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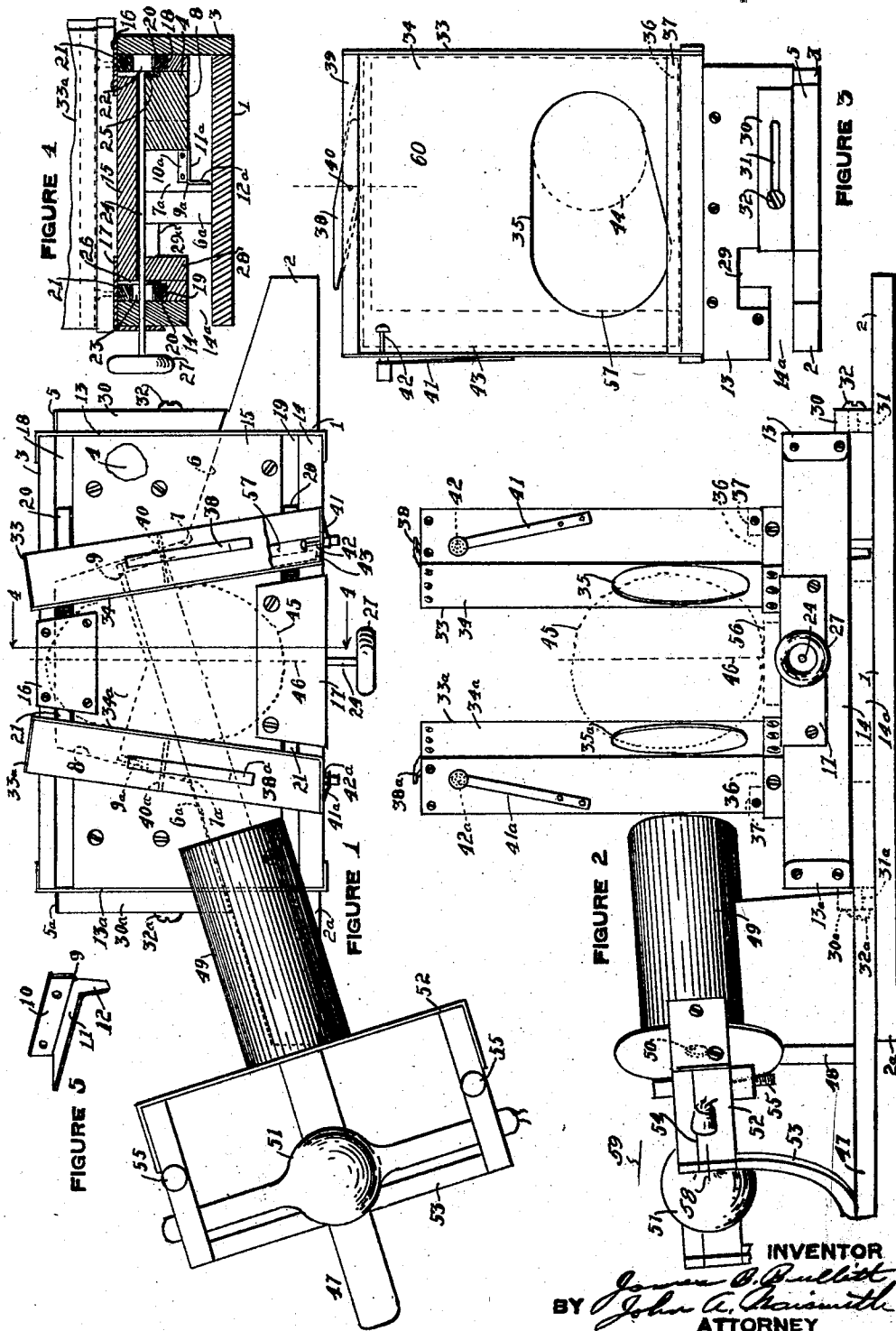
1,620,992

J. B. BULLITT

STEREOSCOPIC PHOTOGRAPHY

Filed Jan. 16, 1926

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

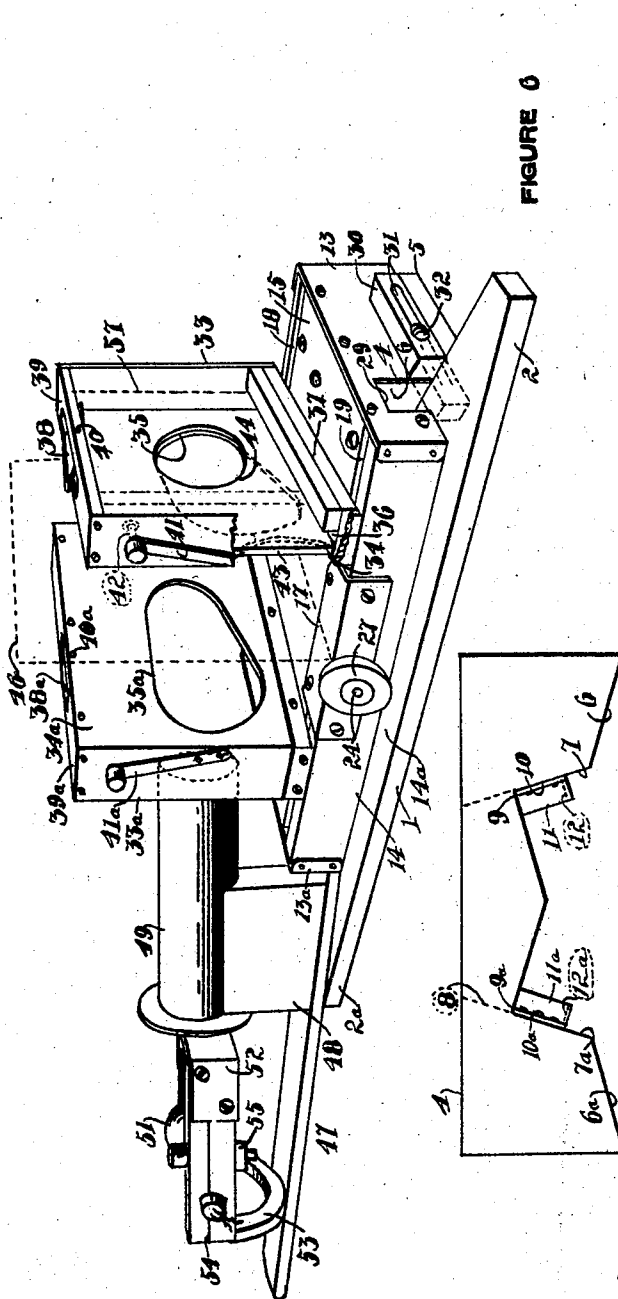


FIGURE 0



FIGURE 7

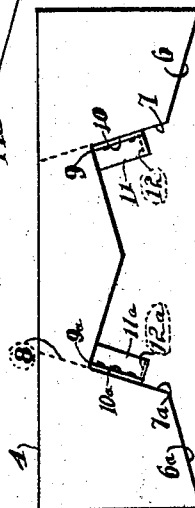


FIGURE 8

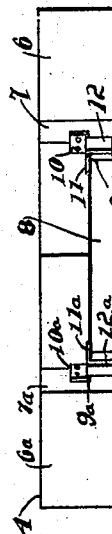


FIGURE 9

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STEREOSCOPIC PHOTOGRAPHY.

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This invention relates particularly to a device for securing stereoroentgenograms of the mastoid processes.

In securing stereoscopic photographic plates of the mastoid processes by the use of the X-ray, it has heretofore been extremely difficult to secure the perfect symmetry desired. Furthermore, many plates have been taken under unfavorable conditions due to the position which the patient must assume.

It is one object of the present invention to provide a device of the character indicated in which the photographic plates are accurately and symmetrically supported upon opposite sides of the sagittal plane of the patient's head.

It is another object to provide a device of the character indicated in which the plates are simultaneously and oppositely adjustable relative to the said plane.

It is still another object of the invention to provide a device of the character indicated in which the four exposures required to secure the desired plates may be accurately and quickly made without altering the adjustment of the patient's head.

It is also an object to provide a device of the character indicated wherein the desired plates may be secured without applying pressure to either mastoid process.

Finally, it is an object to provide a device of the character indicated that is simple in form and construction, accurately and quickly adjusted and applied, and highly efficient in its practical application.

In the drawing:—

Figure 1 is a plan view of the device, a part being broken away.

Figure 2 is a rear elevation of the same, part being broken away.

Figure 3 is an end elevation of the device.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a detail perspective of the tube holder stop.

Figure 6 is a perspective view of the device.

Figure 7 is a horizontal cross-section through one of the plate holding frames.

Figure 8 is a plan view of the block around which the structure is built.

Figure 9 is an edge view of the block shown in Figure 8.

Referring more particularly to the draw-

ing, I show at 1 a base plate provided with laterally extending end portions 2—2^a, and a front piece 3 mounted thereon as shown.

Mounted on plate 1, and in the angle between the same and piece 3, is a block 4. This block 4 is somewhat shorter than the base plate 1 so that when it is centrally mounted thereon a ledge as 5—5^a is left on each end of the plate 1 for the purpose hereinafter set forth. The inner edge of block 4 is irregular in shape, sloping from both ends inwardly as at 6—6^a to form acute angles with the adjacent ends of the block, and thence more sharply inwardly a distance as at 7—7^a, the edge 7 lying at right angles to the edge 6^a and at the base thereof, and the edge 7^a lying at right angles to the edge 6 and at the base thereof. The portion of the block between edges 7—7^a, the central portions of edges 6—6^a, and the forward edge of the block are undercut to form a slot 8 closed at its forward end by front piece 3.

At the base of each edge 6—6^a and mounted upon the edges 7—7^a is a stop member as 9—9^a. This member is provided with a vertical flange 10—10^a by means of which it is mounted on block 4, an outwardly and upwardly tilted flange 11—11^a, and a downwardly extending finger 12—12^a at one end of the flange 11—11^a.

In using this device it is necessary that the tube will assume a fixed angular position relative to the sagittal plane of the head positioned therein. This positive positioning of the tube is secured by forming the symmetrically arranged edges 6—6^a and 7—7^a on the inner edge of block 4, and placing the stops 9—9^a in the fixed positions described, these parts cooperating with a movable tube holder hereinafter described.

Mounted on each end of block 4 is a metal strap as 13—13^a, one end of each strap engaging the adjacent end of front piece 3 and the other end engaging and supporting a bar 14 spaced a distance above plate 1 to form a slot 14^a of substantially the same height as slot 8 in block 4.

At 15 I show a top member mounted on block 4 and carrying plates 16 and 17 respectively which in turn are attached to front piece 3 and bar 14 as shown. Member 15 is spaced a distance from both front piece 3 and bar 14 as indicated at 18 and 19, these slots 18 and 19 forming guide-ways for two sets of racks 20—21 posi-

tioned therein and operated by pinions 22—23 mounted on shaft 24 journaled in bearing plates 25—26 mounted on the front and rear edges of the top member 15 as shown. The shaft 24 is provided with a handle 27, and the racks are arranged upon opposite sides of the pinions so that by turning the handle 27 the two sets of racks are simultaneously moved equal distances in opposite directions. The housing for the rear rack and pinion is completed by the parts 28.

In the lower edge of each of the end straps 13—13^a is formed a notch as indicated at 29—29^a one side edge of this notch coinciding with the outer end of the adjacent edge 6—6^a. On each ledge 5—5^a is mounted a short bar as 30—30^a having a slot 31—31^a formed longitudinally therein, the bar being held in place on its ledge by a screw as 32—32^a passing through the slot and into the block 4. By means of this arrangement the bars 30—30^a may be moved forwardly or backwardly on plate 1 as desired.

On racks 20 is mounted a vertical frame 33 carrying a sheet metal element 34 provided with an opening 35 near its lower edge. A slot 36 is formed in the inner side of the base member 37 of this frame, and a catch 38 is pivotally mounted in the top member 39 as at 40. At 41 is a spring member mounted on the rear end of frame 33 and carrying a pin 42 which passes through frame 33 to form a stop for the lead screen 43 positioned therein. The lead screen is provided with an opening 44 to define the area of the photograph.

On racks 21 is mounted a similar frame structure designated by similar numerals followed by the letter "a".

The sagittal plane of the head 45 placed between these frames is indicated at 46, and the two frames are equally spaced therefrom, the two frames converging toward their forward ends at an angle of substantially twenty degrees. This angular relation between the two frames remains constant, of course, during all adjustments of the frames.

The tube holder used consists of a flat bar 47 so proportioned as to slide freely in the slot 14^a when moved backwardly in a horizontal plane, and in the notches 29—29^a when properly aligned therewith and moved vertically.

On bar 47 is mounted a block 48 having a tubular element 49 mounted thereon at a predetermined angle to a horizontal plane, in the present case three and one-eighth degrees. This element 49 is open at its forward end and has a small opening 50 at its rear end and in axial alignment therewith, and carries a Coolidge tube 51 by means of brackets 52 and 53 respectively. Bracket

52 is split as at 54 to permit placing or removal of the tube, and is normally held together by bolts 55.

In using this device the patient's head is positioned face upwards between the two frames 33—33^a with its sagittal plane at right angles to the plane of base plate 1. The head is given the desired elevation by means of one or more plates 56 inserted thereunder and the frames are moved toward each other to embrace the head by operating handle 27, thereby fixing the head in the desired position.

Assuming that the right mastoid is to be photographed first, a lead screen as 43 provided with opening 44 is placed in the right frame and held in position by catch 42. This screen is so formed and positioned that the right mastoid is visible through the opening 44. The cassette 57 carrying the photographic plate is now placed in the frame with its lower edge in slot 36^a and held snugly against the screen 43 by means of the clip or catch 38 which is turned into the position indicated at 60 for that purpose.

The first exposure is now made with the bar 47 of the tube holder resting flat on base 1 and bearing against edge 6^a of block 4 and with its forward end bearing in the opposite direction against finger 12 on stop 9.

To secure the second photograph of the right mastoid the first cassette is removed and a second one substituted therefor. With the bar 47 still engaging the parts 6^a and 12 its outer ends is raised so that the said bar engages notch 29^a in strap 13^a and the sliding bar 30^a is then moved forwardly thereunder to act as a support therefor. These parts are all so proportioned that the tube 51 moves in a vertical plane a distance of substantially two and one-half inches, the average spacing between the human eyes. In this position the second exposure is made, and the cassette is then removed. In Figure 2 the parts are shown as positioned for making the first exposure with the bar 47 resting on plate 1—2^a, the center of the Coolidge tube 51 and the angular position of the tube 49 being indicated by the short line 58. The position of the tube for making the second exposure is indicated by the short line 59.

To secure corresponding photographs of the left mastoid the bar 47 is now lowered again onto the base plate 1 and then swung around backwardly and to the right through slot 14^a until its forward end engages finger 12^a on stop 9^a and its edge engages the bevelled edge 6 of block 4. The lead screen 43 is now transferred to the left frame 33^a and the second cassette used in photographing the right mastoid placed in position therein. An exposure is now made, and then the tube is raised until bar 47 engages slot 29 where-

upon the bar 30 is moved into the position shown in dotted lines to support the bar in this raised position and the plate changed and an exposure made upon the first plate
5 used in photographing the right mastoid.

If the patient's head has been properly placed in the device it will now be found that stereoscopic plates have now been secured of both right and left mastoid processes that are perfectly symmetrical and accurate in every detail.

The slot 8 merely provides a guide for the forward end of bar 47 so that when the tube is swung from one side to the other
15 the said forward end will readily move from its seat in one stop 9 or 9^a to the other.

It is to be understood, of course, that while I have herein shown and described but one embodiment of my invention, changes in
20 form, construction and method of operation may be made within the scope of the appended claims.

I claim:—

1. A device of the character described
25 comprising a clamp for the human head, photographic plate holding means arranged in each jaw of said clamp, and an X-ray tube holder operatively positioned relative to said plate holders.

30 2. A device of the character described comprising a pair of photographic plate holders, means for supporting the same in symmetrical relation to the sagittal plane of a head placed therebetween, and an X-ray
35 tube holder operatively mounted relative to said plate holders.

40 3. A device of the character described comprising a pair of photographic plate holders, means for supporting the same in symmetrical relation to the sagittal plane of a head placed therebetween, and means for supporting an X-ray tube in operative rela-

tion to either holder on the side of said sagittal plane remote from the holder in conjunction with which it is to be used.

45 4. A device of the character described comprising a pair of photographic plate holders, means for supporting the same in symmetrical relation to the sagittal plane of a head placed therebetween, and an X-ray
50 tube holder operatively mounted relative to said plate holders and movable in a plane at right angles to the planes of said holders.

55 5. A device of the character described comprising a pair of photographic plate holders, means for supporting the same in symmetrical relation to the sagittal plane of a head placed therebetween, and an X-ray
60 tube holder mounted in operative relation to said plate holders and vertically adjustable relative to a plane intersecting said sagittal plane at right angles.

65 6. A device of the character described comprising a pair of photographic plate holders, means for supporting the same in symmetrical relation to the sagittal plane of a head placed therebetween, and an X-ray
70 tube holder operatively mounted relative to said plate holders and adjustable in two planes, one plane of adjustment intersecting said sagittal plane at right angles, and the other plane intersecting said last mentioned plane at right angles.

75 7. A device of the character described comprising a pair of photographic plate holders, means for supporting the same in symmetrical relation to the sagittal plane of a head placed therebetween and at right
80 angles to a plane intersecting said sagittal plane at right angles, and an X-ray tube holder operatively mounted relative to said plate holders.

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