Feb. 13, 1934. J. S. CLACHKO 1,946,899

PEDESTAL BASE OPERATING TABLE

Filed June 17, 1930 4 Sheets-Sheet 1

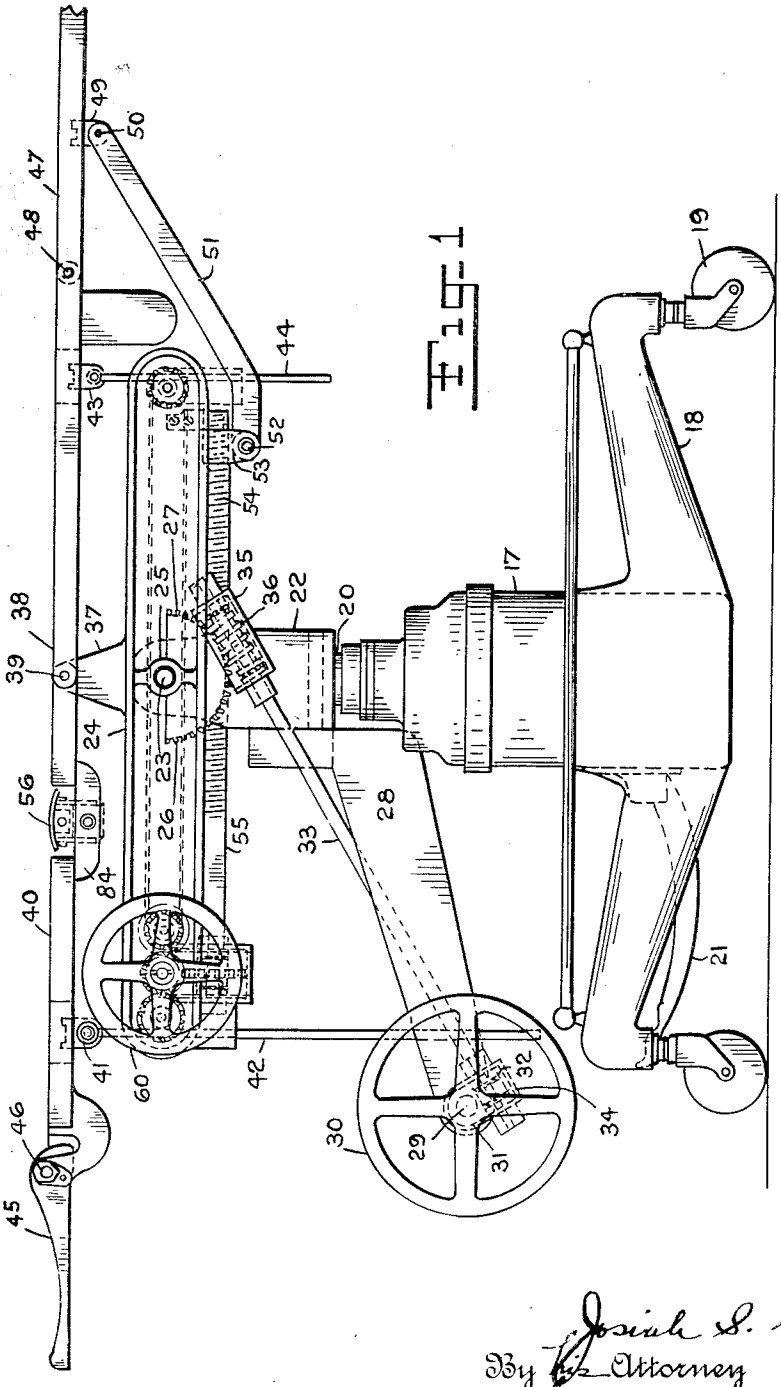


Fig. 1

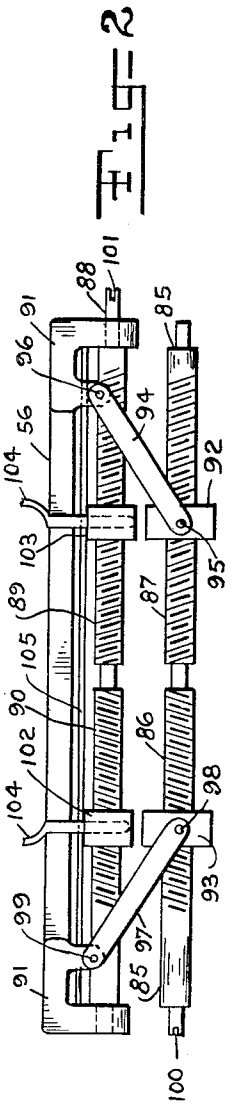


Fig. 2

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PEDESTAL BASE OPERATING TABLE

Filed June 17, 1930 4 Sheets-Sheet 2

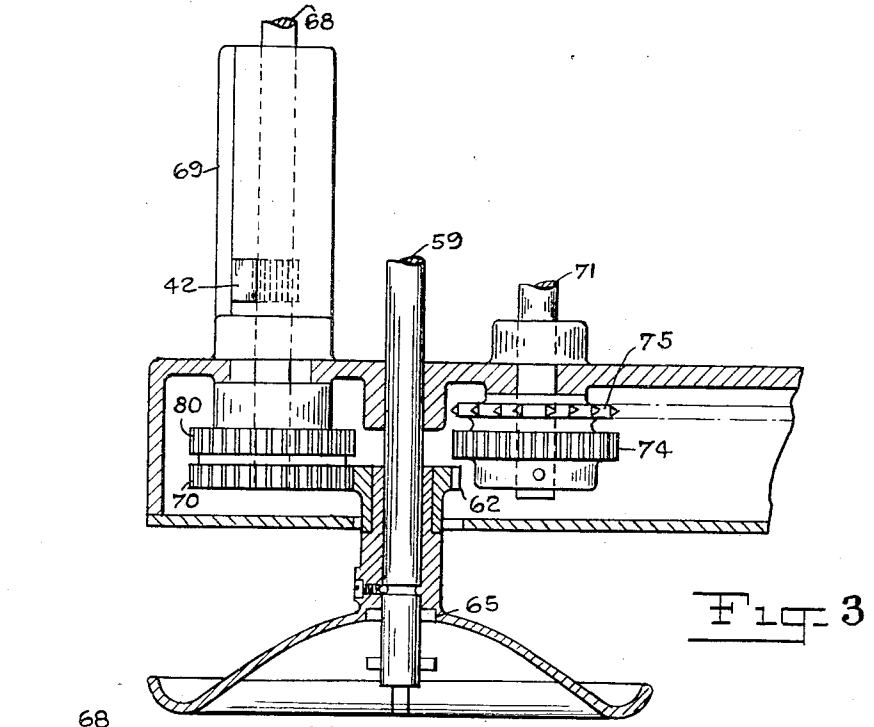


Fig. 3

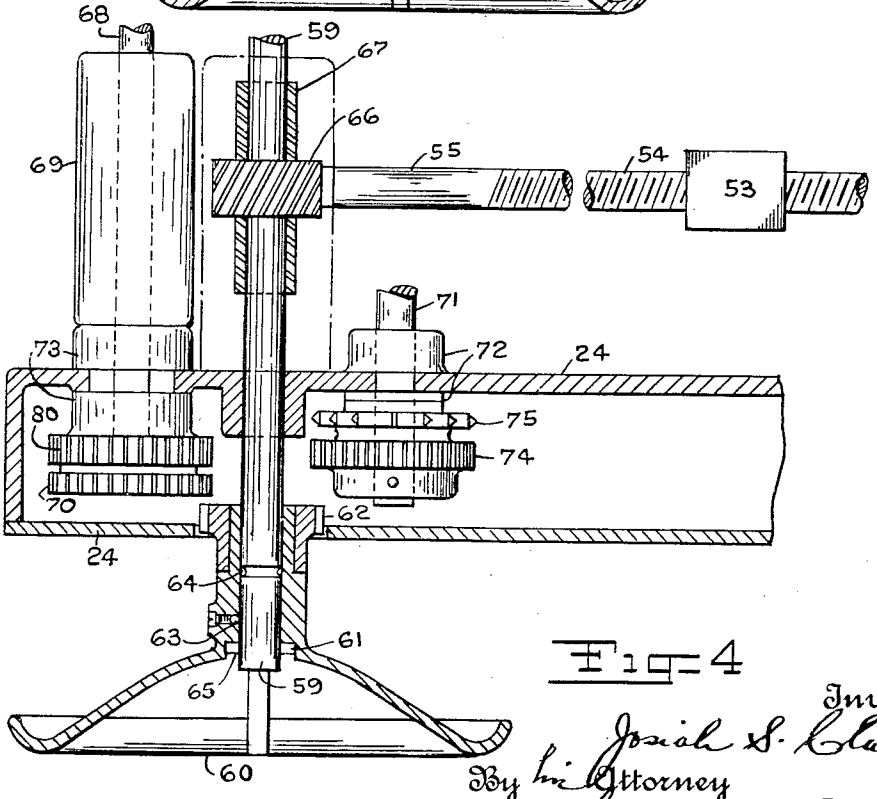


Fig. 4

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PEDESTAL BASE OPERATING TABLE

Filed June 17, 1930 4 Sheets-Sheet 3

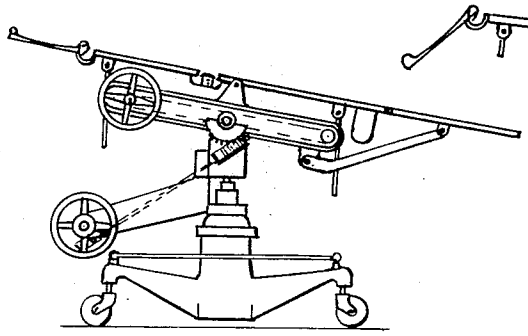


Fig. 6

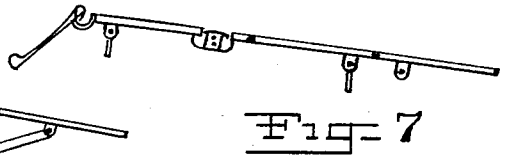


Fig. 7

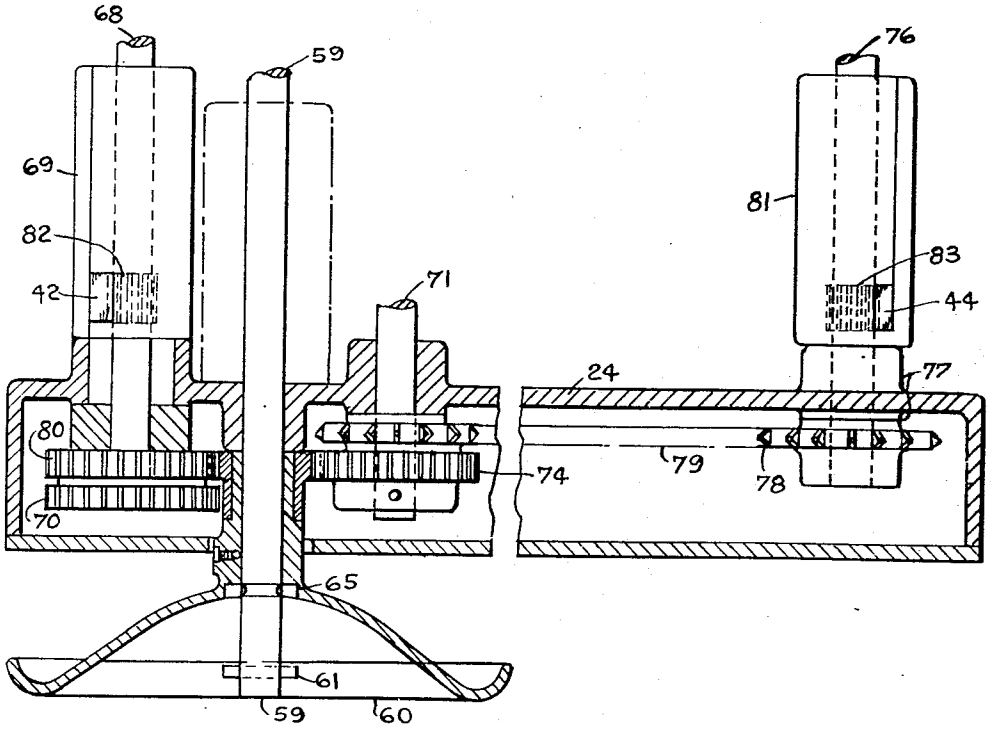


Fig. 5

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PEDESTAL BASE OPERATING TABLE

Filed June 17, 1930 4 Sheets-Sheet 4

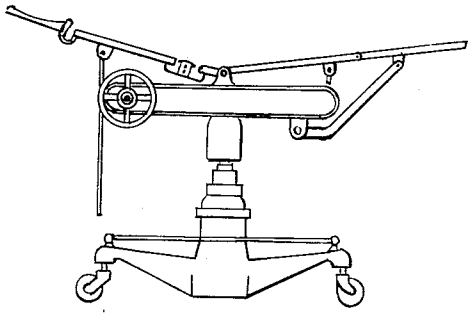


Fig. 8

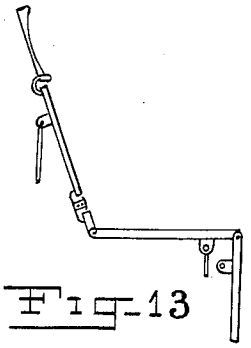


Fig. 13

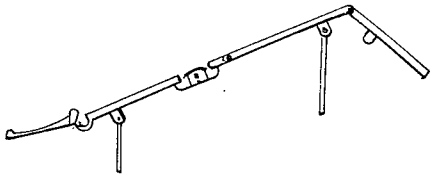


Fig. 9

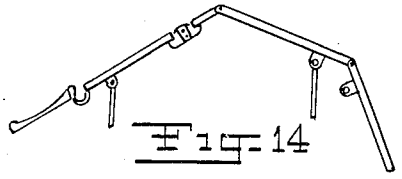


Fig. 14

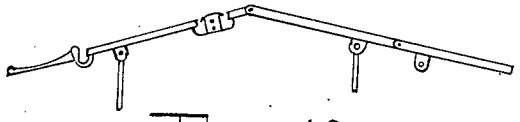


Fig. 10

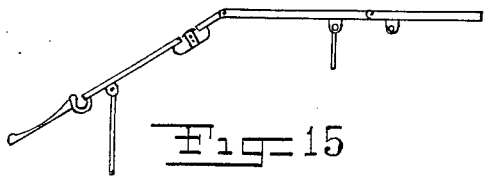


Fig. 15

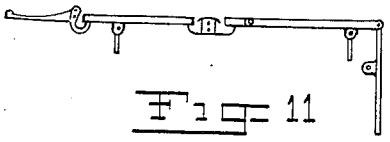


Fig. 11

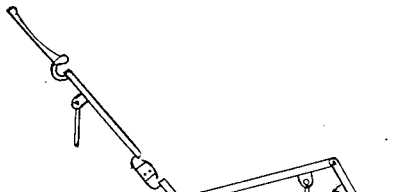


Fig. 12

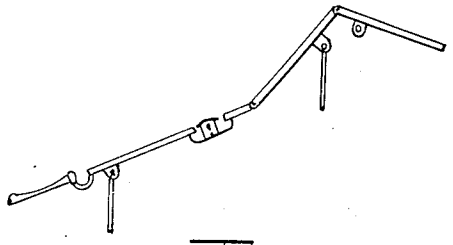


Fig. 16

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Patented Feb. 13, 1934 1,946,899

UNITED STATES PATENT OFFICE

1,946,899

PEDESTAL BASE OPERATING TABLE

Josiah S. Clachko, Springfield, N. Y., assignor, by mesne assignments, to American Sterilizer Company, Erie, Pa., a corporation of Pennsylvania

Application June 17, 1930. Serial No. 461,667

13 Claims. (Cl. 45—50)

My invention relates to an improvement in a pedestal base operating table and its novelty consists in the adaptation and arrangement of parts as will be more fully hereinafter pointed out.

There are many operating tables on the market and a number of pedestal base operating tables but all of these require the nurse or operator assisting the surgeon to move from one part of the table to the other in order to throw the table top to the different necessary positions required during the operation.

This interferes seriously with the efficiency of the person assisting the surgeon as it takes them away from the head of the patient where it is essential they should be throughout the operation in order to know the exact condition of the patient throughout the operation.

My invention solves this serious and difficult problem which has for many years handicapped the quick and easy changes of position required to be made in the operating table top at different times during the operation.

Furthermore, my device has simplified and speeded up the shifting of the operating table top from one position to another so that the efficiency of the table has been improved in a very substantial manner thereby eliminating all delays between the necessary shifts of the table top which must be made quickly and easily during the different stages of the operation.

Referring to the drawings, Figure 1 is a side elevation of my complete device in the straight general operating position.

Figure 2 is a front elevation of the complete detail of the kidney bridge portion of my table.

Figure 3 is a cross sectional top plan view of the detail of the operating mechanism for controlling the different sections of the operating table top.

Figure 4 is the same as Figure 3 but shows the additional operating mechanism for moving the foot portion of the table top.

Figure 5 is the same as Figure 3 but shows the connecting operating mechanism operated by the chain drive at the further end of the table.

Figure 6 is a small view the same as Figure 1 but with the entire table top tilted to the reverse Trendelenburg position.

Figure 7 is a detail of the table top in the goitre position.

Figure 8 is a small illustrative front elevation of the table in the reflex abdominal position.

Figure 9 is a detail of the table top in the Trendelenburg position.

Figure 10 is a detail of the table top in the Mayo kidney position.

Figure 11 is a detail of the table top in the pelvic and plastic position.

Figure 12 is a detail of the table top in the cystoscopic position.

Figure 13 is a detail of the table top in the chair position.

Figure 14 is a detail of the table top in the extreme lordosis position.

Figure 15 is a detail of the table top in the resuscitating position.

Figure 16 is a detail of the table top in the reflex thigh position.

In the drawings 17 is a pedestal base having legs 18 on which are mounted casters 19 in the usual well known manner. A supporting piston 20 of usual construction is mounted in the base 17 in the usual well known manner and is operated by foot pedal 21 to raise and lower the same in an oil plunger construction which has been used in this art for a number of years and is the usual construction. On the head of the piston 20 is rigidly secured a yoke 22 through which is mounted near its head a shaft 23 and on the shaft 23 are mounted two frames 24 which pivot thereon by means of bearings 25 of the frames 24. Said frames 24 also have a semi-circular segmental gears 26 which are made integral therewith and which have gear teeth 27.

A bracket member 28 is rigidly secured to yoke 22 and at its outer end a shaft 29 is mounted therethrough so as to rotate freely therein and carries a hand wheel 30 mounted thereon at its outer end and pinned thereto in the usual manner. A cut gear 31 is also mounted on said shaft 29 inside of said wheel 30 and is pinned to said shaft so as to rotate therewith and meshes with a worm gear 32 which is cut on the lower end of a driving shaft 33 which is supported in a box 34 mounted over said shaft 29 thereby enclosing the gear 31 and the gear 32. The upper end of the driving shaft 33 is supported in a box 35 which is rigidly secured to the side of the yoke 22 and a worm gear 36 is cut on the upper end of said driving shaft 33 and meshes with the teeth 27 of segmental gear 26.

A pair of pyramidal supporting members 37 are rigidly secured to the upper side of the frame 24 and table top section 38 is pivotally and hingedly mounted near one end of the same on supporting members 37 on pivot rod 39 in the usual well known manner. A second top member 40 containing a kidney bridge (Fig. 2) is pivotally supported on the brackets 41 mounted in the usual

well known manner at the head of rack bar 42 and is pivotally and hingedly mounted at one end of the same on supporting members 37 on pivot rod 39 in the usual well known manner. The opposite end of table top 38 is also supported in the usual well known manner on brackets 43 mounted on the head of rack bar 44 in the usual well known manner. Table top head member 45 is pivoted at 46 in the well known manner and may be dropped and raised by the usual hand operation or secured in the desired position. Foot section 47 of the table top is pivoted at one end on the bar 48 in the usual well known manner and is supported by the bracket 49 pivoted at 50 on the arm 51 which is pivotally secured at 52 to pinion 53 which is internally threaded to travel over the worm gear 54 on shaft 55.

In the frame 24 is mounted a shaft 59 on the outer end of which is mounted a wheel handle 60 and which is adapted to move along said shaft and is held against being pulled off the end of the shaft by means of cross pin 61 running through said shaft 59, which also serves as a key to engage in pocket 65 so as to lock the handle 60 and shaft 59 together so that they will turn together in that position. A cut gear 62 is rigidly secured to the inner end of said handle 60 so as to turn therewith. A spring operated nipple member 63 is mounted in said handle member 60 and is adapted to engage groove 64 in said shaft 59 so as to determine the position of the gear 62 as clearly shown in Figure 3, but is readily dislodged therefrom as the shaft 59 is pushed inwardly or pulled outwardly. On the shaft 59 is mounted a spiral gear 67 in such a way that it will rotate with said shaft 59 and said gear meshes with gear 66 mounted on the end of shaft 55 so that the motion of the shaft 59 is transmitted through said gears 67 and 66 to the shaft 55 and the shaft 55 has worm gear 54 and the other parts as already described. A shaft 68 is also mounted in the frame 24 on the usual bearings 73 through gear casing 69 and a pair of gears 70 and 80 which are formed together and rotate together are rigidly mounted inside of the frame 24 on one end of the shaft 68. Another shaft 71 is mounted in the frame 24 on the usual bearings 72 and a cut gear 74 is rigidly secured thereto at the end inside of the frame 24 and the chain sprocket wheel 75 is also rigidly secured thereon so as to rotate therewith. At the further end of the frame 24 from the handle 60 and operating part described is another shaft 76 mounted in bearings 77 and a sprocket wheel 78 is rigidly secured thereto so as to rotate therewith and a chain 79 travels over the sprocket wheels 78 and 75 so that said sprocket wheels and the shafts 76 and 71 to which they are respectively rigidly secured rotate therewith.

The meshing of the gear 62 with gear 70 insures the rotation of the shaft 68 in either direction as desired, this is illustrated in Figure 3. Meshing of gear 62 with gears 80 and 74 effects the rotation of both shaft 68 and shaft 71 simultaneously by the turning of handle 60, which is shown in Figure 5. In order to operate the shaft 59 the handle 60 is pulled out so as to engage the key 61 in the pocket 65 whereby the shaft 59 will be turned with the rotation of the handle 60 and spiral gear 67 will rotate the gear 66 whereby the shaft 55 will be turned.

It is to be noted at this point that the shafts 59, 68 and 71 and also 76 extend across the table and engage in a second frame 24 carried on the opposite side of the table in similar bearings and a second spiral gear 67 meshing with a second gear 66 drives a second shaft 55 with the duplicated elements as described herein and a second set of gear boxes 69 and 81 encase a second set of gears 82 and 83 on the shafts 68 and 76 operating a second pair of rack bars 42 and 44 in the usual well known manner and connected at the upper ends with the table top sections 40 and 38 respectively by means of a second pair of supporting brackets 43 and 41 respectively.

Kidney bridge 56 is rigidly supported on side frame members 84 being secured thereto in a fixed manner. The bridge 56 is composed of a cross bar 85 having a worm gear 86 on one half and a second worm gear 87 on the other half. A second cross bar 88 having a worm gear 89 on one half and worm gear 90 on the other half carries the frame members 91 and the bridge 56 mounted in said frame members 91. Internally threaded pinion 92 is mounted over the worm gear 87 of the bar 85 and a similar pinion 93 is mounted over the worm gear 86. Link 94 is pivotally connected at 95 to pinion 92 and pivotally connected at 96 to frame 91. A similar link 97 is pivotally connected at 98 to pinion 93 and pivotally connected at 99 to the other frame member 91 whereby the rotation of the shaft 85 in one direction will draw the pinions 92 and 93 outwardly thereon thereby pushing up on the links 94 and 97 and thereby raising the frame members 91 and the kidney bridge top 56 as desired. The opposite rotation of the shaft 85 by means of the crank engaging the key way at 100 will have the opposite result. The shaft 88 also has a key way 101 adapted to be engaged by a crank to rotate said shaft in either direction whereby pinions 102 and 103 mounted on the worm gears 89 and 90 and carrying body bracket members 104 may be moved to the desired positions on the shaft 88, said pinions 102 and 103 being held against rotation by the contact of cross bar 105 secured to the frame members 91 and which rests against the upper side of the same.

In order to obtain the twelve different principal operating positions commonly used, the following operations of the table are necessary.

The straight general operating position is shown in Figure 1 and the tilting of the entire table top and frames 24 with their connections as described is controlled by the operation of the large handle 30 operating through the gears as described, on shaft 33, whereby the semi-circular gear 27 is turned to the desired position carrying with it the frames 24 and the top mounted thereon on pyramidal brackets 37 supported on the frames 24 and the operation of the hand wheel 60 and gear 62 through the various gears, chains, shafts, pinions and rack bars, as already described operates the different sections 38, 40, 47 and 45 of the table top.

In order to secure the reflex abdominal operating position as shown in Figure 8, it is necessary to mesh the gears 62 with 80 and 74 and then turn the hand wheel 60 to the right whereby the shaft 68 and 71 will be rotated to the desired position together with shaft 76 through chain 79 over brackets 75 and 78 and through the turning of gears 82 and 83 the operation of the two sets of rack bars 42 and 44 will be operated.

In order to obtain the Trendelenburg position as shown in Figure 9, it is first necessary to operate the large hand wheel 30 to turn the entire table top to the desired position, then mesh the gears as shown in Figure 4 and turn the handle 60 to the right.

In order to obtain the reflex thigh position as

shown in Figure 16, it is necessary to turn the entire table top to the Trendelenburg position and then by meshing the gears as shown in Figure 3 and turning the hand wheel 60 to the right as far as possible, then unmeshing the gears as shown in Figure 4 and engaging the key 61 in the hand wheel 60, turn the hand wheel 60 to the right thereby rotating the shaft 59 and the connecting gears and shafts as described.

The Mayo kidney position as shown in Figure 10 is obtained by meshing the gears as shown in Figure 5 and then turning the hand wheel 60 to the left.

The reverse Trendelenburg position, as shown in Figure 6 is obtained by turning the large hand wheel 30 to the left to tilt the entire table top, then attach the Hartley foot rest in the usual well known position for use.

The goitre position as shown in Figure 7 is obtained by first placing the table top in the Trendelenburg position as already described and then turning the head rest 45 in the manner as already described to the desired position.

The pelvic and plastic position as shown in Figure 11 is obtained by returning the table top to the horizontal position as shown in Figure 1 and then unmeshing the gears as shown in Figure 4 and turning the hand wheel 60 to the right.

The cystoscopic position as shown in Figure 12 is secured by meshing the gears as shown in Figure 5 and turning the hand wheel 60 to the right, then meshing the gears as shown in Figure 4 and turn the hand wheel to the right.

The chair position as shown in Figure 13 is obtained by starting with the table in the horizontal position as shown in Figure 1, then meshing the gears as shown in Figure 3 and turn the hand wheel 60 to the right, and then meshing the gears as shown in Figure 4 and turn the hand wheel 60 to the right.

The extreme lordosis position as shown in Figure 14 is obtained by first turning the table top to the Trendelenburg position as already described and the meshing the gears as shown in Figure 5 and turning the hand wheel 60 to the right, then meshing the gears as shown in Figure 4 and turn the hand wheel 60 to the right.

The resuscitation position as shown in Figure 15 is obtained by first placing the table top in the horizontal position as shown in Figure 1 and then meshing the gears as shown in Figure 3 and turning the hand wheel 60 to the left.

I claim:

1. In a pedestal base operating table the combination of a base having legs mounted on casters, a plunger shaft mounted therein under foot pedal control, a yoke mounted on the upper end of said shaft, a pair of frames pivoted on said yoke, and connected by shafts so that they move together, a semi-circular gear mounted on one of said frames, a hand wheel connected through a shaft and gears to said semi-circular gear, a sectional operating table top pivotally mounted on said frames, a second hand wheel mounted on said frames on a shaft and connected through intermeshing gears, shafts, pinions, rack bars and a chain to operate said sectional top to all operating positions.

2. In a pedestal base operating table the combination of a base mounted on legs, a plunger shaft mounted therein operated by a foot pedal, a yoke mounted over the head of said shaft, a pair of frames connected and moving together pivotally mounted on said yoke, a hinged sectional top pivotally mounted on said frames, a wheel at the head of said table for tilting said frames as desired and a second wheel at the head of said table for operating said sectional top members as desired.

3. In a pedestal base operating table the combination of a base mounted on legs, a plunger shaft mounted therein operated by a foot pedal, a yoke mounted over the head of said shaft, a pair of frames connected and moving together pivotally mounted on said yoke, a hinged sectional top pivotally mounted on said frames, a wheel at the head of said table for tilting said frames as desired.

4. In a pedestal base operating table the combination of a base mounted on legs, a plunger shaft mounted therein operated by a foot pedal, a yoke mounted over the head of said shaft, a pair of frames connected and moving together pivotally mounted on said yoke, a hinged sectional top pivotally mounted on said frames, means at the head of said table for tilting said frames as desired comprising a semi-circular gear mounted on one of said frames, a shaft having a worm gear meshing with said semi-circular gear and a worm gear at the opposite end of said shaft driven by a gear mounted on a shaft operated by a hand wheel supported on a bracket from said yoke at the head of said table.

5. In a pedestal base operating table the combination of a base, a plunger shaft mounted therein, a yoke mounted over the head of said shaft, a pair of frames pivotally mounted in connected relation on said yoke, a hinged sectional top pivotally mounted on said frames, means located at the head of said table for tilting said frames as desired and a second means located at the head of said table for operating said sectional top members as desired comprising a shaft mounted in said frames operated by a hand wheel, a gear on said handle adapted to mesh with two different sets of gears and two gears on said shaft all selectively operative and through a chain drive a second driven shaft and rack bars operated by worm gears on shafts driven by said sets of gears and by a chain driven shaft operated from one of said first shafts and a pair of right angularly mounted shafts driven from said gears on said hand wheel shaft and having worm gears on their outer ends and pinions mounted thereon operating brackets supporting the foot section of said top.

6. In a pedestal base operating table a side frame carrying a shaft rotatable therein and having a handle movable thereon and engageable with the outer end of the same, a cut gear integral with said handle and adapted to selectively engage in different longitudinal positions one of two cut gears rigidly secured to the outer end of a second shaft similarly mounted in said frame parallel to the outer side of said first shaft and having a pair of cut gears engaging a pair of rack bars secured at their upper ends to the outer end of the second table top member, a third shaft similarly mounted in said frame on the inside of said first shaft and having a cut gear mounted thereon adapted to mesh with the gear of said first shaft, a sprocket rigidly secured to said third shaft inside of said gear, a fourth shaft mounted similarly in said side frame near the opposite end of the same and carrying a sprocket rigidly secured thereto, a chain passing over said sprocket and over said sprocket on said third shaft and a cut gear on said fourth shaft engaging and operating a rack bar secured at its upper end to the outer end of the middle table top member.

7. In a pedestal base operating table a side frame carrying a shaft rotatable therein and having a handle movable thereon and engageable with the outer end of the same, a cut gear integral with said handle and adapted to selectively engage in different longitudinal positions one of two cut gears rigidly secured to the outer end of a second shaft similarly mounted in said frame parallel to the outer side of said first shaft and having a pair of cut gears engaging a pair of rack bars secured at their upper ends to the outer end of the second table top member, a third shaft similarly mounted in said frame on the inside of said first shaft and having a cut gear mounted thereon adapted to mesh with the gear of said first shaft, a sprocket rigidly secured to said third shaft inside of said gear, a fourth shaft mounted similarly in said side frame near the opposite end of the same and carrying a sprocket rigidly secured thereto, a chain passing over said sprocket and over said sprocket on said third shaft and a cut gear on said fourth shaft engaging and operating a rack bar secured at its upper end to the outer end of the middle table top member and a second side frame similar to the first side frame and on the opposite side of the table and carrying the opposite ends of the four shafts which have similar gears, rack bars, sprockets and chain as in the first side frame.

8. In an operating table means for tilting the table top longitudinally comprising a centrally pivoted top having a semi-circular cut gear secured thereto and meshed by a worm gear on the inner end of a shaft mounted on a bracket extending from the base of said table to the head of the same and a hand wheel secured to a second shaft mounted in the outer end of said bracket at the head of the table and said second shaft having a cut gear meshing with a worm gear on the outer end of said first shaft.

9. In a pedestal base operating table a side frame carrying a shaft rotatable therein and having a handle movable thereon and engageable with the outer end of the same, a cut gear integral with said handle and adapted to selectively engage in different longitudinal positions one of two cut gears rigidly secured to the outer end of a second shaft similarly mounted in said frame parallel to the outer side of said first shaft and having a pair of cut gears engaging a pair of rack bars secured at their upper ends to the outer end of the second table top member, a third shaft similarly mounted in said frame on the inside of said first shaft and having a cut gear mounted thereon adapted to mesh with the gear of said first shaft, a sprocket rigidly secured to said third shaft inside of said gear, a fourth shaft mounted similarly in said side frame near the opposite end of the same and carrying a sprocket rigidly secured thereto, a chain passing over said sprocket and over said sprocket on said third shaft and a cut gear on said fourth shaft engaging and operating a rack bar secured at its upper end to the outer end of the middle table top member and means near the head of said table for operating a kidney bridge mounted in said second top section.

10. In a pedestal base operating table a side frame carrying a shaft rotatable therein and having a handle movable thereon and engageable with the outer end of the same, a cut gear integral with said handle and adapted to selectively engage in different longitudinal positions one of two cut gears rigidly secured to the outer end of a second shaft similarly mounted in said frame parallel to the outer side of said first shaft and having a pair of cut gears engaging a pair of rack bars secured at their upper ends to the outer end of the second table top member, a third shaft similarly mounted in said frame on the inside of said first shaft and having a cut gear mounted thereon adapted to mesh with the gear of said first shaft, a sprocket rigidly secured to said third shaft inside of said gear, a fourth shaft mounted similarly in said side frame near the opposite end of the same and carrying a sprocket rigidly secured thereto, a chain passing over said sprocket and over said sprocket on said third shaft and a cut gear on said fourth shaft engaging and operating a rack bar secured at its upper end to the outer end of the middle table top member and a second side frame similar to the first side frame and on the opposite side of the table and carrying the opposite ends of the four shafts which have similar gears, rack bars, sprockets and chain as in the first side frame and means near the head of said table for operating a kidney bridge mounted in said second top section.

11. In an operating table means for tilting the table top longitudinally comprising a centrally pivoted top having a semi-circular cut gear secured thereto and meshed by a worm gear on the inner end of a shaft mounted on a bracket extending from the base of said table to the head of the same and a hand wheel secured to a second shaft mounted in the outer end of said bracket at the head of the table and said second shaft having a cut gear meshing with a worm gear on the outer end of said first shaft and means near the head of said table for operating a kidney bridge mounted in said second top section.

12. In combination in a pedestal base operating table, a four part top mounted thereon and vertically controlled by foot operated pedal means, means for tilting said top operated by a single control wheel at the head of said table and means for independently moving the four parts of said top by a second single control wheel at the head of said table.

13. In a pedestal base operating table the combination of a top mounted thereon having a plurality of parts, means for tilting said top operated by a single control wheel at the head of said table and means for independently moving all of the several parts of said top by a second single control wheel at the head of said table.

JOSIAH S. CLACHKO.