Sept. 12, 1944. F. T. POWERS 2,357,969

X-RAY CASSETTE

Filed June 14, 1943

Fig. 1

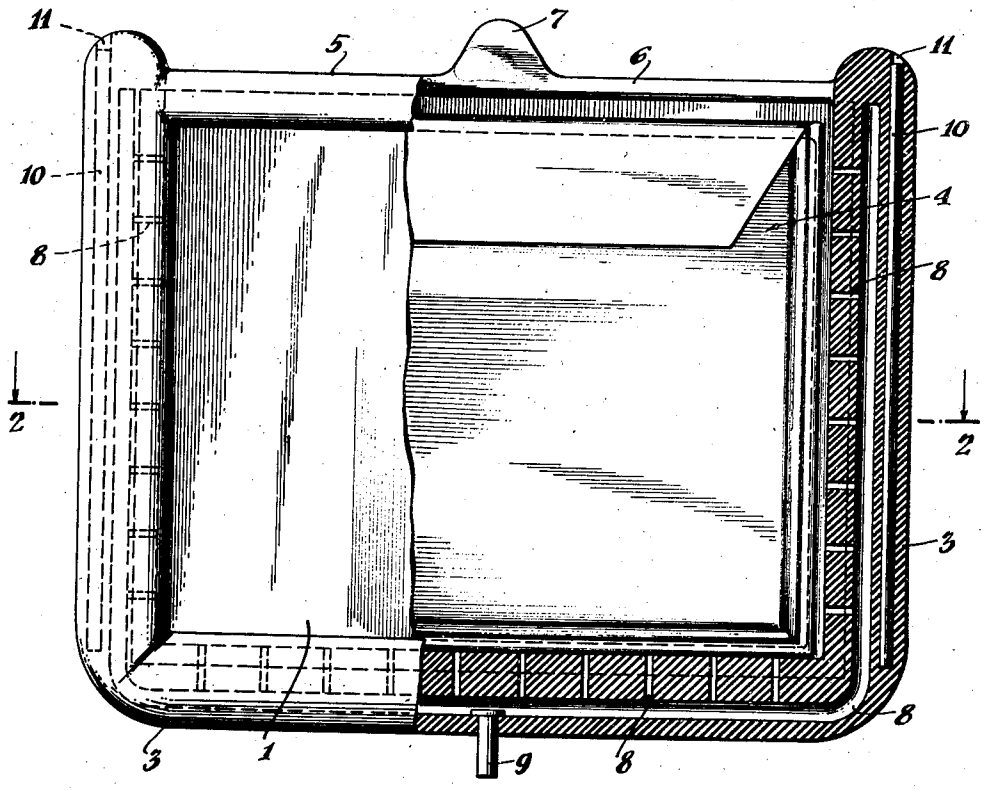
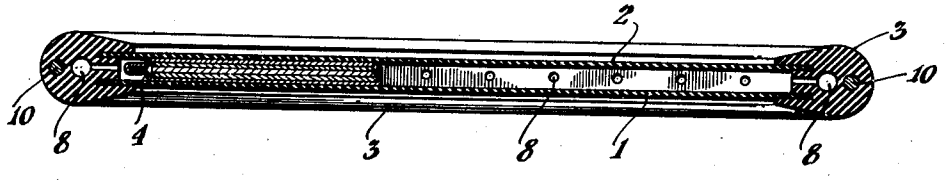


Fig. 2



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X-RAY CASSETTE

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Application June 14, 1943, Serial No. 490,743

7 Claims. (Cl. 250—68)

This invention relates to certain new and useful improvements in X-ray cassettes and this application is a continuation-in-part of my application Serial No. 485,591, filed May 4, 1943, for improvements in X-ray casette.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates one embodiment of the invention, and together with the description, serves to explain the principles of the invention.

Objects of this invention are to provide an X-ray cassette which will facilitate the making of radiographs of curved objects such as wooden telegraph, telephone and electric power line poles, at the ground line to determine the presence of decay before the pole falls; to provide a flexible X-ray cassette which may be readily and easily conformed to the contour of an object to be radiographed and will maintain its conformed shape while in use; and, to provide a new and improved flexible vacuum casette.

Of the drawing:

Fig. 1 is a view in front elevation with parts in section of a preferred embodiment of this invention; and,

Fig. 2 is a view in section taken along the line 2—2 of Fig. 1.

Referring now more particularly to the accompanying drawing, a pair of thin, flexible, resilient wall members 1 and 2 are enclosed by a flexible, resilient marginal frame 3 to which they are cemented or otherwise suitably anchored at their edges and by which they are held in coextensive spaced parallel relation.

The walls members are fashioned of a suitable flexible and resilient, or extensible X-ray pervious material such, for example, as semi-soft rubber with a light opaque filler. The wall members are preferably of substantially uniform thickness in the order of, for example, $\frac{1}{32}$ to $\frac{1}{16}$ inch thick so as to permit their being easily flexed for conformance to the curvature of a pole or other curved object to be radiographed without tearing the wall members loose from the frame 3.

The marginal frame 3 forms a light-tight and air-tight closure for the space between the wall members 1 and 2 and is preferably fashioned of soft rubber which is preferably bonded to the wall members, as by being cemented or vulcanized thereto. In order that X-ray sensitive material may be positioned in the space between the wall members, the marginal frame 3 is slotted preferably along its top side, so as to provide a normally closed opening through which the X-ray sensitive material may be inserted into and withdrawn from the interwall space. There is depicted in Fig. 1 an envelope 4 accommodated within this space which may contain the X-ray sensitive material and one or more intensifying screens in accordance with usual practice in the art. In order to facilitate insertion and withdrawal of the envelope 4, the slot forming portions 5 and 6 of the frame 3 may be provided with ears 7 of which one only is shown.

Air is adapted to be evacuated from the interwall space through a manifold duct system 8 contained within the marginal frame 3 and providing communication between the interwall space and an eduction nozzle 9 through which suction producing apparatus (not shown) is adapted to take suction. It will be understood that as suction is applied to the interwall space, the wall members 1 and 2 by relative movement toward each other will press the X-ray sensitive material into firm, intimate and uniform contact with its intensifying screen.

Flexible means of a substantially non-resilient nature are provided in association with the frame 3 for holding the frame 3, and hence the wall members 1 and 2, in a flexed position conforming to the curvature of the object to be radiographed. As embodied, flexible members 10 of substantially non-resilient material and possessing sufficient stiffness to resist the natural tendency of that frame 3 and wall members 1 and 2 to "spring back" to a normal position when flexed therefrom, are incorporated in the frame 3 at opposite sides thereof. The members 10 may be of stranded construction, or in the form of successive sections and may be cemented, vulcanized or otherwise securely anchored to the frame 3. As here preferably embodied, the members 10 are of rod shape, are fashioned of lead and are snugly lodged removably in sockets 11 extending lengthwise of and substantially coextensive with the opposite side walls of the frame 3. In order to minimize relative movement between the frame 3 and the rod members 10, the latter are preferably positioned with their lengthwise axes in the transverse plane of symmetry of the cassette as viewed in Fig. 2.

Thus, it will be seen that through the provision in a flexible cassette of holding means, such as the rod members 10 depicted in the illustrative embodiment of this invention, the cassette may be manipulated to a flexed position in which it conforms to the curvature of an object to be radiographed and will be maintained in this position until relieved manually by the operator.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. A flexible vacuum cassette for X-radiography comprising a pair of thin flexible wall members of which at least one forms an X-ray permeable exposure window; a flexible marginal frame for holding said wall members in coextensive spaced relation, said frame having a duct system for the evacuation of air from the interwall space; and, flexible means of a substantially non-resilient nature structurally associated with said frame for holding said wall members and frame when flexed, in a flexed position.

2. A flexible vacuum cassette for X-radiography comprising a pair of thin flexible wall members of which at least one forms an X-ray permeable exposure window; a flexible marginal frame for holding said wall members in coextensive spaced relation, said frame having a duct system for the evacuation of air from the interwall space; and, flexible members of a substantially non-resilient nature removably lodged in said frame for holding said wall members and frame when flexed, in a flexed position.

3. A flexible vacuum cassette for X-radiography comprising a pair of thin flexible wall members of which at least one forms an X-ray permeable exposure window; a flexible marginal frame for holding said wall members in coextensive spaced relation, said frame having a duct system for the evacuation of air from the interwall space; and, flexible members of substantially non-resilient material and possessing sufficient stiffness to resist the natural tendency of said frame and wall members to "spring back" to a normal position when flexed therefrom incorporated in one pair of opposite side walls of said frame for holding said members and frame when flexed, in a flexed position.

4. A flexible vacuum cassette for X-radiography comprising a pair of thin flexible wall members of which at least one forms an X-ray permeable exposure window; a flexible marginal frame for holding said wall members in coextensive spaced relation, said frame having a duct system for the evacuation of air from the interwall space; and a pair of lead rods respectively incorporated in the respective units of a pair of opposite side walls of said frame for holding said wall members and frame when flexed, in a flexed position, each said rod running lengthwise of and substantially coextensive with its frame side wall.

5. A flexible cassette for X-radiography comprising a pair of thin flexible wall members of which at least one forms an X-ray permeable exposure window; a flexible marginal frame for holding said wall members in coextensive spaced relation; and, flexible means of a substantially non-resilient nature structurally associated with said frame for holding said wall members and frame when flexed, in the flexed position.

6. A flexible cassette for X-radiography comprising a flexible marginal frame and flexible members of substantially non-resilient material incorporated in said frame for holding it when flexed, in a flexed position.

7. A flexible cassette for X-radiography comprising a flexible marginal frame and flexible members of substantially non-resilient material in one pair of the frame side walls for holding said pair when flexed, in a flexed position.

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