Jan. 5, 1960 W. R. MULLER ET AL 2,919,625

ADJUSTABLE PLATE HOLDER AND SUPPORT THEREOF

Filed May 10, 1954

FIG. 1

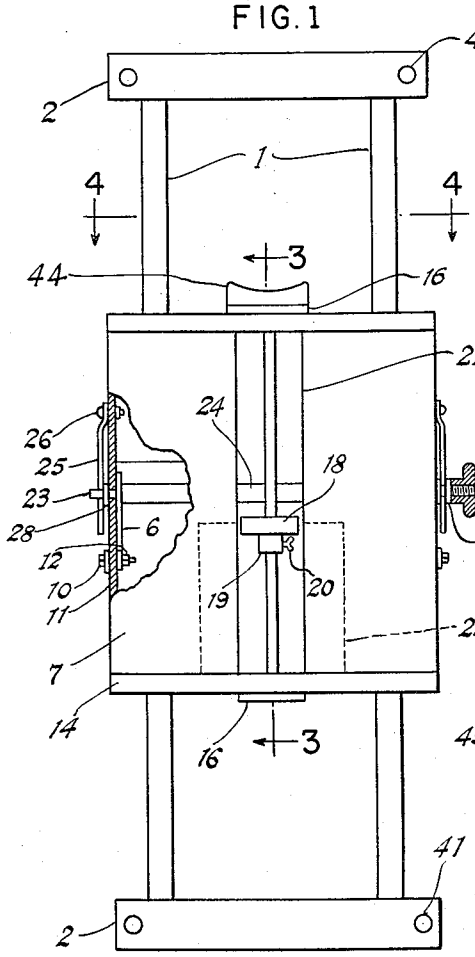


FIG. 5

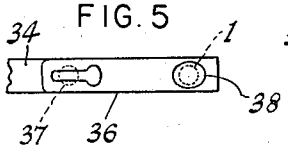
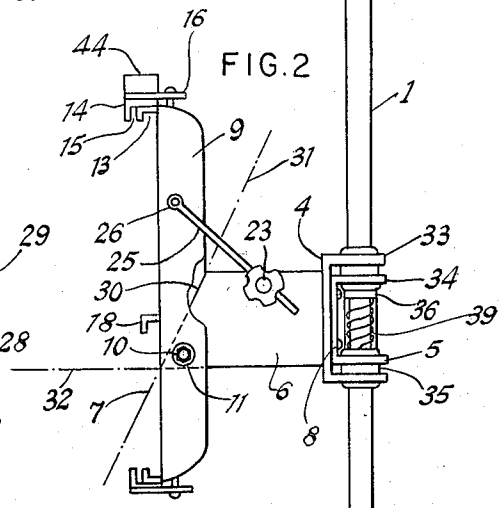


FIG. 2



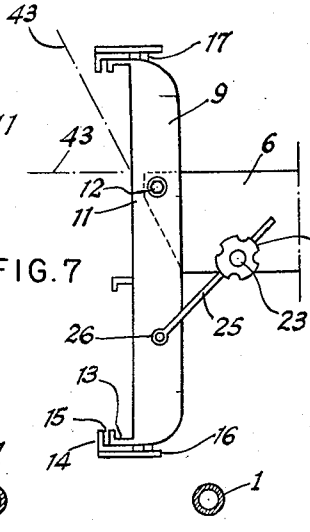


FIG. 7

FIG. 3

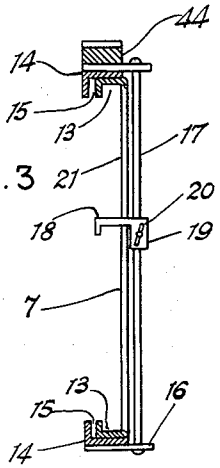


FIG. 6

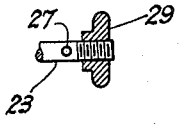
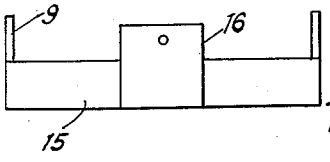


FIG. 4



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ADJUSTABLE PLATE HOLDER AND SUPPORT THEREOF

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1 Claim. (Cl. 88—24)

Our invention is an improved holder for a light-sensitive film or plate to permit the taking of X-ray photographs of parts of the interior of the human body or other objects for which such photographs may be needed.

An important object of this invention is to provide a holder in which films or plates of different sizes can be quickly secured for exposure in the required manner.

Another object is to provide a holder than can readily be disposed above or below the subject, and tilted and held at an angle within a predetermined range; the holder being mounted so that it can easily be adjusted and held in the position desired.

A further object is to provide a plate holder and a carriage therefor which can be moved in unison with the holder, and having means for pivotally connecting the holder to the carriage so that the holder can be set to face in the direction best suited to give a full and clear image on the plate attached to the holder.

Other objects are set forth in the ensuing description and the characteristics of the invention are defined in the claim. The drawings illustrate one or more embodiments of the device, but changes in minor respects may be adopted without deviation from the general design in which the invention resides.

On the drawings:

Figure 1 is a front view of a holder and its support, according to this invention.

Figure 2 is a side elevation thereof.

Figure 3 is a vertical section on line 3—3 of Figure 1, showing the holding panel for the photographic plate.

Figure 4 is a horizontal section on line 4—4 of Figure 1, showing only the holding rack or panel.

Figures 5 and 6 show details; and

Figure 7 is a side view of part of a modified form of the invention.

The support has the shape of a frame to be mounted in vertical position. It comprises parallel upright members or posts **1**, preferably tubular, united at both ends to channel-shaped cross bars **2**, by screws **3**, or other means, at points on the line along the middle of each bar **2**. The upper bar is open on top and the lower bar is open along the bottom. The support also comprises a channel-shaped transverse member **4** slidably mounted on the posts **1**, and another smaller transverse channel-shaped member **5** within and back of the member **4**. Between their upper and lower edges these members are parallel to the plane of the posts **1**, and to the front face of the member **4** are affixed two vertical projecting plates **6** on which the holding panel **7** is pivotally mounted. The members **4** and **5** are of the same length crosswise of the posts **1**, with flush ends, and one plate **6** is at each end, also flush and held fast by screws **8** that pass through both members **4** and **5**. The panel **7** is flat with a rib or flange **9** at each side extending towards the member **4** and overlapping the plates **6**, as shown in Figure 1, and it is attached to the plates **6** near their lower outer corners by alined bolts **10**, washers **11** and nuts **12**. Hence the holder can be tilted on the

bolts **10** into various adjusted positions. The members **4** and **5** and plates **6** form a slidable carriage for the panel **7**.

The upper and lower edges of the panel or rack **7** are bent forward and over to present transverse grooves or channels **13** facing each other, and along each of said edges extends a relatively wide strip **14**, with one edge projecting from the front face of the panel and bent over parallel to said face to make a second groove **15** along the outer side of the adjacent groove **13**. Upon the middle of each strip **14** is laid a small flat plate **16** that projects to the rear face of the plate holder **7**, and between the plates **16** extends a vertical guide rod **17**, secured to the plates **16** by screws or other means at its ends. On the guide rod is a retaining member **18**, having a boss **19** through which the rod **17** passes. The member **18** can slide up and down on the rod **17** and the boss **19** is equipped with a binding screw **20**. The body of the part **18** has the form of a flat plate, and it projects through a vertical slot **21** in the middle of the holder **7** into the vertical plane of the grooves **13**. The front edge is bent down as shown in Figure 3, in the plane of the grooves **13**. A full-size cassette bearing a sensitive plate can be disposed in the grooves **13** by slipping it into the open ends of the grooves, or a smaller one, as indicated at **22**, can be put in the lower groove **13** and secured by the retaining clip **18**. The outer grooves **15** are for the usual grid, which can be of one and the same size for all cassettes.

The projecting plates **6** carry a transverse bar **23** near their upper edges about midway between the panel **7** and member **4**. Between the plates **6** this bar is enveloped by a tubular sleeve **24** abutting the plates **6**. The extremities of the bar **23** protrude through openings in the plates **6** and the extremities have transverse apertures **27** extending in the same direction adjacent the outer faces of the plates **6**. Through these openings pass slidable rods **25**, with their front ends pivotally attached to the flanges **9** or the rack **7** by bolts and nuts indicated at **26**. Between one rod and the adjacent flange **8** is a washer **28**, and on the other end of the bar are similar washers **28** with the other rod **25** between them. This other end is threaded to receive a locking knob **29**. When this knob is loose the holder can be titled, the rods then sliding through the ends of the bar, and when it is screwed tight on the bar and rods **25** are held fast the holder is maintained at the desired angle. The front edges of the plates are inclined down from the tops, as shown at **30** in Figure 2, and the panel can be swung back to the dot and dash line **31**, or forward and made to face downward along the dot-and-dash line **32**. The last position is required for an X-ray photo of an individual who is prostrate.

The two members **4** and **5** have horizontal flanges **33** and **34** extending backward past the posts **1**. Each pair of such flanges is united by two tubular bosses **35**, surrounding the posts **1**. The bosses contain anti-friction elements in loop-shaped raceways, extending vertically, so that the members **4** and **5** can easily be moved up and down on the posts **1**. Such ball bearings are well known and are not part of this invention but are used in the assembly of the parts.

The carriage including the members **4** and **5**, with the holder **7** are held in high or low position on the posts **1** by a releasable catch **36** movably secured by a pin **37** in a slot at one end to one flange **34** of the member **5** between the posts **1**. At its opposite end the catch has an opening **38** through which one of the posts **1** passes, the opening **38** being larger than the diameter of the post. This rod is encircled by a spring **39** which forces the catch along said post and binds the catch fast to the post. In this position the members **4** and **5** and plate **7**

are held stationary on the posts **1**. By pressure on the catch **36** and compression of the spring **38**, the catch is released from said post **1**.

The edges of both channel bars **2** are bent over inward as indicated at **40**. Both the front and rear sides of these bars have openings **41** for screws to affix the frame to a wall, beams or other surface. The holes are alined so that a tool can be inserted through one side of these bars to engage screws at the other side and tighten them. The entire structure can of course be affixed to a movable framework or standard, with rollers, so that it can be pushed about as needed.

In Figure 7, the plates **6** are illustrated with front edges inclined in the opposite direction, or down and back, and the panel is pivoted by means of bolts **12** near the front upper corners. The bar **23** spans the plates **6** near their lower edges. Otherwise the design is the same. With the changes mentioned the panel can be swung so that its front face can be inclined down along the dot-and-dash line **42**, or to horizontal position along the dot-and-dash line **43** facing upward, so that the panel can be moved beneath a cot or stretcher for an exposure below the patient if required. The member **4** has a chin rest **44** on top.

From the above description it will be apparent that the invention is simple and easy to produce and well adapted to serve all its intended purposes.

Having described our invention, what we believe to be new is:

In a plate or film holding device, the combination of a pair of upright parallel posts, a carriage comprising a pair of channel-shaped members, one within the other,

said members having flanges along their edges all bent towards one side, said members being apertured and slidably engaging said posts, bearings connecting said flanges and encircling said posts, a plate projecting from the opposite side of the carriage at each end, a plate holding rack having flanges at each side overlapping the outer faces of said plates, pivot bolts engaging said plates and said flanges, a transverse bar mounted in said plates between the rack and the carriage, the ends of the bar protruding from the plates and having transverse openings, a rod pivotally attached to each flange on the rack and slidably received in one of said openings, one end of each bar being threaded, and a rotatable knob on said threaded end, an apertured catch being mounted on the inner channel member and engaging one of said posts, said plate holding rack having portions along the bottom and top edges, forming grooves presented towards each other and adapted to receive the plate or film and hold the same removably in position on said rack.

References Cited in the file of this patent

UNITED STATES PATENTS

1,113,549	Franke	Oct. 13, 1914
1,449,970	Bucky	Mar. 27, 1923
1,847,010	Koppe	Feb. 23, 1932
1,997,557	Buck	Apr. 9, 1935
2,060,351	Simjian	Nov. 10, 1936
2,150,974	Huebner	Mar. 21, 1939
2,350,831	Schubert et al.	June 6, 1944
2,352,221	Phillips	June 27, 1944
2,368,970	Cook	Feb. 6, 1945
2,441,843	Raiff et al.	May 18, 1948