June 22, 1954 D. R. LIMBACH 2,681,839

PATIENT SUPPORTING AND TRANSPORTING DEVICE IN COMBINATION WITH AN X-RAY TABLE OR THE LIKE

Filed May 4, 1953 2 Sheets-Sheet 1

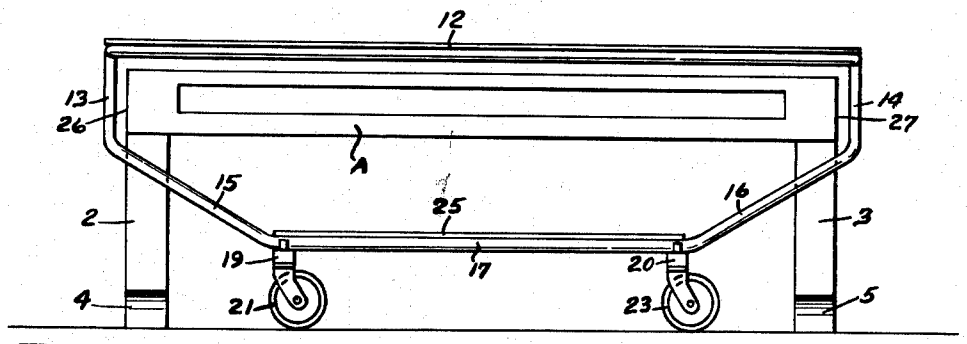


Fig. 1

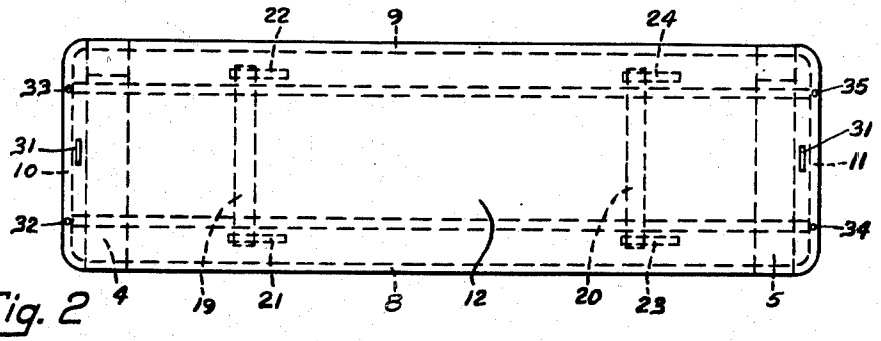


Fig. 2

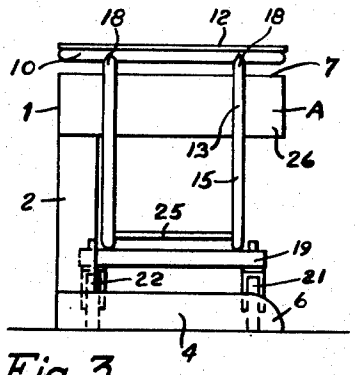


Fig. 3

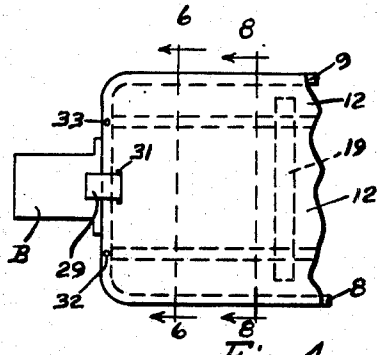


Fig. 4

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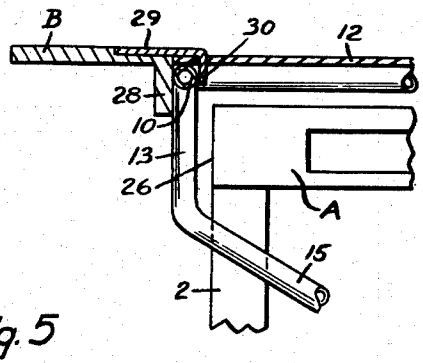


Fig. 5

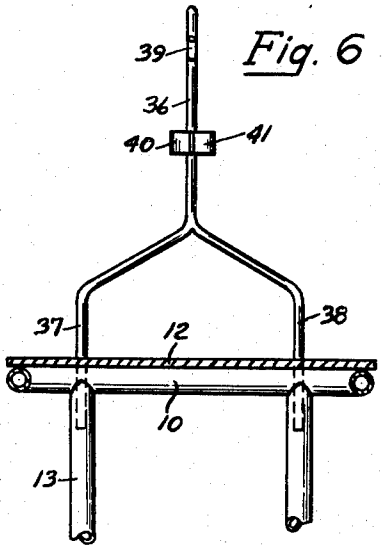


Fig. 6

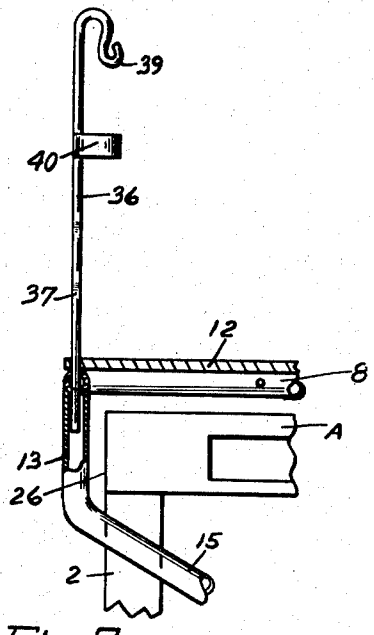


Fig. 7

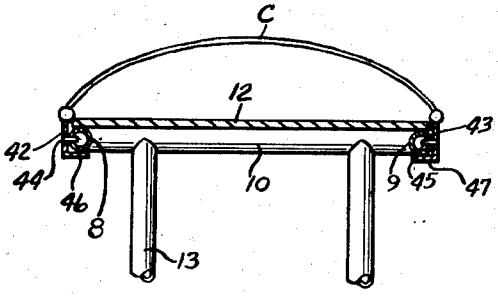


Fig. 8

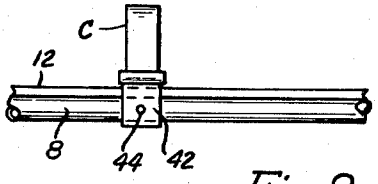


Fig. 9

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PATIENT SUPPORTING AND TRANSPORTING DEVICE IN COMBINATION WITH AN X-RAY TABLE OR THE LIKE

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Application May 4, 1953, Serial No. 352,736

2 Claims. (Cl. 311—2)

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In respect to many patients brought to a hospital or a similar institution it is necessary to take X-ray pictures. In a great many instances a number or series of X-ray pictures must be taken and there is a time interval between the taking of the pictures. Each time a picture is taken it is now the practice to remove the patient from his bed to a stretcher and carry him to the X-ray room where he is removed from the stretcher onto the X-ray table. It is not at all unusual to move a patient from a bed to a stretcher and then to an X-ray table as many as eight to ten times in order to perfect the X-ray to enable a diagnosis. If, as in a great many cases, the patient is ill or seriously injured the necessity of repeated movements of the patient from his bed to a stretcher to the X-ray table and then back to the stretcher and to his bed is very disturbing and even dangerous to the patient and can be very detrimental to his recovery.

The present invention relates to a novel combination between a patient-supporting and transporting device in combination with an X-ray table or the like to eliminate the above referred to repeated disturbing movements of the patient during the obtaining of the necessary X-ray pictures.

For simplicity of description the patient-supporting and transporting device will be hereinafter referred to as a carrier and from the following description it will be seen that this carrier constitutes a temporary mobile bed for the patient so that the carrier serves both as a bed and a stretcher in place of the conventional bed and stretcher as now found in hospitals or similar institutions. The carrier likewise can also conveniently serve as a table for minor operations such as on the head and ventriculography.

The primary object of the invention is the provision of a novel and unique leg supporting arrangement for a conventional X-ray table and a patient carrier which cooperates therewith in a novel manner to make it possible to take X-ray pictures of the patient while he is supported or prone upon the carrier.

Another object of the invention is the provision of a carrier for the purpose described which is comparatively simple of construction yet highly efficient in the support and transportation of a patient and which has mobility and is easily maneuverable.

Another object of the invention is the provision of a carrier of the type described which has associated with it a removable support for the head of a patient.

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Another and still further object of the invention is the provision of a carrier of the type described having associated therewith a removable and optionally positionable support and holder for a fluid jar such as is used in intravenous feeding and in transfusion procedures.

A still further object of the invention is the provision of detachable and attachable compression restraining bands for securing the patient to the carrier.

Other advantages of the invention will be apparent from the following description when read in the light of the accompanying drawings which illustrate a construction embodying the inventive concept.

In the drawings:

Fig. 1 is a view in side elevation of the transporting device and the X-ray table.

Fig. 2 is a top plan view of Fig. 1.

Fig. 3 is a view in end elevation of Fig. 1.

Fig. 4 is a fragmentary top plan view of the transporting device with the head rest in place.

Fig. 5 is a fragmentary view in side elevation, a portion of the view being in longitudinal vertical section, showing the head rest in place on the transporting device and showing a portion of an end of the X-ray table.

Fig. 6 is a transverse vertical section on the line 6—6 of Fig. 4, looking in the direction indicated by arrows, showing the fluid jar support in place.

Fig. 7 is a fragmentary view in side elevation, a portion of the view being in longitudinal vertical section, of the transporting device with the fluid jar support in place and a portion of an end of the X-ray table.

Fig. 8 is a transverse sectional view of the transporting device on the line 8—8 of Fig. 4 looking in the direction indicated by arrows, showing a patient restraining band in place.

Fig. 9 is a fragmentary view in side elevation showing the attachment of a restraining band end to the transporting device frame.

Referring now to the drawings and utilizing like reference numerals and characters to designate similar parts, A designates an X-ray table which is conventional of construction aside from the legs by which it is supported. By the foregoing it is meant that the X-ray table is a standard table top containing the usual bucky and heavy metal frame.

Conventionally X-ray tables are supported upon four legs one of which is disposed at each of its corners, whereas in the present instance only a pair of legs is provided and one each of them

is positioned at the rear corners of the rear edge 1 of the X-ray table as designated at 2 and 3. Each of these legs is provided at its lower end with an elongated and forwardly extending horizontally disposed foot designated 4 and 5, respectively. Each foot is of substantially the same length as the width of the table and each at its front end is preferably rounded as at 6. The table is provided with a top 7 upon which, in conventional usage, the patient reclines during the period the X-ray picture or pictures are being taken. Inasmuch as the electrical components of an X-ray table are well known and form no part of the present invention, description and illustration of them is unnecessary and is not given. The important and vital factor respecting the X-ray table is the described manner of its support and any X-ray table irrespective of its particular components and specific manner of operation is suitable for the practice of the present invention.

The carrier is in general terms a rectangular shaped bed-like device supported upon wheels to make it mobile, but is constructed in a particular and specific manner to enable it to cooperate with the X-ray table so as to position the patient while on the carriage above the X-ray table so that X-ray pictures can be taken.

Specifically the carrier comprises a rectangular top frame which is preferably made of a continuous hollow tube or pipe which, for appearance and sanitation, is preferably chromed. This frame has side elements 8 and 9 and end elements 10 and 11 and is covered by a top 12 which is suitably secured at its marginal edges to the elements making up the top frame. This top is composed of radiolucent material so that no shadow is cast on the X-ray film from either the overhead or floor-mounted X-ray tubes. There is a supporting frame for the top frame and this is composed in part of a pair of tubes each of which comprises at each end of the carriage a vertical leg designated 13 and 14 respectively. Each vertical leg at its lower end is bent or shaped to extend inwardly and downwardly as at 15 and 16 and the lower ends of these inclined leg portions are interconnected by a horizontally disposed bottom or base leg 17.

By reference to Fig. 3 it will be seen that the upper ends 18 of the vertical legs 13 and 14 are secured to the end top frame members 10 and 11 at a point inward of the ends thereof at a distance slightly greater than the width or thickness of the X-ray table supporting legs 2 and 3. It is to be further noted that the lengths of the vertical frame legs 13 and 14 are slightly greater than the depth or thickness of the X-ray table.

The opposite ends of the horizontal or base carrier frame leg 17 are interconnected by cross braces or ties 19 and 20. A caster mounted floor or ground engaging wheel is mounted in the end of each cross brace or tie, as indicated at 21, 22, 23 and 24. A tray or shelf 25 is preferably, although not necessarily, positioned above and supported upon the carrier base legs 17.

From the description thus far given it will be seen that the patient can be placed upon the carrier top 12 and the carrier can be rolled into the position illustrated in Figs. 1 to 3 of the drawings and the patient will be disposed above and in spaced relationship to the X-ray table top 7 for the taking of such X-ray pictures as are deemed necessary. The patient can then be wheeled away on the carrier upon which he will remain until it is determined that no further X-ray pictures are necessary. As explained, additional and further X-ray pictures are ordinarily necessary and to obtain them the patient can, while on the carrier, be wheeled back and the carrier can be placed in proper position in respect to the X-ray table. In this manner repeated handling of the patient is obviated, which is highly desirable.

It will be seen that when the carrier and X-ray table are utilized in combination with one another the downwardly inclined and horizontal base legs of the carrier, including the carrier wheels, are disposed beneath the X-day table while the vertical end legs of the carrier are disposed outwardly beyond the ends 26 and 27 of the table.

The obliquely extending carrier leg construction is utilized so as to position the caster wheels toward the center of the carrier in respect to its length, which has been found to facilitate its maneuverability. It is to be understood that the particular point of attachment of the vertical legs of the carrier frame to the top of the frame and the particular length of the vertical legs of the carrier frame, could or would vary to correspond to the technique of the X-ray table, that is, in respect to the width of the table legs and the thickness or depth of the table. The length and width of the carrier can also be varied if necessary, but these particular dimensions of X-ray tables are pretty much standard, as is also the height of the tables. In use there would be some sag of the carrier top 12 due to the weight of the patient, but the construction is such that such distortion of the carrier frame or sag of its top is small and the carrier top 12 and the top carrier frame elements will remain in spaced relationship above the top 7 of the X-ray table.

An attachment for the carrier is illustrated in Figs. 4 and 5 and comprises a head rest B which is preferably in the form of a piece of grainless wood which has a down-turned inner end 28 which abuts and is held in abutment with the vertical carrier frame legs 13 and 14 by the board-carried bracket 29 which has its down-turned end 30 removably secured in the slot 31 which passes through the carrier top 12 immediately behind the carrier frame end leg 10. Ordinarily a sheet would be disposed upon the carrier top 12 before a patient is placed thereon and as the head board B lies in substantially the same plane as the carrier top, the patient can be pulled along the carrier top by the sheet until his head is upon the head rest for the taking of X-ray pictures of the skull.

In many instances the condition of the patient might be such that he would need transfusions or intravenous feeding, and to facilitate this an attachable and detachable bottle or jar holder is provided. At each of its ends the table top immediately above the vertical frame legs 13 and 14 is provided with passageways or holes 32, 33, 34 and 35 respectively and immediately therebeneath the top frame end legs or elements 10 and 11 are drilled to provide through passageways into the vertical frame legs. The jar holder is preferably constructed of tubular elements formed to provide a vertical upright or standard 36 the lower end of which is forked to provide legs 37 and 38 which

extend downwardly through the aforesaid holes in the ends of the carrier top, as clearly illustrated in Figs. 6 and 7. The liquid jars are ordinarily provided with bails and the upper end of the standard **36** is provided with a hook end **39** for the removable reception of the jar bail, and beneath the hook is provided with a pair of opposed resilient fingers **40** and **41** which resiliently encircle the jar to hold it against sway or being jarred into movement. Inasmuch as both ends of the carrier top are provided with means for reception of the jar holder, it can be selectively positioned at either end of the carrier.

Under some conditions it is necessary or desirable to strap the patient to the carrier top, and to this end a series of spaced attachable and removable compression bands are provided along the length of the carrier top. These are all of identical construction and illustration of one of them appears in Figs. 8 and 9, from which it will be seen that each compression band C has at each of its ends an L-shaped bracket element, as indicated at **42** and **43**, each of which is provided with a pin which is designated **44** and **45**. At proper spaced intervals along its length the side elements **8** and **9** of the top frame of the carrier is provided with openings for the reception of the pins **44** and **45**. From Fig. 8 it will be seen that when the bands are in position the lower legs **46** and **47** of the bracket elements lie at the under sides of the frame elements **8** and **9**.

From the description given it will be seen that there is no front or rear side in respect to the carrier as the construction is such that either side of the carrier top can be the leading side when the carrier is pushed into telescopic relationship with the X-ray table. This arrangement obviates the necessity of repositioning the patient as the position of the patient's head and feet in respect to the X-ray table top can be reversed by merely repositioning the carrier, that is, rotating it end for end, in respect to the X-ray table, such rotation occurring of course when the carrier is disassociated from the X-ray table.

Modification of the specific and precise construction described and illustrated in the drawings can be made without departing from the inventive concept, and the invention is accordingly to be limited only by the scope of the hereinafter following and appended claims.

What I claim is:

1. A device for use in X-ray examination of human patients in prone position comprising in combination, a substantially flat, elongated, substantially rectangular, radiolucent member of such proportion as to accommodate thereon a human patient in fully prone position, a wheeled frame movably supporting said radiolucent member in a horizontal plane, a table top adapted to support X-ray plates in a horizontal plane, a frame supporting said table top in such position that X-ray plates supported by said table top are maintained substantially parallel to and in close proximity to the underside of said radiolucent member during X-ray examination of patients on said radiolucent member, said frames characterized further in that they may be moved laterally relative to each other freely into and out of nested relation whereby said radiolucent member is moved laterally into and out of overlying relation with said table top.

2. A device as defined in claim 1 characterized further in that said table top is supported by said second named frame as a horizontally disposed laterally extending cantilever.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
357,074	Fee	Feb. 1, 1887
802,728	Amos	Oct. 24, 1905
1,233,292	Brown	July 10, 1917
1,273,599	Floyd	July 23, 1918
1,380,007	Osterberg	May 31, 1921
1,662,293	Bennett	Mar. 13, 1928
1,980,848	Cass	Nov. 13, 1934
2,014,244	Bramlett	Sept. 10, 1935
2,022,714	Gallup	Dec. 3, 1935
2,216,789	Scriven	Oct. 8, 1940
2,244,122	Scudder	June 3, 1941
2,319,589	Drinkwater	May 18, 1943
2,418,606	Smith	Apr. 8, 1947
2,542,963	Knox et al.	Feb. 20, 1951