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CARRIAGE HAVING UNIVERSAL HORIZONTAL SHIFTING PLATFORM

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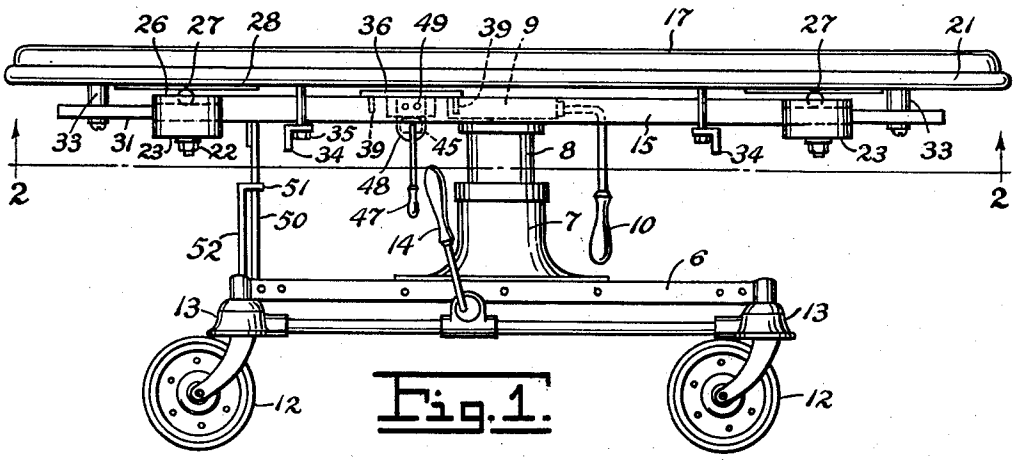


Fig. 1.

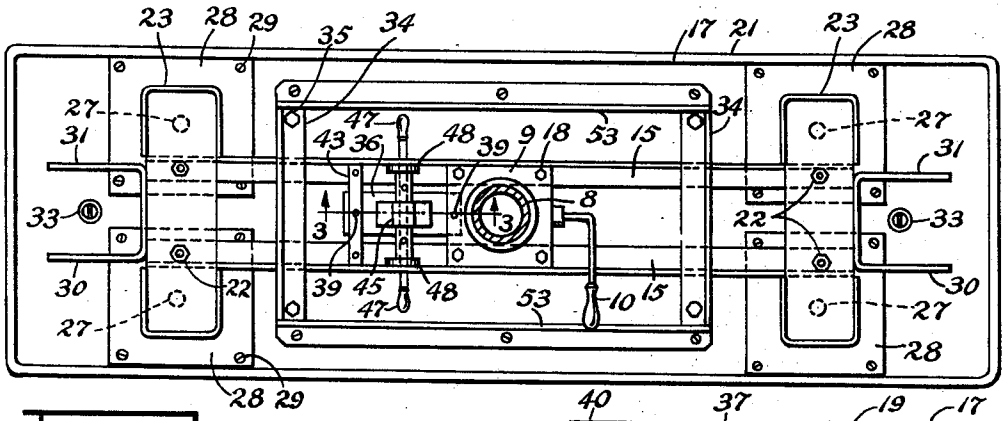


Fig. 2.

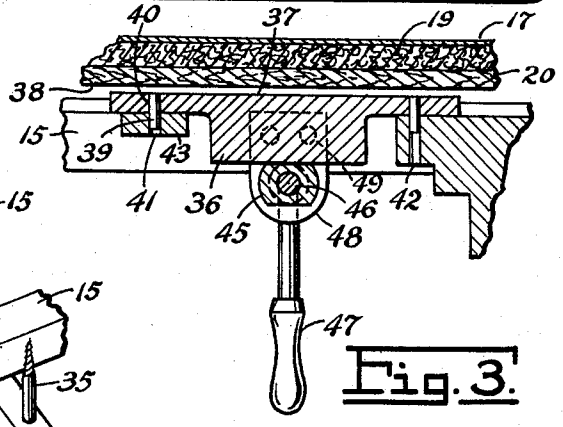


Fig. 3.

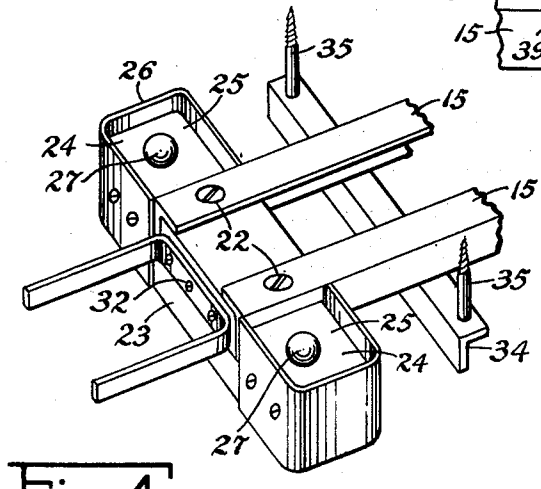


Fig. 4.

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CARRIAGE HAVING UNIVERSAL HORIZONTAL SHIFTING PLATFORM

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6 Claims. (Cl. 311—6)

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This invention relates to a physicians' carriage or litter for professional use in the treatment or diagnosis of human ailments.

An object of the invention is to provide a carriage of the character stated, including simple and durable means free from maintenance costs and servicing troubles, for easily and expeditiously shifting the body of a patient relative to a treatment or diagnostic apparatus which is relatively stationary, or incapable of rapid adjustments.

Another object is to provide means in association with a physician's carriage or litter, whereby the body of a patient may be shifted smoothly and without shock or annoyance to the patient, for the purposes stated.

Another object is to provide a universally shiftable table for a professional carriage or the like, including simple and efficient reliable means for locking the table in any position of adjustment, such locking means being always readily accessible for instant manipulation.

A further object is to provide the foregoing improvements in a wheeled carriage which is adjustable as to elevation, preferably by means of a hydraulic lift, and capable of being rendered immobile by means of a multiple brake assembly.

The foregoing and other objects are attained by the means described herein and illustrated by the accompanying drawing, in which:

Fig. 1 is a side elevational view of the improved physician's carriage or litter, embodying the means of the present invention.

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1, showing the under-side of the device.

Fig. 3 is an enlarged cross-sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a detail view, in perspective, showing the mechanism whereby the table is rendered smoothly and noiselessly shiftable with a universal movement, in a plane of operation.

Although the device of the invention may be used for various purposes and under varying circumstances, its novel features have been incorporated for the comfort of the patient and the conveniece of the physician or professional practioner in the treatment and diagnosis of disease or human ailments. In many instances, and particularly in the practice of heat or light therapy, X-ray treatments and photography, and the like, it is considered desirable at times to smoothly and gently shift the patient while undergoing treatment or examination. This cannot ordinarily be accomplished by shifting the treating mechanism, or the carriage in the normal manner, due to the fact that an excessive amount of manipulation generally is required in doing so, all of which disturbs the patient, or inconveniences the physician and consumes time that might be more advantageously spent otherwise in the course of the treatment or examination. Moreover, the device of the invention possesses the advantage of greatly reducing fatigue and the physical effort involved in performance of professional services such as have been mentioned above, thereby enabling the practioner to accomplish more and better results in the pursuit of his practice.

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Other and further advantages and objectives will become manifest to the experienced and competent practioner, in the light of the detailed description which follows.

With reference to the drawing, 6 indicates a rectangular chassis upon which is mounted the base or housing 7 of an hydraulic lift. The lift includes a vertical post 8 to be elevated and lowered by fluid pressure generated within the head 9 as the pump handle 10 is manipulated in the usual manner. The lift being of standard construction, need not be illustrated and described in detail herein.

At the four corners of the chassis are mounted swivel casters, each of which includes preferably a rubber tired wheel 12. A hood 13 is applied over each of the wheels, and the several hoods may serve as braking means to preclude rotation of the wheels and swiveling of the casters about their vertical shafts. The brake mechanism, which includes an operating handle 14, is fully disclosed in our issued Patent No. 2,110,227 dated March 8, 1938. For the purposes of the present disclosure, it is sufficient to note that all of the swivel casters may be locked simultaneously against movement by manipulating the brake lever 14.

The carriage includes a table supporting frame comprising a pair of spaced parallel rigid bars or beams 15 which extend lengthwise of the table 17. The frame members 15—15 may be fixed to the hydraulic lift head 9 in any suitable manner, as by means of a series of bolts 16. Frame members 15—15 may be in the form of angle irons in a horizontal plane. Table 17, which is adapted to support the body of a patient undergoing examination or treatment, may be in the form of a slab of wood or other material suitably upholstered as indicated at 19 of Fig. 3, the table as a whole being substantially flat by preference. The table slab to which the upholstery material 19 is

applied, is indicated by the character 20. As indicated upon Fig. 1, the table may be furnished with a circumferential bumper or molding strip 21. It may be noted that the table is in spaced substantial parallelism with the table supporting frame 15—15.

In conformity with the objectives of the present invention, table 17 is supported upon the frame members 15—15 for free floating movement in all lateral directions. It is necessary that the table movement, which may properly be considered a universal movement, be performed in an effortless manner, and without disturbing or annoying the patient lying upon the top of the table. This is accomplished most effectively utilizing the simple means now to be described.

To the opposite corresponding ends of the table supporting frame members 15—15 are secured, as by means of screws, bolts or other fasteners 22, the cross members 23 each of which carries at its opposite ends a spacious or enlarged well 24. The base or floor 25 of each well preferably is of metal or other hard and smooth sheet material, and is circumscribed by the upstanding confining wall 26. Within the wells are placed the anti-friction balls of hard metal or other dense material, and upon which rests table 17. Movement of the anti-friction balls within the wells, is limited only by the upstanding confining walls 26, so that the balls may roll freely in all directions within the wells, at least to the extent permitted by the confining walls 26. As indicated upon Fig. 4, the frame members 15 may be utilized in closing one side of each well.

From the foregoing, it will readily be evident that a table such as 17, resting solely upon the anti-friction balls 27, may be noiselessly and easily shifted in all lateral directions to an extent determined by the size or area of the several wells 24. To ensure smooth and easy universal shifting of the table relative to its supporting frame 15—15, the underface of the table may be furnished with a series of flat metallic wear plates 28, one above each anti-friction ball. Plates 28 may be secured to the table in any suitable manner, as by means of screws or other fasteners 29.

In that form of the invention herein disclosed, limits of movement of the table are established by means of the spaced parallel arms 30—31, which constitute bumper frames applied to the cross members 23 at the locations 32, and adapted to contact the bumpers 33 fixed to the underface of the table. Bumpers 33 may be of rubber or other resilient material, and they depend sufficiently beneath the plane of the table to contact the arms or the base of a bumper frame whenever the table is shifted to the limit established by said frames. The bumpers 33 and their cooperative frames serve to relieve the confining walls of the well of undue stresses resulting from extreme movements of the table to its maximum limits of travel. The bumper frames may be rectangular or of any other shape, rather than U-shaped as illustrated by the drawing. As is obvious, the bumper frames may be fixed to the table supporting frames in any suitable manner, the mounting means illustrated by the drawing being by way of example only. If desired, the bumpers 33 may be located between the frame members 15—15, or at opposite sides thereof, without loss of function.

In order to preclude the possibility of lifting the table 17 from its position upon the supporting frame 15—15, suitable retaining means may be provided in the form of cross bars 34 underlying the frame members 15—15, said cross bars being fixedly suspended from the underface of the table 17. For this purpose, hangers in the form of bolts 35 may be anchored in the material of the table and arranged to locate the cross bars 34 at a proper distance beneath the frame members 15 to permit the free shiftability of the table in all lateral directions, as required. The retaining means just described may be variously constructed and designed, the particular structure of the drawing being suggestive of but one form of means for the purpose.

To preclude accidental or inadvertent shifting movements of the table, there is provided a suitable brake or lock such as is illustrated in detail upon Fig. 3.

The locking means referred to may be in the form of a shoe 36 having a flat face 37 to be advanced flatwise against the underface 38 of the table with considerable force. The shoe is mounted upon the table supporting frame, and may be guided in its movements toward and from the table by means of pins 39. The pins may be anchored in the shoe at the locations 40, if desired, and will be loosely accommodated in the guide bores or apertures 41 and 42. The bore 41 may be formed in a cross member 43 of the frame, and if desired the bore 42 may be provided in the head of the lift, as shown. The particular manner of guiding the shoe is, of course, a matter of detail which is not material to the invention.

To move the shoe into and out of contact with the table, there may be provided a cam or eccentric 45 mounted fixedly upon an operating shaft 46 to be rotated by means of a brake lever 47, which serves to rotate the cam and thereby elevate or lower the shoe. The shaft 46 may be journaled in the bearing apertures of the opposed brackets 48—48, which are fixed to the frame members 15—15 at 49. Shaft 46 may be furnished with two levers 47, if desired, these being located at opposite sides of the carriage for convenience of operation. When the lever is rotated to elevate the toe of the cam and thereby force the brake shoe into firm contact against the underface of the table, shifting movement of the table is effectively prevented.

Upon Fig. 1, 50 indicates a rod or bar attached to the frame 15—15, and depending therefrom through a guiding head 51 formed upon a rigid standard 52 which is fixed to the chassis. This structure serves as a means to prevent rotation of table 17 relative to the chassis of the carriage.

The angle members 53 of Fig. 2 reinforce the table and serve to stabilize the cross bars 34. Members 53 may be omitted from the structure, if desired.

It is to be understood that various modifications and changes in the structural details of the device may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed is:

1. A carriage of the class described, comprising in combination a wheeled chassis and a table to support the body of a patient, means between the chassis and the table to support the table for universal horizontal shifting movement relative to the chassis, said table supporting means being in the form of spherical bodies having free rolling movement in all lateral directions rela-

tive to the table and the chassis, means independent of the spherical bodies for limiting the lateral movement of the table relative to the chassis and means for limiting movement of said table upward from said chassis.

2. A carriage of the class described, comprising in combination a wheeled chassis and a table to support the body of a patient, and means between the chassis and the table to support the table for universal horizontal shifting movement relative to the chassis, said table supporting means being in the form of spherical bodies having free-rolling movement in all lateral directions relative to the table and the chassis, means independent of the spherical bodies for limiting upward movement of said table away from said chassis and a brake shoe reciprocable vertically with respect to the chassis and adapted to engage the under side of the table to lift the table from the spherical box and cause engagement of said limiting means with the chassis.

3. In a carriage of the class described, the combination of a wheeled chassis including a substantially central lift having a movable head portion, a table to support the human body, a table supporting frame beneath the table and having fixed relationship to the head portion of the lift, a plurality of wells near each end of the supporting frame, said wells each including a smooth hard-surfaced bottom wall, a hard spherical body in each well resting freely upon the bottom wall, said wells being substantially of greater area than the diameter of the spherical bodies, whereby the latter have free rolling movement over substantial areas of the wells, the table having a smooth underface resting upon the spherical bodies for universal shifting movement of the table in all directions parallel to the bottom walls of the wells, stop means independent of the spherical bodies between the table and said chassis for limiting lateral movement of said table relative to said chassis and means for limiting movement of said table upwardly from said chassis.

4. In a carriage of the class described, the combination of a wheeled chassis including a substantially central lift having a movable head portion, a table to support the human body, a table supporting frame beneath the table and having fixed relationship to the head portion of the lift, a plurality of wells near each end of the supporting frame, said wells each including a smooth hard-surfaced bottom wall, a hard spherical body in each well resting freely upon the bottom wall, said wells being substantially of greater area than the diameter of the spherical bodies, whereby the latter have free rolling movement over substantial areas of the wells, the table having a smooth underface resting upon the spherical bodies for universal shifting movement of the table in all directions parallel to the bottom walls of the wells, stop means independent of the spherical bodies between said table and said chassis for limiting lateral movement of said table relative to said chassis, means for limiting upward movement of said table away from said chassis and

brake means for locking the table relative to the supporting frame.

5. In a carriage of the class described, the combination of a wheeled chassis including a substantially central lift having a movable head portion, a table to support the human body, a table supporting frame beneath the table and having fixed relationship to the head portion of the lift, a plurality of wells near each end of the supporting frame, said wells each including a smooth hard-surfaced bottom wall, a hard spherical body in each well resting freely upon the bottom wall, said wells being substantially of greater area than the diameter of the spherical bodies, whereby the latter have free rolling movement over substantial areas of the wells, the table having a smooth underface resting upon the spherical bodies for universal shifting movement of the table in all directions parallel to the bottom walls of the wells, a flat-faced brake shoe mounted upon the table supporting frame for vertical movement only, and manually operative means to selectively elevate the flat face of the shoe into firm contact with the table, for precluding free shifting movement of the latter while tending to lift the table from contact with the spherical bodies, and bumper means exteriorly of the wells for limiting the universal shifting movements of the table upon lowering of the brake shoe.

6. A carriage of the class described comprising in combination a wheeled chassis and a table to support the body of a patient, means between the chassis and the table to support the table for universal lateral shifting movement relative to the chassis, said table supporting means being in the form of spherical bodies having free rolling movement in all lateral directions relative to the table and chassis, means for limiting relative lateral movement of said table and chassis, means for limiting upward movement of said table away from said chassis, and braking means between said table and said chassis, said braking means including a flat-faced brake shoe mounted upon the chassis for vertical movement only and manually operative means to selectively elevate the flat face of the shoe into firm contact with the table for precluding free shifting movement of the table while tending to lift the table from contact with the spherical bodies to engage said limiting means with the chassis.

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