Sept. 9, 1958 W. J. LORANG 2,851,320

HYDRAULICALLY OPERATED CHIROPRACTIC TABLE

Filed Aug. 27, 1957 4 Sheets-Sheet 1

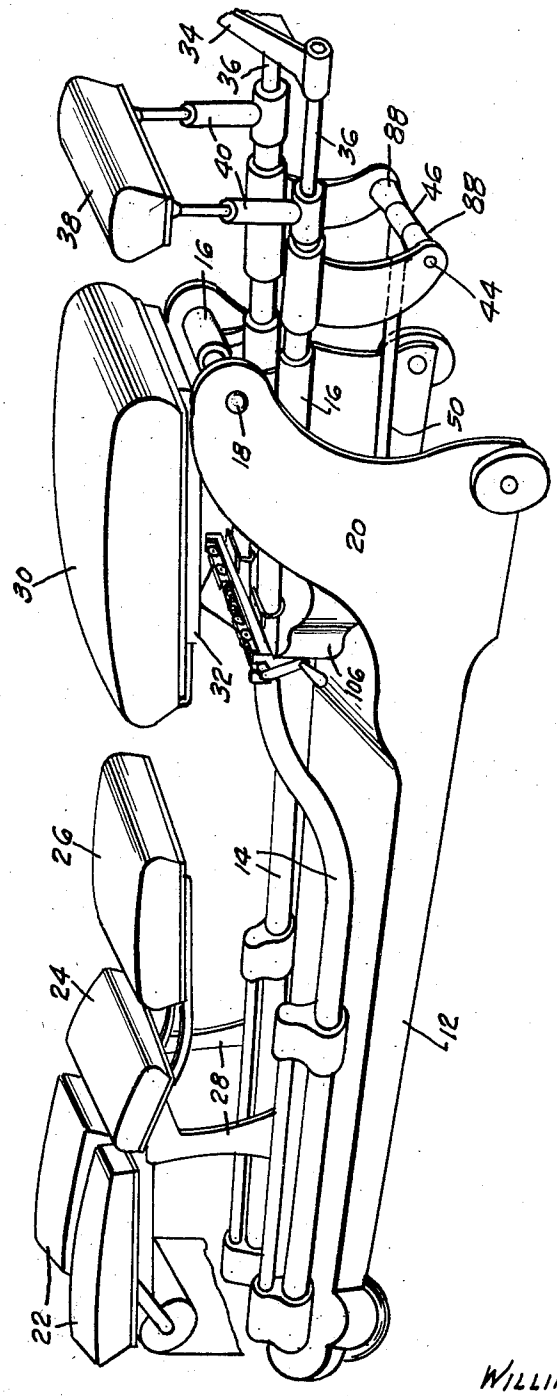


FIG. 1.

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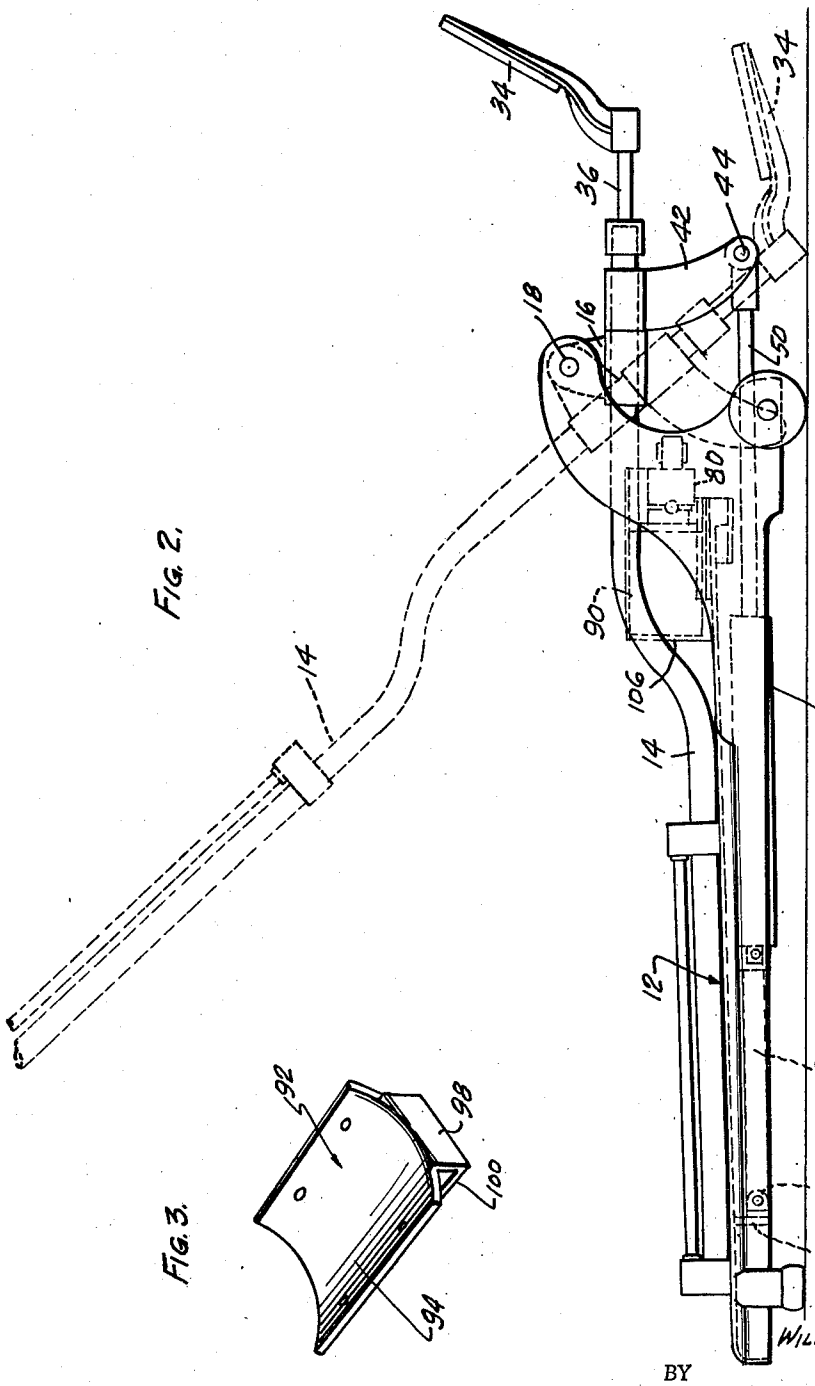


FIG. 2.

FIG. 3.

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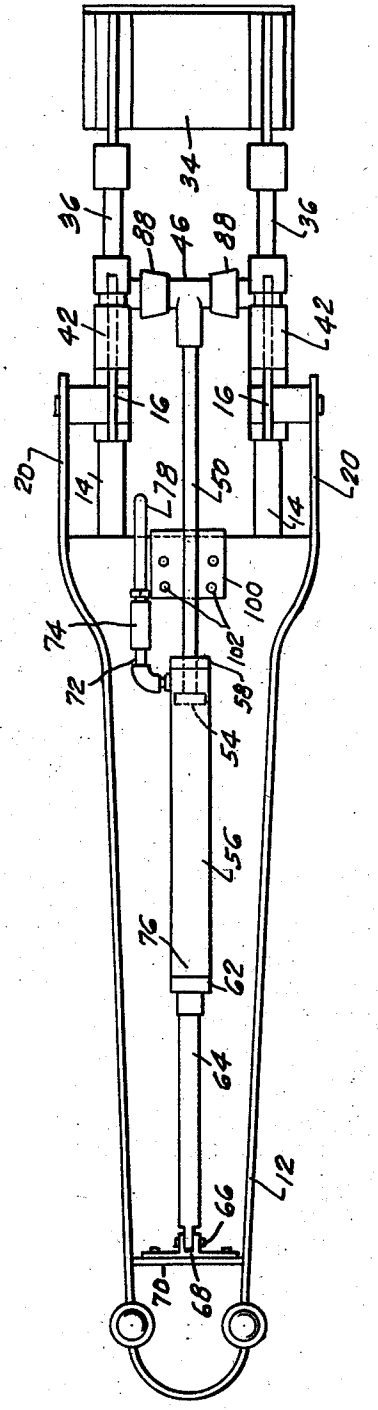


FIG. 4.

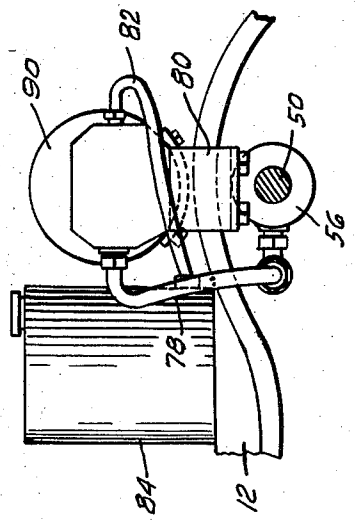


FIG. 5.

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FIG. 6.

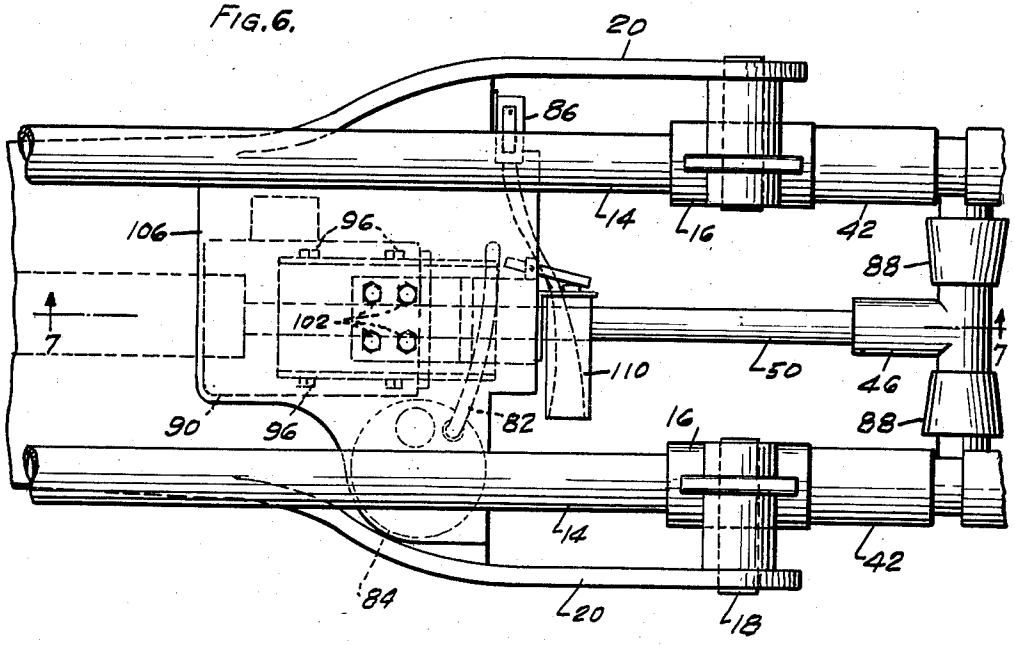
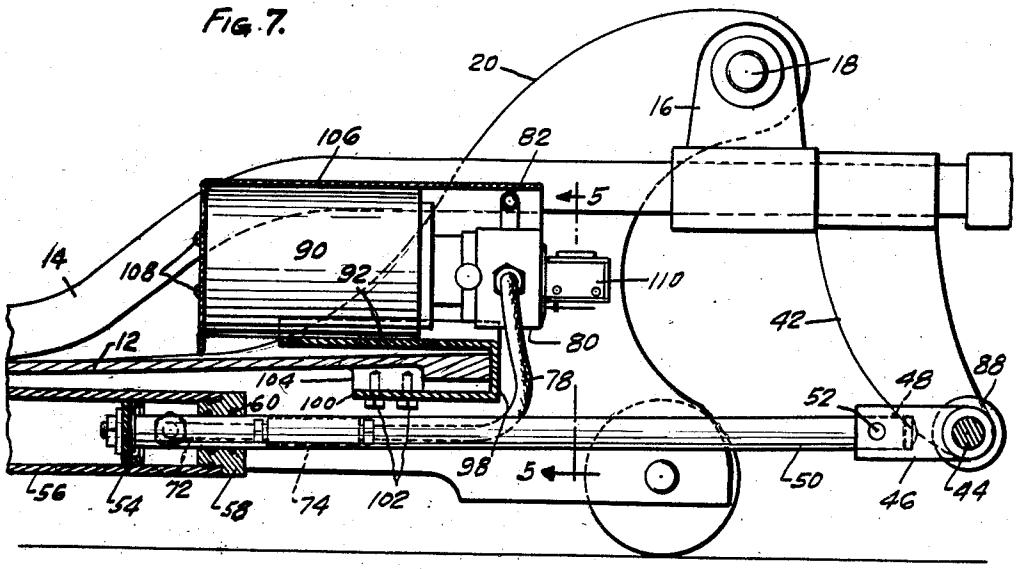


FIG. 7.



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2,851,320

HYDRAULICALLY OPERATED CHIROPRACTIC TABLE

William J. Lorang, Elgin, Ill., assignor to Williams Manufacturing Company, Inc., Elgin, Ill., a corporation of Illinois

Application August 27, 1957, Serial No. 680,445

3 Claims. (Cl. 311—7)

My invention relates to improvements in chiropractic tables and similar devices.

My invention relates more particularly to chiropractic tables of the type which have various adjustable body rest cushions including a foot step upon which a patient stands leaning forward against the cushions, and in this position the entire table is adapted to be lowered to a reclining or working position by hydraulically operated means.

Chiropractic tables of the type above referred to have been made in the past employing spring operated mechanisms, direct motor driven mechanisms, and various types of hydraulic mechanisms for lowering the table to an operating position and for raising the same for removal of the patient after the chiropractic treatment. However, none of the structures shown in the prior art have been sufficiently satisfactory in operation so that they have received universal acceptance.

The principal object of the present invention is to provide a hydraulically operated chiropractic table capable of push-button control and so constructed that the operator of the same can easily and quickly raise or lower the cushioned table upon its base and to any desired angle of rest.

A further object of the invention is to provide a hydraulic mechanism of the type described capable of use with chiropractic tables presently on the market.

Another object of the invention is to provide the motivating force for the chiropractic table of the type described, easily accessible for removal, replacement or repair, yet so located that it will not interfere with the normal operation of the chiropractic table.

Another object of the invention is to provide in connection with the hydraulically operated mechanism above described safety controls for the same, so that even though the operator may be careless in his control thereof, the table will be automatically stopped at maximum positions without any damaging results to any parts of the same.

For a more comprehensive understanding of the invention and the attendant advantages thereof, reference is made to the following description wherein one embodiment of the same is described and illustrated upon the accompanying drawings, upon which:

Fig. 1 is a generally front perspective view of one type of chiropractic table embodying my invention;

Fig. 2 is a side elevational view of the base and support rails of the same table, all of the support cushions and super-structure having been removed for more clarity in illustrating this invention; a raised position of the table has also been shown in dotted lines;

Fig. 3 is a front perspective view of the motor support bracket which I employ;

Fig. 4 is a bottom plan view of the base showing the hydraulic cylinder, piston and associated parts;

Fig. 5 is a fragmentary sectional view taken generally on the line 5—5 of Fig. 7, showing the position of the

motor, reservoir, piston and associated parts on the base of the table;

Fig. 6 is a fragmentary plan view of the lower end of the chiropractic table showing the location of the motor, reservoir and associated parts; and

Fig. 7 is a cross-sectional view thereof taken generally on the line 7—7 of Fig. 6.

The improvement to which this invention relates may be adapted to the type of chiropractic adjustment tables known in the art and shown in U. S. Patents 1,989,434, 2,023,429 and others.

Accordingly, in the accompanying drawings I have shown the usual chiropractic table including the supporting base **12** upon which a pair of support rails **14** are carried by support brackets **16** mounted on pivots **18** in the arched side wall portions **20** of the base **12**. These members permit the longitudinal adjustment and regulation of the various supporting cushions and their control means. The table may include a pair of head cushions **22**, a chest cushion **24** and an abdominal cushion **26**. This group of support members may be mounted upon the bracket or frame member **28** supported as shown from the rail sections **14**.

A leg or lower body support member **30** is provided mounted upon a bracket **32** pivotally mounted at one end upon suitable supports in the upright portions **20** of the base **12**. A foot support **34** is mounted for longitudinal adjustment on the rods **36** which are telescopically mounted at one end of the table in the ends of the rail sections **14**. I also provide a calf or ankle rest **38** mounted for adjustment in suitable brackets **40** which are also supported on the rail portions **14**. The entire supporting bed section consisting of the head, chest, abdominal and leg cushions, is thus mounted upon the support rails **40** or their pivot and swung about the same to be raised or lowered during use.

The support rails **14** are carried by brackets **16** mounted on the pivots **18** in the arched side wall portions **20** of the base **12**, and the support rods also carry downwardly depending brackets **42** which are connected at their lower end by a cross-rod **44**. The cross-rod **44** has a bracket **46** pivotally mounted thereon medially thereof, the bracket **46** having a transverse bore **48** to receive the end of a piston rod **50**, the rod being connected thereto by a pin member **52**.

The piston rod **50** may be provided at its opposite end with a cup leather piston or plunger **54** mounted for reciprocation in an oil cylinder **56**. The cylinder has a cap **58** at the forward end with an axial bore for the passage of the piston rod **50**, sealing rings **60** being provided to prevent leakage of oil at this point.

The cylinder **56** may have a cap **62** closing the opposite end of the same, the cap being pinned to a connecting rod **64** that is pivotally mounted upon a pin **66** in a fixed bracket **68** fastened to a cross-brace **70** in the bottom of the base **12**. With this connection, when the piston is moved to the left, Figs. 2 and 7, by oil under pressure, the support rods **14** will be raised as shown in Fig. 2 to the dotted line position, thus raising with them the assembly of support cushions which have previously been described, so that a patient can step off the chiropractic table.

The mechanism for operating the plunger or piston **54** in the cylinder **56** may include an oil conduit **72** connected to the forward end of the cylinder **56**, the conduit being provided with flow control regulator **74** for governing the rate of flow of fluid during the lowering of the table. A breather hole **76** is provided in the forward end of the cylinder **56** for permitting air to escape during the forward movement of the piston **54**.

The flexible conduit **78** may extend from the flow control regulator **74** to a motor driven oil pump **80**, the

oil pump being connected by an inlet conduit **82** to a reservoir **84** that is positioned on the top of the lower or right end of the base **12**. The oil pump **80** may be of the type which permits the by-passing of the oil back to the reservoir during the reclining or lowering action of the chiropractic table, and may also be provided with a solenoid operated safety valve which stops the flow of oil to the cylinder near the extreme limit of the raising movement of the chiropractic table. This may include a micro switch **86** fastened to the edge of the base **12** and adapted to be struck by the lower end of the arm of the hanging bracket **42** to shut off the pump when the support bars have been raised almost to their stop limit. In addition, to cushion the operation at this point, I have provided taper-shaped compressible rollers **88** on the cross-rod **44** which strike against the edge of the table to cushion the stopping movement at this point.

The pump **80**, as previously stated, may be driven by an electric motor **90** which is mounted above the top of the base at the lower end of the same (see Fig. 7) in a cradle shaped motor support bracket **92**, the support bracket **92** having an arcuate body **94**, in which the motor is seated and fastened by screw members **96** and a downwardly turned front ledge portion **98** terminating in a ledge **100** parallel to the top of the same. The ledge may thus be fastened by a pair of screw members **102** to a boss **104** formed on the bottom of the base **12**.

The motor, pump and reservoir are thus all located on the back end of the base **12** between the upwardly extending support arm portions **20**, and may be protected and concealed from view by a cover member **106** which is so formed that it encompasses the reservoir **84**, the motor **90** and pump **80** can be fastened by screw means **108** to a forward shoulder on the motor **90**, thus keeping the same from line contact with any portion of the base and preventing the transfer of any vibrations in the motor to any of the parts of the chiropractic table.

As previously mentioned, the pump includes the usual check valve which stops the flow of oil from the cylinder at any desired angular level, and in addition a release valve which is operated to permit the return flow of oil when it is desired to lower the table. The operation of the motor and release valve is controlled by the usual switch which may be placed on the floor adjacent the chiropractic table and which has two buttons, one for starting the motor to raise the table and the other for actuating the solenoid-operated release valve **110** of the pump **80**. Thus in addition to the controls above mentioned, the raising movement of the table is stopped by the switch **86** operated by the bracket **42**, and the up and down movement between the maximum and minimum is controlled by the push button switch previously described.

From the above and foregoing it can be seen that I have provided a comparatively simple yet highly efficient hydraulic power system for operating a chiropractic table for its raising or lowering operation, one which the operator controls with a foot-operated push button control, and in addition the safety feature of the automatic stop when the maximum raising has been reached. In addition, the power unit which I provide is so concentrated and positioned that it does not detract from the appearance of the chiropractic table nor does it interfere with the efficient operation of the same. Also, the power unit is capable of installation or removal by the simple expedient of attaching or removing the bolts which fasten the motor support bracket and connecting the cylinder and piston mechanism between the front of the base and the cross-rod between the support bars of the table.

I contemplate that changes and modifications may be made in the exact details shown and I do not wish to be limited in any particular; rather what I desire to secure and protect by Letters Patent of the United States is:

1. The combination with a chiropractic table of the type having a flat horizontally disposed base that has a cavity under the same throughout the length thereof, said base having two upwardly projecting support arms at one end of the same, a pivot pin connected between said arms, a pair of brackets, a pair of parallel support rails carried by said brackets for pivotal action about said pivot, said support rails having the usual head, chest, abdominal and leg support cushions mounted thereon, of means for raising or lowering said support rails and cushions by swinging the support rails, comprising a pair of brackets connected near one end of said support rails, arms extending downwardly from said brackets, a cross-rod connected between the ends of said arms, a block pivotally carried on said cross-rod, a piston rod connected to said block at one end, a piston connected to the other end of said piston rod, a cylinder longitudinally disposed in the cavity below said base, a transverse wall in said base adjacent the front of the same, a bracket fastened thereto, a rod pivotally connected to said bracket, said rod fastened to one end of said cylinder, a fluid conduit connected adjacent the front end of said cylinder, a motor and pump mounted on said base adjacent said support arms, a release valve in said pump, said conduit connected to said pump, a fluid reservoir mounted on said base adjacent said motor and pump, a conduit from said reservoir to said pump, and a push button switch for operating said motor to raise said support arms or for operating said release valve to permit the return of fluid to said reservoir.

2. The combination with a chiropractic table of the type having a flat horizontally disposed base that has a cavity under the same throughout the length thereof, said base having two upwardly projecting support arms at one end of the same, a pivot pin connected between said arms, a pair of brackets, a pair of parallel support rails carried by said brackets for pivotal action about said pivot, said support rails having the usual head, chest, abdominal and leg support cushions mounted thereon, of means for raising or lowering said support rails and cushions by swinging the support rails, comprising a pair of brackets connected near one end of said support rails, arms extending downwardly from said brackets, a cross-rod connected between the ends of said arms, a block pivotally carried on said cross-rod, a piston rod connected to said block at one end, a piston connected to the other end of said piston rod, a cylinder longitudinally disposed in the cavity below said base, a transverse wall in said base adjacent the front of the same, a bracket fastened thereto, a rod pivotally connected to said bracket, said rod fastened to one end of said cylinder, a fluid conduit connected adjacent the front end of said cylinder, a motor and pump mounted on said base adjacent said support arms, a release valve in said pump, said conduit connected to said pump, a fluid reservoir mounted on said base adjacent said motor and pump, a conduit from said reservoir to said pump, and a push button switch for operating said motor to raise said support arms or for operating said release valve to permit the return of fluid to said reservoir, said motor, pump and reservoir having a cover therefor fastened to the front of said motor.

3. The combination with a chiropractic table of the type having a flat horizontally disposed base that has a cavity under the same throughout the length thereof, said base having two upwardly projecting support arms at one end of the same, a pivot pin connected between said arms, a pair of brackets, a pair of parallel support rails carried by said brackets for pivotal action about said pivot, said support rails having the usual head, chest, abdominal and leg support cushions mounted thereon, of means for raising or lowering said support rails and cushions by swinging the support rails, comprising a pair of brackets connected near one end of said support rails, arms extending downwardly from said

brackets, a cross-rod connected between the ends of said arms, a block pivotally carried on said cross-rod, a piston rod connected to said block at one end, a piston connected to the other end of said piston rod, a cylinder longitudinally disposed in the cavity below said base, a transverse wall in said base adjacent the front of the same, a bracket fastened thereto, a rod pivotally connected to said bracket, said rod fastened to one end of said cylinder, a fluid conduit connected adjacent the front end of said cylinder, a motor and pump mounted on said base adjacent said support arms, a release valve in said pump, said conduit connected to said pump, a fluid reservoir mounted on said base adjacent said motor and pump, a conduit from said reservoir to said pump, and a push button switch for operating said motor to raise said support arms or for operating said release valve to permit the return of fluid to said reservoir, said motor, pump and reservoir having a cover therefor fastened to the front of said motor, said base also having a micro-switch actuated by one of said bracket arms for stopping said motor in a maximum raised position of said table.

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