April 23, 1963 R. J. EVELAND 3,087,059

X-RAY DECUBITUS TABLE

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Fig. 1.

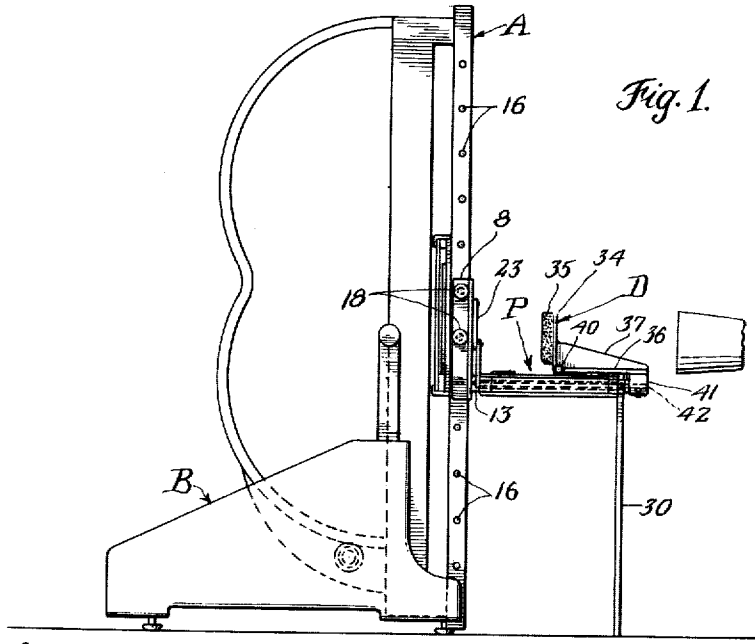
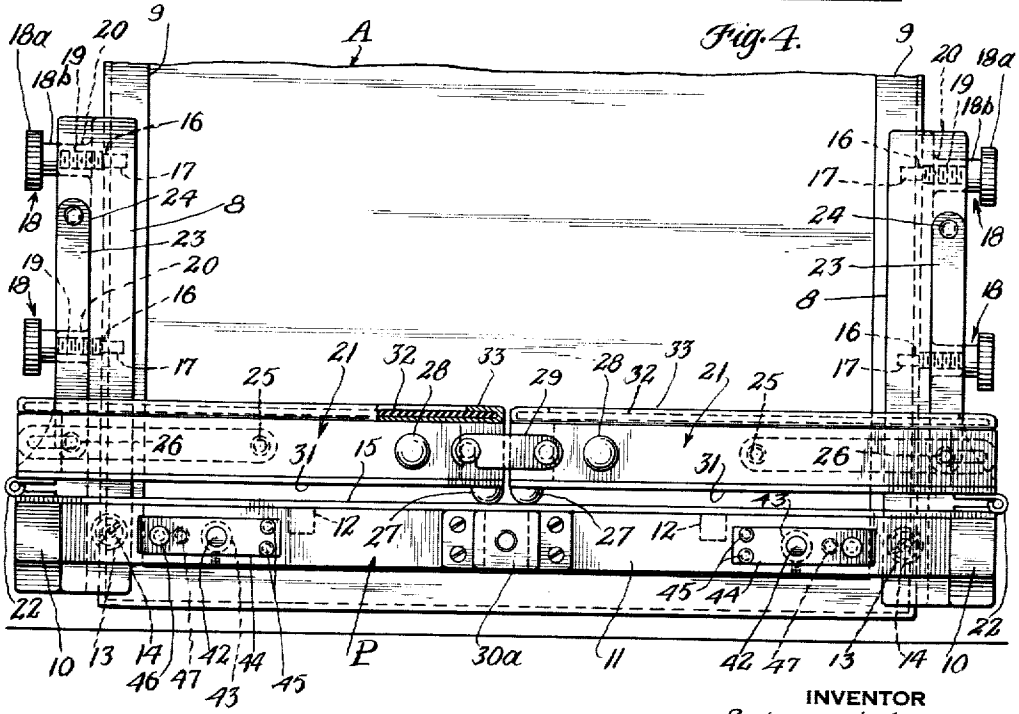


Fig. 4.



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Fig. 2.

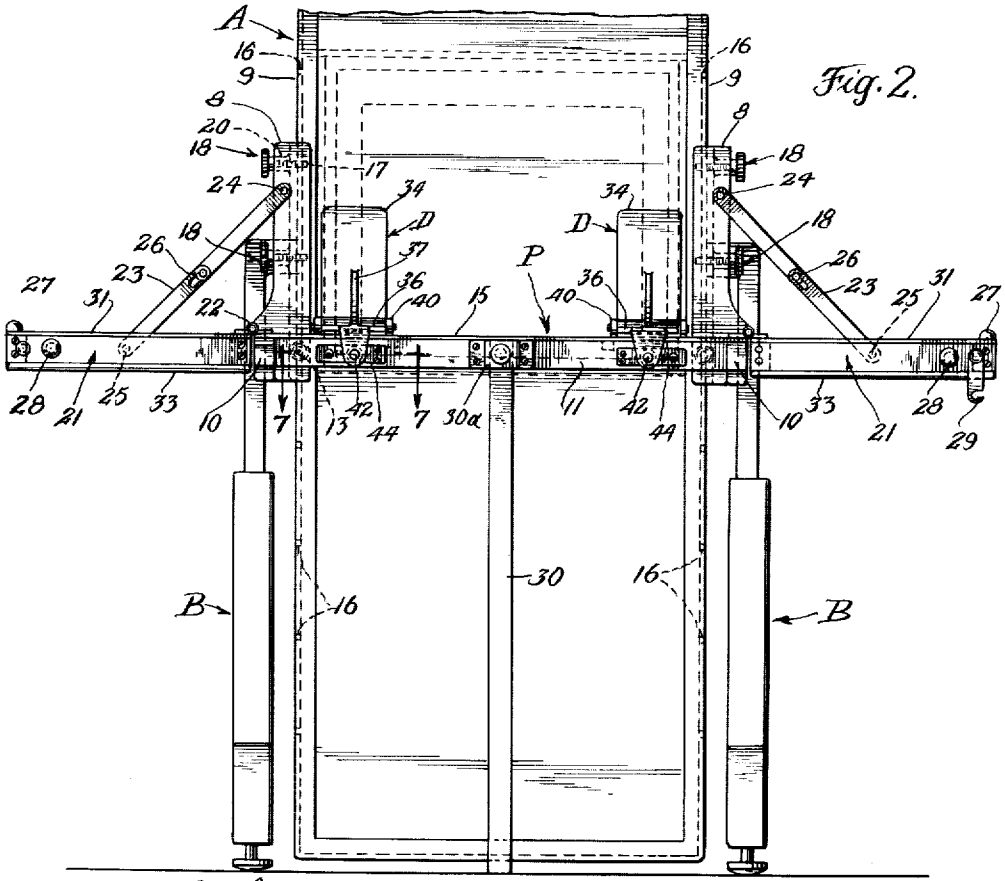
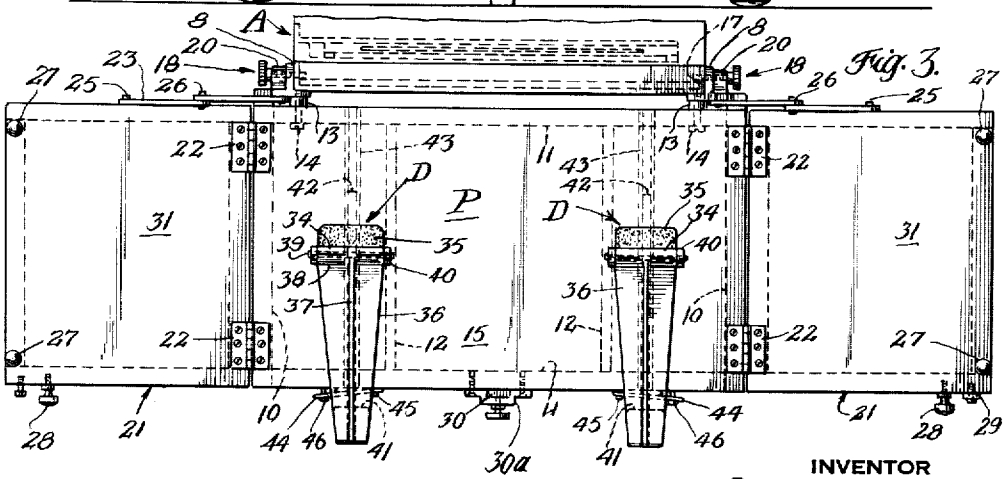


Fig. 3.



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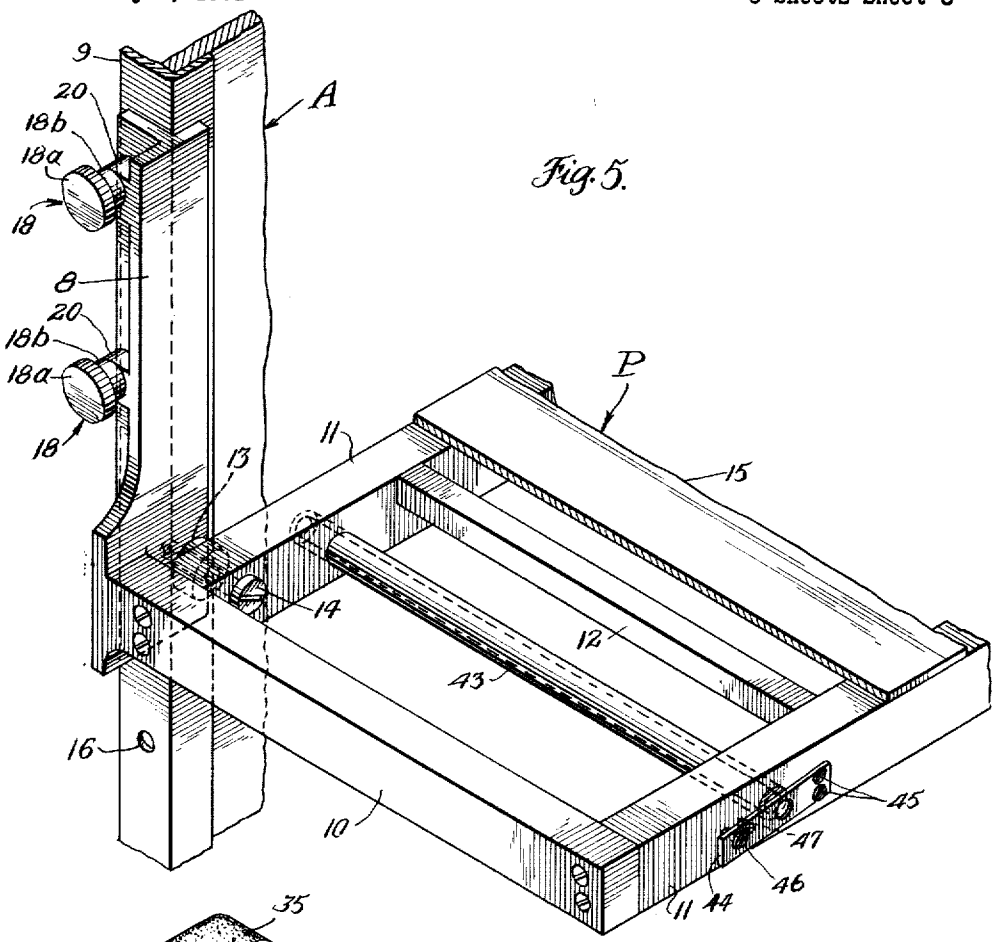


Fig. 5.

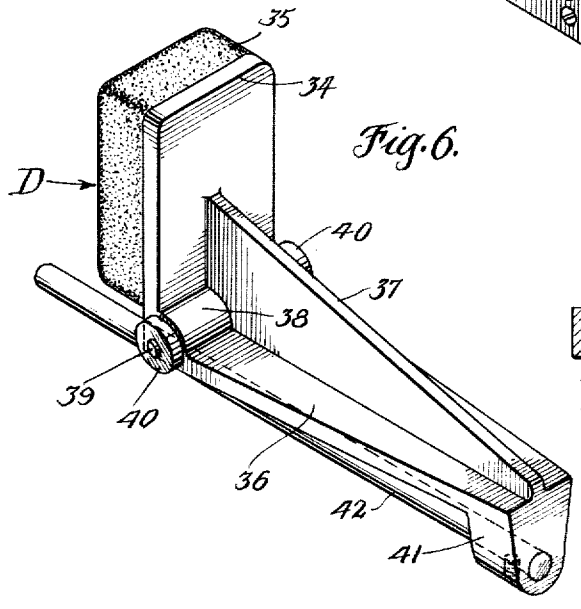
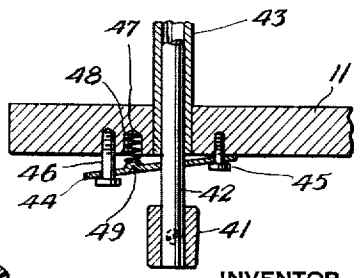


Fig. 6.

Fig. 7.



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X-RAY DECUBITUS TABLE

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9 Claims. (Cl. 250—55)

My invention relates to an attachment or accessory for X-ray tables and more particularly to an easily removable accessory which in one position will serve as an adjustable platform for supporting a patient in a position lengthwise of the X-ray table when it is in a vertical position or tilted from the vertical and in another position will serve to support the patient at a right angle to or crosswise of the table with the table in vertical position.

This latter position is provided to enable the radiologist to make what is called a lateral decubitus study of the patient. For an exposure of this character, the patient must be in a horizontal position lying on his side in order to determine, for example, the fluid or air level in the body.

Heretofore, it has been the practice to place the patient on a stretcher which is rolled to the front of the vertically positioned table with the patient in the decubitus position and remaining on the stretcher while the X-ray exposure is made. This procedure, however, has several disadvantages among which are the difficulty of preventing movement of the stretcher when the patient is moved against the table. There is the further danger that the patient will accidentally fall between the table and the stretcher or push the stretcher away from the table. There is also difficulty of immobilizing the patient on the stretcher against the X-ray table when the X-ray film is being exposed.

It is the primary object of my invention to provide an easily adjustable detachable platform or table which can be used with the conventional X-ray tilt table which will overcome the foregoing objections when a lateral decubitus study is to be made and which will also serve as a platform or foot rest on which the patient can stand or bear against when a study of the patient in a vertical or tilted position is desired.

It is a further object of my invention to provide simple and easily adjustable compression devices which can be securely locked in position on the platform to hold the patient immobilized against the X-ray table in the lateral decubitus position without danger of falling and yet be easily and quickly removable for the comfort of the patient.

I have illustrated my invention as applied to an X-ray table of standard dimensions which is easily tiltable from the horizontal position through any angular position to the vertical. The particular table illustrated is known as the Keleket Supertilt Table, but my invention is equally applicable to other conventional X-ray tables.

In the drawings:

FIGURE 1 is a side elevational view of an X-ray tilt table in vertical position with my adjustable platform associated therewith.

FIGURE 2 is an enlarged front elevational view of the adjustable platform applied to the X-ray table.

FIGURE 3 is a plan view of FIGURE 2.

FIGURE 4 is an enlarged view showing the adjustable platform in its lowermost position with the wings or leaves folded in to provide a platform on which the patient can stand in vertical position.

FIGURE 5 is a fragmentary isometric view of one of the platform brackets and associated frame structure.

FIGURE 6 is an isometric view of one of the compression devices; and

FIGURE 7 is a section on the line 7—7 of FIGURE 2 showing the lock plate of a compression device.

Referring to FIGURE 1 of the drawings, the X-ray tilt table A is mounted on the base B for tilting movement between a horizontal and vertical position. An X-ray tube which is vertically adjustable is indicated to the right of the X-ray table and in FIGURE 1 would be adjusted to a position to make an X-ray photograph of a patient lying on the platform which is generally indicated by the reference letter P.

The X-ray table is provided with a space between the table top and the frame of the table which accommodates what is known as the potter bucky diaphragm, which is a device slid into the opening through the side of the X-ray table and is adjustable lengthwise thereof. The bucky accommodates a tray which carries a grid which consists of vertical lead strips to prevent diffusion of the X-rays and also carries the X-ray film. The grid is located between the X-ray film and the X-ray table top. The grid and film are indicated in dotted lines in FIGURE 2.

The platform comprises a frame consisting of a pair of supporting brackets **8** which are of general T-shape in cross section and are spaced apart to fit against the edge frame **9** of the table top with the leg and adjacent web portion of the T forming an angle portion in slidable contact with the frame as clearly seen in FIGURE 5. The brackets are sufficiently long to have extended contact with the table edges to give rigidity to the frame and prevent tilting of the platform.

Supporting arms **10** are formed integrally with the brackets and extend at right angles thereto outwardly from the table top. The supporting arms of the two brackets are connected by rectangular frame members **11, 11** which are secured to the inner and outer ends of the arms **10.** Bracing members **12, 12** also extend between the frame members **11** to provide rigidity to the frame.

The platform frame is spaced slightly away from the table top by means of spacing collars **13, 13** which are held in place by bolts **14** which extend between the rear frame member **11** and are threaded into the bracket **8.** These bolts **14** also provide further rigidity to the support of the frame members from the brackets.

The top of the platform is covered by a Bakelite plate **15** which rests on the frame members and completely covers the frame.

The edge frame of the table is provided at intervals with apertures **16** which are spaced to receive the projecting end portions **17** of locking bolts **18** which are screwed into threaded holes **19** in lugs **20** of the brackets. The locking bolts are provided with knurled heads **18*a*** having shouldered portions **18*b*** which bear against the lugs **20** of the brackets when the bolts are tightened. Screwing of the bolts tightly against the lugs **20** securely locks the platform B to the table A in selected adjusted position.

As will be best seen in FIGURES 2, 3 and 4, the platform P is provided with wings or leaves **21** which are connected to the platform by means of hinges **22** which will permit the wings to be swung outwardly from the position shown in FIGURE 4 to the position shown in FIGURE 3 with the X-ray table in vertical position. When the wings **21** are swung outwardly they are supported from the brackets by jointed strap members **23** which are pivotally connected to the upper portion of the brackets **8** at **24** and to the wings at **25.** The strap members are connected by a pin and slot connection indicated at **26** to permit the two parts of the strap to be folded to position shown in FIGURE 4 where they will not interfere with the use of the platform when the wings **21** are folded inward to rest on the platform.

The wings **21** are provided with rubber buttons **27** which rest on the Bakelite plate **15** of the platform when the wings are folded in. These buttons **27** support the inner

edges of the wings when in this position and their thickness is such that they will support the wings above the platform by the amount of space that the hinges **22** occupy. The wings are also provided with knobs **28** to aid in folding them and with a latch member **29** to lock the wings together in their folded in position.

Further support for the platform can be provided if desired by the leg **30** which will rest on the floor and fits into a strap **30***a* provided centrally of the platform at the outer edge thereof.

The wings **21** when in the extended position shown in FIGURES 2 and 3 have Bakelite top plates **31** which lie in the same horizontal plane as to plate **15** of the platform. When the wings **21** are folded to the position shown in FIGURE 4, the top portion of the wings are covered by rubber foot mats **32** held in frames **33** secured to frames of the wings.

When making X-ray decubitus studies of a patient the X-ray table will be turned to a vertical position and the platform P with the wings in extended position will be adjusted to standard hospital stretcher height (approximately 32 inches) for convenience of moving a patient from the stretcher to the platform. When the patient has been moved to the platform and is resting on his side against the X-ray table two of the compression devices D illustrated in FIGURE 6 are applied to the platform to press the body of the patient against the X-ray table top and immobilize the patient in this position while the X-ray exposures are made.

These compression devices consist of an angular member having a vertical pad supporting face **34** to which a sponge rubber pad **35** is secured. An arm **36** extends at right angles from the lower end of the face **34** and this arm **36** carries a rib **37** on its upper surface which engages and braces the face **34**. A tubular bearing **38** is formed at the juncture of the face and arm to support the spindle **39** which carries rollers **40** which are adapted to engage the top surface of the X-ray table. At the end of the arm **36** there is a depending lug **41** which is apertured to receive the rod **42** which is secured to the lug in a position parallel to, but spaced from the lower surface of the arm **36**.

When the patient has been placed in position on the platform, the rods **42** of the compression members are inserted in the tubular guide members **43** which extend through the front and rear frame members **11** of the platform and are moved inwardly until the pads **35** come into contact with the body of the patient. The compression devices can be held in any desired position of adjustment by means of the spring loaded lock plates at the outer ends of the tubular members **43** through which the rods **42** pass when they are inserted in the tubes **43**. These lock plates consist of an apertured plate **44** which is loosely secured at one end to the frame member **11** by means of the screws **45**. The other end of the plate is apertured to receive the guide member **46** which is also screwed into the frame member **11**. A spring **47** is inserted in a recess **48** in the frame member **11** and this spring bears against a knob **49** on the plate to hold the free end of the plate away from the frame.

To insert the rod **42** in the tubular guide member **43**, the free end of the lock plate is depressed and the rod will readily slide through the plate into the tubular member **43**. Upon release of the lock plate the spring **47** will force the free end outwardly and the edge of the hole in the lock plate will take a bite on the rod and hold it against any pressure from the patient against the pad **35**. The greater the pressure against the pad, the tighter the bite will be.

As will be observed in FIGURES 3 and 4, the compression devices are located near the ends of the platform in order to avoid interference with the exposure of the X-ray film to the X-rays. When the X-ray exposures have been made the compression devices can be removed quickly

by depressing the free ends of the spring plates **44** and withdrawing the rods **42** from the tubes.

When the platform **40** is removed from the table, the wings are folded in and the locking bolts **18** are unscrewed to withdraw the projecting end portions **17** of the bolts from the apertures **16** in the edge frame of the table. In this condition a very compact package is provided for storage or carrying.

From the above description, it will be apparent that I have provided a versatile attachment for X-ray tables which can be quickly adjusted to support a patient in standing position at any desired elevation, which will serve as a foot rest when the table is in tilted position, which can be quickly converted to a decubitus study platform when required and can be quickly removed from the table when not needed.

I claim:

1. An accessory for an X-ray table comprising a platform positioned generally perpendicular to the table, means to secure said platform to the table in said perpendicular position and in various positions of adjustment lengthwise of the table, said platform comprising a plurality of relatively collapsible and extensible members providing in extended condition for the support of a patient crosswise of the table and providing in collapsed condition for the support of a patient lengthwise of the table.

2. An accessory for an X-ray table comprising a platform positioned generally perpendicular to the table, means to secure said platform to the table in said perpendicular position and in various positions of adjustment lengthwise of the table, said platform comprising a plurality of relatively collapsible and extensible members providing in extended condition for the support of a patient crosswise of the table and providing in collapsed condition for the support of a patient lengthwise of the table, and compression means associated with the platform to hold the patient in position against the table.

3. An accessory for an X-ray table comprising a platform positioned generally perpendicular to the table, means to secure said platform to the table in said perpendicular position and in various positions of adjustment lengthwise of the table, said platform comprising a plurality of relatively collapsible and extensible members providing in extended condition for the support of a patient crosswise of the table and providing in collapsed condition for the support of a patient lengthwise of the table, compression means slidably mounted on said platform to move toward and away from the X-ray table to hold the patient in position against the table and releasable means to hold said compression means in various positions of adjustment.

4. An accessory for an X-ray table comprising a longitudinally movable platform mounted on the table substantially perpendicular to the table top, means to secure said platform to the table in said perpendicular position in various positions of adjustment lengthwise of the table, said platform comprising a central member having wings associated therewith, said wings being laterally movable to form extensions of the said platform for support of a patient crosswise of the table and means to support said wings in extended position.

5. An accessory for an X-ray table comprising a longitudinally movable platform mounted on the table substantially perpendicular to the table top, means to secure said platform to the table in said perpendicular position in various positions of adjustment lengthwise of the table, said platform comprising a central member having wings associated therewith, said wings being laterally movable to form extensions of said platform for support of a patient crosswise of the table, means to support said wings in extended position, and compression means associated with the platform to hold the patient in position against the table.

6. An accessory for an X-ray table comprising a longitudinally movable platform mounted on the table substantially perpendicular to the table top, means to secure said platform to the table in said perpendicular position in various positions of adjustment lengthwise of the table, said platform comprising a central member having wings associated therewith, said wings being laterally movable to form extensions of said platform for support of a patient crosswise of the table, means to support said wings in extended position, compression means slidably mounted on said platform to move toward and away from the X-ray table to hold the patient in position against the table and releasable means to hold said compression means in various positions of adjustment.

7. An accessory for an X-ray table comprising a platform, a frame for said platform having supporting brackets adapted to engage the side edges of the table and support the platform in generally perpendicular relation to the table top, means to secure said brackets to the table in various positions lengthwise of the table, a wing hinged to either side of said platform, said wings being adapted to be swung outwardly to form extensions in the same plane as the platform on either side thereof and means to support said wings in extended position from said brackets.

8. An accessory for an X-ray table comprising a platform having supporting brackets adapted to engage the side edges of the table and support the platform in generally perpendicular relation to the table top, means to secure

said brackets to the table in various positions lengthwise of the table, a wing hinged to either side of said platform, said wings being adapted to be swung outwardly to form extensions in the same plane as the platform on either side thereof, means to support said wings in extended position from said brackets, compression means slidably mounted on said platform to move toward and away from the X-ray table and releasable means to hold said compression means in various positions of adjustment.

9. An accessory for an X-ray table for support of a patient in position for a decubitus study comprising a platform positioned generally perpendicular to the table, supporting brackets for said platform, means for detachably securing said brackets to the X-ray table, compression means slidably mounted on said platform to move toward and away from the X-ray table to hold the patient in position against the table and means to hold said compression means in various positions of adjustment.

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