PATIENT SUPPORT FOR FLUOROSCOPIC EXAMINATION

ABSTRACT: A patient support unit for fluoroscopic examination comprising a table of X-ray transparent material having a pair of guides at one end adapted to fit guideways of conventional hospital beds used to retain movable head and footboards and at least one leg at the opposite end to support the table in cooperation with the bed at a height equal to the elevation of the bed. The connection between the table and leg may be hinged so as to make the support unit foldable.
PATIENT SUPPORT FOR FLUOROSCOPIC EXAMINATION

Our invention relates to a patient support unit and, in particular, to a patient support usable during fluoroscopic examinations. X-ray examinations of patients in hospitals have typically involved removing a patient from his room and transporting him to the X-ray center of the hospital. Once at the center, the patient is removed from the bed and placed on special equipment usually integrated with the X-ray equipment.

While this is yet the routine manner of providing X-ray examinations in hospitals, it is extremely dangerous to a specialized class of patients who are not permitted to be moved. The specialized class of patients range from cardiac problems to seriously injured persons. Common to this class is the fact that they cannot be moved and require intensive care. Most of them are confined to intensive care units which are physically small and commonly include electronic monitoring units and lift support equipment. The intensive care units often comprise cubicles, each of which is just large enough to house a patient with room enough to permit the hospital staff to move in and out to render aid. A patient confined to one of these units becomes, in effect, a part of the unit itself by way of connection of electronic monitoring electrodes affixed to the body as well as connections for life supporting equipment such as oxygen, plasma, etc.

Many patients require X-ray examinations, for example coronary, thoracic and angiographic diagnosis, but cannot withstand movement which is part of the normal hospital procedure. The development of portable fluoroscopic X-rays has made it possible to employ X-ray equipment at the patient's bed. Fluoroscopic examination cannot, however, be carried out on a conventional hospital bed because the metal therein creates shadows and interferes with the pictures obtained.

Solutions to the problem have been proposed which include special beds that permit the mattress and support to be pivoted on from the frame to swing an end of the mattress outward. That end is supported and the X-ray equipment placed thereover. This solution has not proved entirely satisfactory, most importantly because the bed occupies most of the available space in its normal position. When the mattress is pivoted to swing to one side of the bed frame, there is inadequate space remaining for the fluoroscopic equipment and staff. It has also been proposed to move such beds into the corridor and to swing the mattress at that point. Such an arrangement is unsatisfactory because it requires the patient to be moved from the various services which have been connected to him. Moreover, such specially constructed beds are expensive and by their very nature must be provided in each of the separate cubicles. To overcome the problems involved in fluoroscopic examination of nonmovable patients, we provide a portable patient support which is adaptable to all conventional hospital beds that have removable head and footboards. The space required by the support is minimized and permits monitoring and life support equipment to remain in place during diagnosis or examination without interference, since the patient will be located at substantially the same position during diagnosis as before. Our support unit also provides a very inexpensive solution to the problem, not only because one or two will usually suffice, but because it is extremely inexpensive and simple to manufacture.

We provide a patient support unit that includes a patient support table made from material transparent to X-rays such as glass or methyl methacrylate. At one end of the table we provide a pair of extending guides that are adapted to fit into guideways used to retain the head or foot boards of conventional hospital beds. At the opposite end, we provide a leg pivotally attached to the bottom of the table which is adapted to support that end of the table when extended. The height of the leg is about equal to the maximum elevation of the bed and the table is approximately equal to the height of the leg.

In the accompanying drawings we have illustrated a present preferred embodiment of our invention in which:

FIG. 1 is a front perspective view of our support unit and FIG. 2 is a rear perspective view of our support unit connected to a conventional hospital bed.

Referring to FIGS. 1 and 2, a conventional hospital bed 1 having a frame 2 and a mattress 3 is shown with a headboard removed. A pair of guideways or socket members 4 retain the headboard and are usually of a square cross section. Patient support table 5 is made from a material that is invisible or transparent to X-rays, for example methyl methacrylate or glass. Table 5 includes a pair of downwardly extending guides or pin members 6 mounted to the underside of the table. Guides 6 are preferably cylindrical and of a diameter small than the cross section of guideways 4. Guides 6 are adapted to fit in guideways 4 when either the head or footboard has been removed.

Table 5 includes at the end opposite guides 6, a leg member 7 which preferably includes a pair of rubber ends 8 and rubber bumpers 9. Ends 8 are useful in preventing the support unit from sliding on the floor and adds to its stability. Leg 7 is pivotally connected to table 5 by means of locking hinges 10. Hinge 10 permits the table to fold down for easy and compact storage. Guides 6 are positioned to pass under the leg in the space created by ends 8. Stops 9 maintain the table parallel to the leg during storage.

While we prefer only one leg member extending the width of the table two narrow legs at either corner can be used. However, one leg facilitates handling of the support unit and provides a much more stable support. Furthermore, we prefer to pivotally mount leg member 7 slightly in from the rear edge of the table and include mating braces 11 and 12. Brace 11 depends from the bottom of table 5 and is of the same material as the table. Brace 12 is mounted on leg 7 so as to mate with brace 11 when the table is horizontal. Braces 11 and 12 stabilize the support unit when positioned for fluoroscopic examination. Leg 7 will not inadvertently move once the unit is positioned. A handle 13 may be positioned on brace 11 to aid in carrying the unit.

To utilize the patient support unit, the bed is moved away from the end of the intensive care unit a distance approximately equal to the length of the table. Since the total movement is small, monitoring and life-support equipment may be maintained without change. The headboard from the bed is removed and the table is raised and guides 6 positioned in guideways 4. The hinges are locked and mattress 3, with the patient thereon, is slid onto the table head first. The fluoroscopic equipment is then brought in and the examination which is normally of the chest cavity proceeds. If it is necessary to examine the lower portion of the patient, the footboard is removed and the table guides placed in the footboard guideways. The examination can proceed without disturbing any of the life-support connections.

It is clear that most, if not all of the problems associated with portable fluoroscopy have been eliminated in a very inexpensive manner by our invention. Our invention does not waste space in the intensive care or cardiac unit or in storage when not in use; a factor that is extremely important in todays hospitals.

We claim:

1. A patient support unit for fluoroscopic examinations and treatment for use with hospital beds having removable head and footboards retained by guideways, said patient support unit comprising a table of X-ray transparent material, a pair of pin members mounted on the bottom of said table, said pin members being adapted to fit within vacant guideways of the bed and at least one leg extending from the bottom of the table and opposing said guides, said leg being of a length to position the table at a horizontal level equal to the height of the bed when the guides are in the guideways, whereby said support unit is adapted to receive a mattress with a patient thereon to provide along with the bed support for said patient during fluoroscopic examination.
2. A patient support unit as set forth in claim 1 wherein said leg is pivotally connected to the table.

3. In combination with a hospital bed having removable head and footboards retained by a pair of socket members at each end of the bed, a patient support unit for fluoroscopic examination and treatment comprising a patient support table of X-ray transparent material; a pair of pin members mounted to the bottom of the table at one of its ends and adapted to fit into a pair of said socket members; and at least one leg mounted to the bottom of said table at its other end, said leg having a length sufficient to position the table horizontally when the pin members are fitted into the socket members, whereby said support unit is adapted to receive a mattress with a patient thereon to provide, in combination with the bed, support for the patient during fluoroscopic examination.
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION


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It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 14, "small" should read -- smaller --;
line 66, after "of", second occurrence, should read
-- elongated --.

Signed and sealed this 24th day of October 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

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Commissioner of Patents