April 23, 1963 R. J. KYSER ET AL 3,086,226

HOSPITAL BED TABLE

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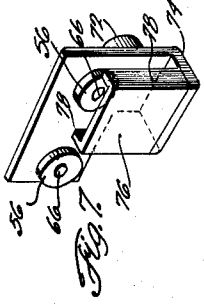
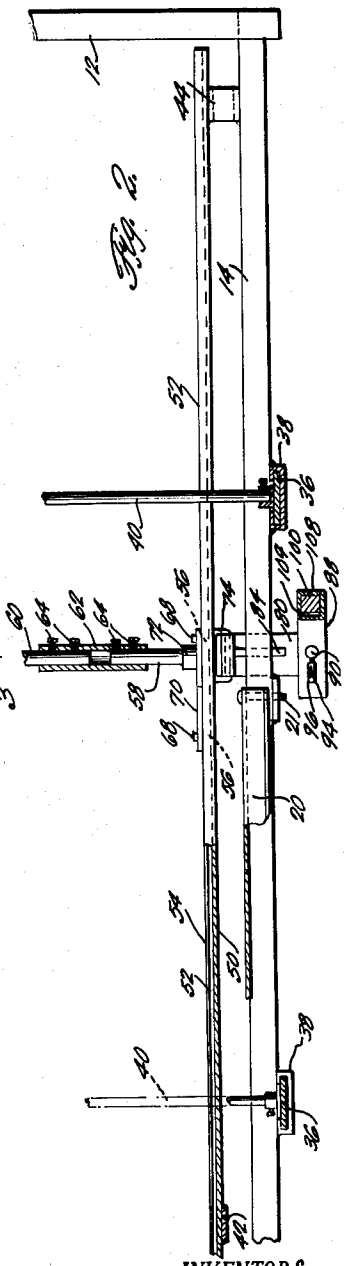


Fig. 1.



Fig. 2.



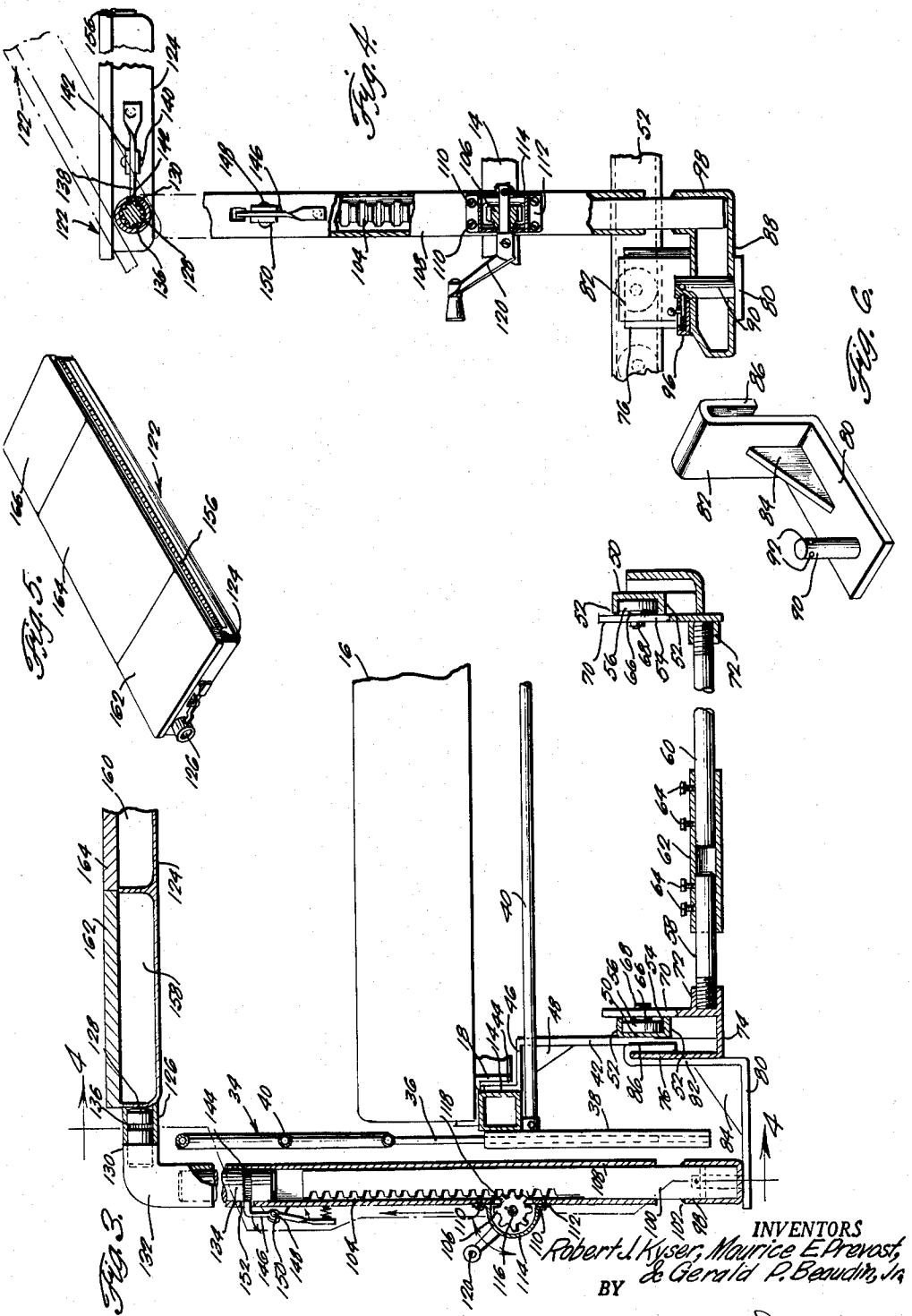
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# HOSPITAL BED TABLE

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This invention relates to tables for hospital beds, and in particular to a table which is adjustable to various positions about the bed, while physically attached to the bed frame. In this respect it differs from a type in most common use, which is cantilever-mounted on a standard carried by a reliable floor base, which is adapted to be slid under the bed. These present one drawback in that they are under control of attendants, rather than the patient, and there is a natural tendency to move them out of the way except for periods when actually required, as at meal times.

It is therefore an object to provide an auxiliary table for beds, which is physically attached to the bed, so as to be conveniently accessible to a patient for positioning and use as required. A further object is to provide a high degree of universality of adjustment. More particularly, it is an object to provide a table movable longitudinally along the bed, as well as in azimuth, height and tilt, and which is transferrable from one side of the bed to the other in a simple, effortless operation, without need for tools. Yet another object is to provide a table permitting of concurrent use of safety rails on a bed. Other objects include the attainment of strength with simplicity of structure and minimized weight, and mobility of the unit, without binding.

These and other ends, which will become apparent, are attained by the present invention, which may be briefly described as comprising a carriage spanning the bed on its underside and having rollers engaged in a pair of oppositely disposed, channel tracks carried by the side rails of the bed, the carriage having at each end a socket for deposit of the hooked end of a bracket which carries the standard upon which the table is mounted.

For a more detailed description of the device, reference is made to the following specification, as illustrated in the drawings, in which:

FIGURE 1 is a side elevational view of a hospital bed, with safety guard rails, and showing the table mounted on the foremost side of the bed,

FIGURE 2 is a sectional view taken on the line 2—2 of FIGURE 1,

FIGURE 3 is a sectional view taken on the line 3—3 of FIGURE 1,

FIGURE 4 is a sectional view taken on the line 4—4 of FIGURE 3,

FIGURE 5 is a perspective view of the table top, apart from its trunnion mounting,

FIGURE 6 is a perspective view of the hanging bracket which carries the table standard, and

FIGURE 7 is a perspective view of one of the end, roller units of the transverse carriage.

Referring to the drawings by characters of reference, there is shown a conventional, hospital bed, which requires only very general illustration, and brief dscription. Thus, the essential parts comprise a head frame **10**, a foot frame **12**, side rails **14**, and a mattress **16**, on a supporting frame **18**. For raising the head of the mattress, the frame **18** has a section **20** pivoted at **21** to the frame, and at **22** to a bell crank lever **24**, pivoted at **25** on the frame, and having an input arm **26** to which is pivoted a thrust rod **28**, threaded in a bushing **30** on the foot frame of the bed, and rotated by means of a crank **32**. A guard rail frame, indicated generally by the numeral



**34**, which may be provided on one or both sides of the bed, has a pair of depending legs **36**, supported in sockets **38** of channel section, which are secured to side rails **14**, and which may have one or more cross-bracing rods **40**.

Two or more supporting brackets, **42**, for the carriage rails, are provided on each side of the bed, being bolted or otherwise secured, as by welding, to the inner face of the square-section, tubular rail **14**, by a short vertical section **44**, connecting with the main leg of the bracket through a horizontal section **46**, which section is braced to the main leg by a corner-bracing web **48**. The staggered form of the bracket allows clearance for the guard rails, and also affords space for reinforcement against bending, as by means of the corner plate. However, in some cases, the extent of stagger may be reduced, or eliminated altogether, by use of a bracket which is inherently resistant to bending. Welded to the brackets **42**, on each side of the bed, are the two parallel, horizontal rails **50**, arranged lengthwise of the bed. These are of channel section, with flanges **52** extending inwardly, the lower flanges having upturned end portions **54**, which serve to retain the carriage rollers **56** in the rails. Each roller is journalled in a mounting unit carried at an end of a shaft extending crosswise of the bed. Preferably, the shaft is adjustable in length, and therefore comprises two sections **58**, **60**, joined by a coupling sleeve **62**, and secured by set screws **64**. Each roller **56** is journalled on a stub shaft **66** and the rollers are secured, in pairs, by screws **68** to a vertical mounting plate **70**, the latter having, on its inner face, a transversely extending tube, or boss, **72**, threadedly receiving the outer ends of the respective shaft sections **58**, **60**. It will be seen that the carriage unit, to the extent thus far described, is capable of rolling movement, along the rails, lengthwise of the bed, being retained against derailing by flanges **54**, and with binding obviated by the provision of the rollers in pairs, on each side. Optimum fit of the carriage to the rails is made possible by the adjustability of the connecting shaft and this feature also enables interchange of the system among different beds.

The table unit is mounted on the carriage by a simple, hooking action, and for this purpose each plate **70** is provided with a hook member (FIGURE 7), comprising a short, horizontal section **74**, and a vertical section **76**, with inwardly bent side faces **78**. As shown, the entire system of roller plate and hook sections is fabricated from a single slab of metal; however, they may equally well be fabricated from separate pieces, welded together, as dictated by economy of material, or other considerations.

The base element of the table unit itself (FIGURE 6), comprises a horizontal, supporting plate **80**, with a vertically disposed hook portion adapted to cooperate with hook plate **76** of the roller mount. Thus, plate **80** has an upwardly bent, vertical portion **82**, with a corner-bracing web **84**, and portion **82** has a downwardly bent, vertical, and portion **86**, adapted to be slipped into the inner, channel-form recess defined by sides **78** of plate **76**. No lock or detent is required, and the table system is mounted by mere deposit of hook section **86**, and the system may be removed, as when it is transferred to the opposite side of the bed, by a mere lifting action.

In order that the table unit may be moved to a position at the foot of the bed, where it does not overlie the top of the bed, the table unit is mounted on the plate **80**, in offset relation to one end of the roller-mounting plates **70** of the carriage, and this mounting is reversible through 180°, so that the same result may be attained with the table located at either side of the bed. Thus, pivotally carried on plate **80** is a square

tube 88, medially bored for swinging movement on a vertical stub shaft 90 carried by the plate 80. Shaft 90 is provided near its top, with a spaced series of peripherally disposed, blind bores or indentations 92, selectively engeable by a spring-urged, indexing pin 94, carried in a housing 96 mounted on tube 88.

To provide the aforesaid offset relation, tube 88 at one end, has a vertically disposed tube, or cup, 98, of square cross section, receiving a rod 100 of square cross section, secured within the cup by a pin 102. Rod 100 is provided on one face, in its upper portion, with gear teeth 104, and constitutes one element of a rack and pinion arrangement, cooperating with a pinion 106, which is carried by that part of the supporting structure which is fixed to the table proper, and therefore movable bodily with the table. Thus, there is telescopically mounted, on rod 100, a square tube 108, on one face of which is secured, by screws 110, the flanges 112 of a semi-cylindrical housing 114, within which is axially journalled the shaft 116 of a pinion 118, the shaft being provided with a hand crank 120.

The table, indicated as a whole by the numeral 122, is connected to the outer sleeve 108 of the rack and pinion system, as follows: A well portion 124 of the table carries, on one end face, a horizontally extending tube 126, constituting a single, female trunnion, which is rotatably mounted on a stub shaft 128, which is press fit, or otherwise secured, in the horizontal arm 130 of a pipe elbow. The vertical arm 132 of the elbow also carries a press-fitted stub shaft 134, which is rotatably mounted in the square tube 108. It will be understood that tube 108 may be square or round, or square in its lower part and round in its upper part, the latter being accomplished either by crimping or otherwise working the metal, or by attaching a length of round tubing to the square tubing.

By virtue of its trunnion mounting, the table 122 is adjustable in elevation; that is to say, in its inclination with the horizontal, and for indexing the adjustment to various positions, the shaft 128 is provided with a peripheral ring of gear teeth, scallops or corrugations 136, cooperating with a latching lever 138, pivoted on a pin 140 carried on a bracket 142 on the end face of the table well, the tube 126 having a slit 143 for entry of the latching end of the lever.

Similarly, the shaft 134 has peripheral teeth 144, cooperating with a latch 146, mounted on a pin 148 carried by a bracket 150 on the tube 108, with the latch passing through a slit 152 in the tube. By this means, the table may be selectively positioned in azimuth; that is, in angular position of swing about the vertical axis of the upright or standard. By virtue of the auxiliary azimuth adjustment on shaft 90 at the lower end of the standard, both the height-adjusting crank 120 and the azimuth latch 146 may be located conveniently to the hand of the patient.

The table 122 is provided with a cover constituting a working surface, this being swing mounted to the wall portion 124 as by a piano hinge 156. The cover also may have collapsible braces for holding it open in one or more positions of adjustment, and may be provided with a mirror on its interior surface. Also, the well portion 124 may have plural compartments, such as 158, 160, and, in the form shown, the cover is shown as comprising three separate panels 162, 164, 166, mounted on separate hinge sections, and coextensive with the respective, inner compartments. By this means, access may be had to the interior, without having to clear the cover of articles, but merely moving them aside.

Among other things, the elevated carriage system facilitates cleaning and disinfecting under the bed, without the need for moving the table about. Another advantage is that the table may be utilized by a patient sitting in a wheelchair, or regular chair, at the side of the bed. The device is also adapted for easy storage, with the table swung to a vertical position, and for particular convenience the foot board of the bed may be provided with a special, built-in receptacle, of simple construction.

While a certain preferred embodiment has been shown and described, various modifications will become apparent, in the light of this disclosure, and the invention should not therefore, be deemed as limited, except insofar as shall appear from the spirit and scope of the appended claims.

We claim:

1. For attachment to a bed, an adjustable table system comprsing a plurality of brackets, adapted for attachment to a bed frame, a pair of rails of channel section carried by said brackets, in parallel and coplanar arrangement, with their channels facing, and having an upturned flange on the lower, inner, flange edge, a carriage having a cross member, adjustable in length, a plate carried on each end of said member, arranged transversely to the lengthwise direction thereof, a pair of rollers journalled on each plate and each pair received in the channel of one of the respective, said rails, an upwardly extending arm carried by each of said plates, outwardly thereof, and in spaced relation thereto, a horizontal platform having a vertically disposed hook portion, with downwardly directed end received on said arm, a base foot pivotally mounted on said platform for swinging movement about a vertical axis, indexing means for angular positioning of said foot, a vertical rack carried by said foot, a sleeve telescopically received on said rack and having a crank-operated pinion engaging said rack, a 90 degree coupling with one arm rotatably mounted in said sleeve, indexing means carried by said sleeve for adjustment of the angular position of said coupling, a table, means rotatably mounting said table on the other arm of said coupling, for tilt of its surface about a horizontal axis, and indexing means for positioning said table in adjusted positions of tilt.

2. For attachment to a bed, an adjustable table system comprising a plurality of brackets, a pair of rails of channel section carried by said brackets, in parallel and coplanar arrangement, a carriage having a cross member, a plate carried at each end of said member, arranged transversely to the lengthwise direction thereof, a pair of rollers journalled on each plate, and each pair received in the channel of one of the respective, said rails, an upwardly extending arm carried by each of said plates, outwardly thereof, and in spaced relation thereto, a horizontal platform having a vertically disposed hook portion, with downwardly directed end received on said arm, a base foot pivotally mounted on said platform for swinging movement about a vertical axis, indexing means for angular positioning of said foot, a vertical rack carried by said foot, a sleeve telescopically received on said rack, and having a crank-operated pinion engaging said rack, an elbow coupling with one arm rotatably mounted in said sleeve, indexing means carried by said sleeve, for adjustment of the angular position of said coupling, a table, means rotatably mounting said table on the other arm of said coupling, for tilt of its surface about a horizontal axis, and indexing means for positioning said table in adjusted positions of tilt.

3. For attachment to a bed, an adjustable table system comprising a plurality of brackets, a pair of rails carried by said brackets, a carriage having a pair of rollers at each end mountable on said tracks, an upwardly disposed hook portion carried at each end of said carriage, a platform having a downwardly disposed hook portion interengaging with one of the upwardly disposed hook portions, a foot rotatably mounted on said platform, angular indexing means for said foot, a rack carried by said foot, parallel to the axis of swing thereof, a sleeve telescopically received on said rack, and having a pinion engaging said rack, an elbow coupling with one arm rotatably mounted in said sleeve, angular indexing means

for said one arm, a table mounted on the other arm of said coupling for tilting movement of its surface, and indexing means for said tilting movement.

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