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G. BUCKY.

PLATE HOLDER FOR TAKING RÖNTGEN PHOTOGRAPHS.

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Fig. 1

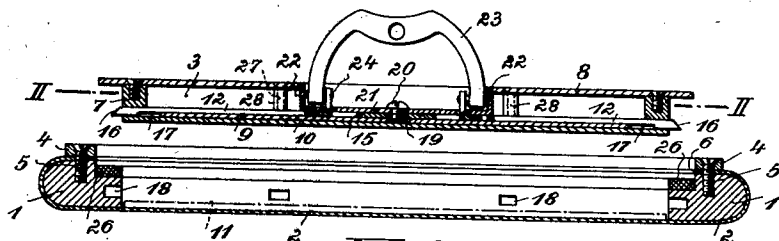


Fig. 2

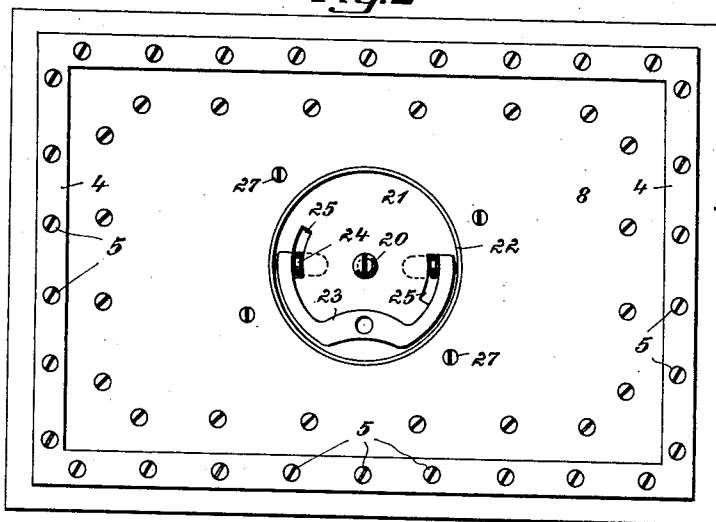


Fig. 3

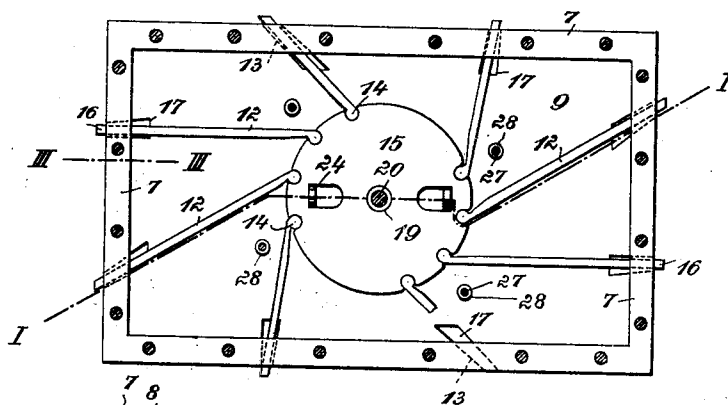
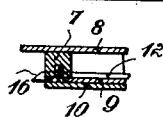


Fig. 4



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UNITED STATES PATENT OFFICE.

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PLATE HOLDER FOR TAKING RÖNTGEN PHOTOGRAPHS.

Application filed January 20, 1921. Serial No. 438,788.

To all whom it may concern:

Be it known that I, GUSTAV BUCKY, residing at Kleiststr. 19, Berlin W, Germany, have invented certain new and useful Improvements in Plate Holders for Taking Röntgen Photographs, of which the following is a specification.

This invention relates to improvements in plate-holders for the taking of Röntgen photographs, in which the sensitive plate is arranged in a frame upon a plate which is pervious to Röntgen rays but impervious to light and upon which is laid the part of the patient that is to be photographed by means of Röntgen rays, whilst a cover that is impervious to rays and that is also arranged in the said frame is placed above the sensitive plate and held in position by locking members.

In known arrangements of this kind the external plate or sheet that is attached to the frame of the plate-holder and upon which the particular part of the patient's body that is to be irradiated by Röntgen rays is placed is generally made of black cardboard. This involves two disadvantages. In the first place such a plate-holder is not consistent with the simplest rules of hygienics because the cardboard surface of the plate-holder cannot be cleaned, although several patients come into contact with it in succession, so that all manners of unclean or contagious matter may be transferred to or by it. Secondly, cardboard is hygroscopic and becomes warped in moist weather which causes much trouble when intensifying foils or sheets are used that are interposed between the cardboard sheet and the sensitive plate and do not lie smoothly against the same when the said sheet is warped.

Another disadvantage of the known plate-holder is that the fixing of the cover is accomplished by means of a large number of individual locking members or hinged clamping devices the handling of which causes much loss of time and which are very liable to become unlocked of themselves. The known form of cover also involves the use of a spring or springs for exerting a pressure upon the sensitive plate and these springs are liable to frequent breakage.

The object of this invention is to produce a device which, whilst it is simple and cheap, conforms in every respect with the rules of hygienics. The external plate or sheet of

the plate-holder that is brought into contact with the patient consists of a non-hygroscopic substance that can be easily washed and which, whilst it is impervious to light, allows Röntgen rays to pass through it.

One specific feature of the invention consists in the manner in which this external plate or sheet is fixed to the frame of the plate-holder.

Another feature of the invention resides in the manner of fixing the cover of the plate-holder in the frame of the same by a device which enables the cover to be locked in position or unlocked by a single motion of the hand.

And finally the invention provides an arrangement by which the cover of the plate-holder is pressed against the sensitive plate without the aid of springs by the effect of the fixing or locking device.

A constructional form of the invention is shown in the drawing in which—

Fig. 1 is a vertical longitudinal section of the plate-holder, with its cover removed, on the line I—I of Fig. 3,

Fig. 2 is a plan view of the plate-holder,

Fig. 3 is a horizontal section of the cover of the plate-holder on the line II—II of Fig. 1 and

Fig. 4 is a vertical section on the line III—III of Fig. 3.

The plate-holder consists chiefly of a metal frame 1, an external or base plate or sheet 2, and a cover 3. The frame, which is preferably made of metal, has rounded outer edges. The external plate 2 consists of a substance such as celluloid, celloid (incombustible cellulate substance) hard-rubber or the like. This plate is impervious to light and preferably black all through, and perfectly smooth, especially on the outside, so that it may be easily washed. The plate 2 is fixed by its margins being bent up around the rounded outer sides of the frame 1 and turned down onto its top surface and fixed there by means of metal strips 4 which, with the aid of screws 5, press the margins and edges 6 of the plate 2 against the frame 1.

In this way the plate 2 is pulled quite taut and the tautening tension can be enhanced by the sheet of celloid or the like being caused to expand by heating and being screwed fast to the frame in its heated state.

The cover 3 of the plate-holder consists chiefly of a frame 7 having an aluminium plate 8 screwed fast to its upper side and

a second metal plate 9 fixed by screws to its lower side. Beneath the plate 9 is a lead plate 10 which, when the cover is put into position, contacts with the sensitive plate 11 indicated by a broken line in Fig. 1.

Resting upon the plate 9 are a number of locking members 12. These are guided at their one end in slots 13 in the frame 7 and their other ends 14 are circular and fit into notches of a corresponding shape in a disc 15. The circular ends 14 are kept in their slots by a cover plate 21 in a manner hereinafter more fully described. The outer end portions of the locking members 12 are thicker from top to bottom than their stems and their end surfaces 16 are inclined. The downwardly projecting portions at the outer ends of the stems of the locking members engage with slots 17 in the plate 9. The said outer ends are adapted to enter the four cornered holes 18 in the frame 1. The end surfaces of the locking members are inclined in such a way that, on their entering the holes 18, they press the cover 3 downwards.

The disc 15 is arranged to be turned on a pivot 19 and fixed upon this pivot by means of a screw 20 is the aforesaid cover-plate 21 whose circular margin 22 is bent upwards. This cover-plate fits into a hole in the upper plate 8 of the cover and forms a cavity in which the handle 23 is arranged. This handle is pivotally attached to two lugs 24 which are punched up out of the disc 15 and extend upwardly through slots 25 in the cover plate 21. The shape of the handle 23 is such that when it is folded down it sinks completely into the cavity formed by the cover plate 21. The handle when turned operates to move the locking members 12 and to thereby lock or unlock the cover 3 of the plate-holder in its frame 1. According to the amount of turning movement imparted to the handle 23 the locking members are moved more or less into the holes 18 in the frame so that their inclined end surfaces 16 press the cover downwards against the sensitive plate 11.

A yielding contacting surface is presented to the margin of the cover in the shape of a felt strip 26 which is fastened upon a ledge at the inner border of the frame 1. The inner edges of the strips 4 by which the sheet of cellon 2 is fixed act as guiding members or lateral abutments for the upper plate 8 of the cover 3. The plate 8, in addition to being fixed by screws at its margin, may also be connected to the lower plate 9 by screws 27 arranged around the

middle hole in the plate 8, these screws being passed through small sleeves 28 that keep the two plates 8 and 9 at the proper distance apart.

It will be obvious that many changes and modifications can be made without departing from the scope of my invention.

I claim:—

1. A plate-holder for taking Röntgen photographs comprising, a frame, a sheet consisting of an opaque, cellulate substance stretched at one side of the frame and having its margins turned around the edges of the frame, a cover adapted to be inserted in the frame at its other side, and a locking device for locking the cover in position in the frame.

2. A plate-holder for taking Röntgen photographs comprising, a metal frame, a sheet of cellulate substance stretched at one side of the frame and having its margins turned around the edges of the frame and passed to its other side, holding means for holding the cellulate sheet, a cover adapted to be inserted in the said frame, the said holding means being adapted to guide the said cover, and locking means for locking the cover in position in the frame.

3. A plate-holder for taking Röntgen photographs comprising, a frame, a sheet of cellulate substance stretched at one side of the said frame and having its margins turned around the edges of the frame and passed to its other side, a cover adapted to be inserted in the frame, screws, strips held by the screws at the other side of the frame, and adapted to form lateral guiding members for the cover, and locking devices for locking the cover in position in the frame.

4. A plate-holder for taking Röntgen photographs comprising; a frame; a washable, opaque sheet at one side of the frame; cavities in the inner edges of the frame; a cover adapted to be inserted in the frame at its other side; a depression in the cover; a plurality of locking bolts with outer ends adapted to engage with the said cavities; guide members for guiding the said bolts; a turnable disc linked to the inner ends of the said bolts; and a handle hinged to the said disc and adapted to be folded down into the said depression.

In testimony whereof I have signed this specification in the presence of two witnesses.

GUSTAV BUCKY.

Witnesses:

URSULA MEYERHOFFER,
ERNST FULD.