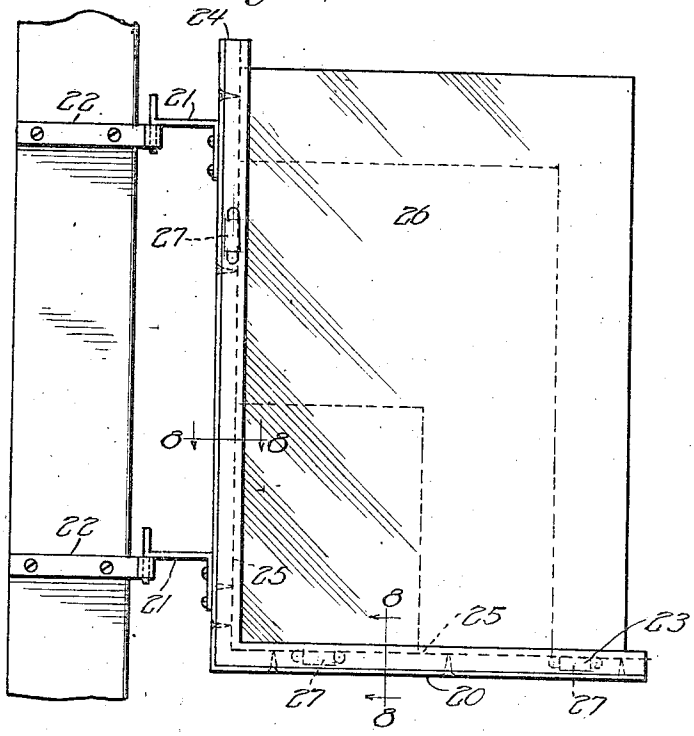


Fig. 9.

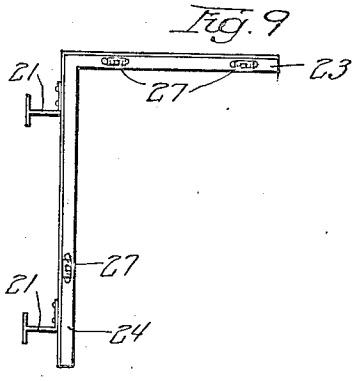
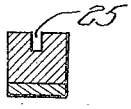


Fig 8



Inventor
Fred W Koehn
Williams, Bradbury,
Lee & McCaleb Attys.

Patented Feb. 6, 1923. 1,444,077

UNITED STATES PATENT OFFICE.

FRED W. KOEHN, OF MARSHFIELD, WISCONSIN.

HOLDER FOR X-RAY PLATES.

Application filed June 4, 1921. Serial No. 475,030.

To all whom it may concern:

Be it known that I, FRED W. KOEHN, a citizen of the United States, and resident of Marshfield, in the county of Wood and State of Wisconsin, have invented a certain new and useful Improvement in Holders for X-Ray Plates, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a device capable of supporting an X-ray plate in such a manner that a surgeon, during the course of an operation, may watch the X-ray plate for guidance in his work. The X-ray plate holder of my invention is capable of accommodating X-ray plates of all sizes, and comprises mounting devices so constructed that a supported plate may be placed where it is plainly visible from the surgeon's position and properly located with respect to a source of light, as, for instance, one of the windows of the operating room.

An explanation of the device of my invention will be best understood when read in connection with illustrative drawings; hence, I shall proceed at once to a description of the accompanying drawings, in which

Figure 1 is a side elevational view illustrating a preferred embodiment of my invention.

Figure 2 is an end elevational view thereof,

Figure 3 is a top plan view thereof,

Figure 4 is a fragmentary elevational view illustrating one of the film clips.

Figure 5 is a section on line 5—5 of Figure 4.

Figure 6 is a section on line 6—6, of Figure 5,

Figure 7 is a view similar to Figure 1 illustrating a modified embodiment of my invention,

Figure 8 is a fragmentary section which may be regarded as having been taken on either of the lines 8—8 of Figure 7, and

Figure 9 illustrates how the plate holder frame of Figure 7 may be reversed in its supporting brackets and be thereby adapted to support films.

Similar characters of reference refer to similar parts throughout the several views.

The X-ray plate holder illustrated in Figures 1, 2 and 3, comprises a pair of vertically spaced brackets 10—10 adapted to be secured to any suitable support 11. The support 11 is usually the frame of an operating room window. The brackets 10—10 are provided with sockets which receive and hold the upper and lower ends of a vertically disposed rod 12. The rod may be fixed in the brackets if desired, but it is most convenient merely to slip the euds of the rod into sockets in the brackets before the latter are secured to the support 11.

At 13 and 14 I have illustrated a pair of plate supporting arms which are rotatably mounted upon the rod 12 and capable of vertical movement relative thereto. The pivoted end of the lower arm 13 normally rests upon the bracket 10, the upper arm 14 being held vertically spaced from the lower arm a distance determined by the height of an X-ray plate to be supported by the device. Fixed to the lower arm 13 and extending upwardly therefrom is a bar 15 provided with an elongated slot 16. A set screw 17 passes freely through the slot 16 and is threaded into the upper arm 14. It will thus be understood that the arm 14 may be adjusted vertically with respect to the arm 13, and held in adjusted position by bar 15 and its co-operating set screw 17. The bar 15 and set screw 17 furthermore rigidly secure the arms 13 and 14 together so that they are capable of turning as a unit around a vertical axis represented by the rod 12. Grooves or channels 13^a and 14^a are formed in the upper and lower edges of the arms 13 and 14. These grooves or channels are adapted to receive the upper and lower edges of an X-ray plate illustrated at 18.

The X-ray plate holder of my invention is preferably mounted upon the frame of an operating room window and so positioned with respect to the operating table that the operating surgeon may swing the holder and the X-ray plate carried thereby into a position such that one face of the plate is presented to the surgeon with the plate lying directly between the surgeon and the window. By manipulation of the set screw and moving the arm 14 up or down as required, the holder may be adapted to receive an X-ray plate of any size.

Bearing in mind that certain surgeons use

films instead of plates in their X-ray work, I have provided the upper arm 14 with a pair of film clips indicated at 19—19. I do not limit myself to any particular type of film clip, but will state that I have found the particular type of clip illustrated in Figures 4, 5 and 6 to be exceptionally well suited for my purpose. It will be unnecessary to enter into a detailed description of this clip, as its construction and mode of operation will be made readily apparent by an examination of Figures 4 to 6. The details of this clip per se form no part of my present invention. The X-ray film is supported by clamping the upper edge thereof between the jaws of the spring clips. I find it is ordinarily sufficient merely to provide film clips upon the upper arm 14, since X-ray films do not have the same tendency to curl as do films used for ordinary photographic purposes. However, the lower edges of the film may, if desired, be held by suitable clips carried upon the lower arm 13, as illustrated.

I now call particular attention to a light diffusing device which is an adjunct to the X-ray plate holder of my invention. The light diffuser herein shown consists of a rectangular sheet A of translucent material, such, for instance, as the tracing cloth used by draftsmen. The sheet A is disposed on that side of the plate which faces the window, or other source of light, and is preferably detachably secured to the upper arm 14. The diffusing sheet is conveniently provided with suitable eyelets co-operating with hooks B—B. The sheet is furthermore conveniently stitched at its lower margin to receive a metal rod C which holds the sheet taut. I have found that the sheet A serves to diffuse the light over the X-ray plate and renders the same very easy to view and interpret from the surgeon's position.

The modification of my invention illustrated in Figures 7 and 8 comprises a substantially L shaped metal frame 20. The metal brackets 21 extend laterally from the vertical leg of the frame 20 and are secured thereto by welding or by screws or rivets. The brackets 21—21 are preferably hingedly mounted to co-operating fixed brackets 22—22, which are secured to a window frame or other suitable support. The frame 20 carries wood strips 23 and 24 which are suitably mitered together and secured to the frame 20 by screws 24. The strips 23 are provided with longitudinal grooves or channels 25 for the reception of the lower and one of the lateral edges of an X-ray plate indicated at 26. This form of holder may, without adjustment, be used with X-ray plates or various sizes, as indicated. The brackets 21—21 are preferably so conformed that the frame 20 may be mounted with its horizontal arm uppermost. When the frame is so mounted, an X-ray film may be supported by means of the clips indicated at 27—27.

While I have illustrated and described the X-ray plate holder of my invention as being mounted for swinging movement with respect to the frame of an operating room window, it will, of course, be understood that the holder may be suitably mounted upon any suitable support, as for instance, a portable stand or the like.

I do not limit myself to the details of construction herein shown and described, but wish to claim all equivalent constructions falling within the terms or spirit of the appended claims.

What I claim as new, and desire to secure by Letters Patent of the United States is:

1. In combination with a window frame, a supporting skeleton framework for an X-ray plate, said supporting framework comprising a pair of channeled bars disposed in the same vertical plane, one of said channeled bars adapted to receive the lower edge of an X-ray plate, the other bar adapted to receive another edge of the same plate, each of said bars being joined to the other at one end only, and means for mounting said supporting framework upon the window frame for swinging movement around a vertical axis.

2. An X-ray plate holder comprising a pair of horizontal bars spaced apart in the same vertical plane, and vertically adjustable, one with respect to the other, said bars being provided with channels adapted to receive the upper and lower edges of a plate, means for securing said bars in adjusted position, means on said bars for supporting a light diffuser adjacent and parallel to one side of the plate, and means for mounting said bars to swing as a unit around a vertical axis.

3. An X-ray plate holder comprising a vertical rod, a pair of vertically spaced horizontal arms pivotally mounted on said rod, one of said arms being vertically adjustable with respect to said rod, channels in said bars adapted to receive the upper and lower edges of a plate, a set screw carried by the vertically adjustable arm, a bar having a longitudinal slot adapted to co-operate with the set screw carried by the vertically adjustable arm, said bar being fixed to the other arm.

4. An X-ray plate holder comprising a framework, including channeled members adapted to receive the lower and one other edge of a X-ray plate, means for mounting said framework for swinging movement relative to a window, and a light diffuser comprising a translucent sheet carried by the framework and disposed adjacent and parallel to the X-ray plate.

5. A device of the class described, comprising a skeleton framework open at one edge adapted to support an X-ray negative in a vertical plane, a light diffuser carried by said framework, said diffuser comprising a translucent sheet adapted to lie adjacent and parallel with one face of the negative, and means for mounting said framework for swinging movement about a vertical axis.

In witness whereof, I hereunto subscribe my name this 26 day of May, 1921.

FRED W. KOEHN.

Witnesses:
HOWE D. DUFF,
J. P. WEDDER.