April 29, 1958 C. F. PERRY 2,832,656

MEDICAL EXAMINING TABLE

Filed Oct. 1, 1957

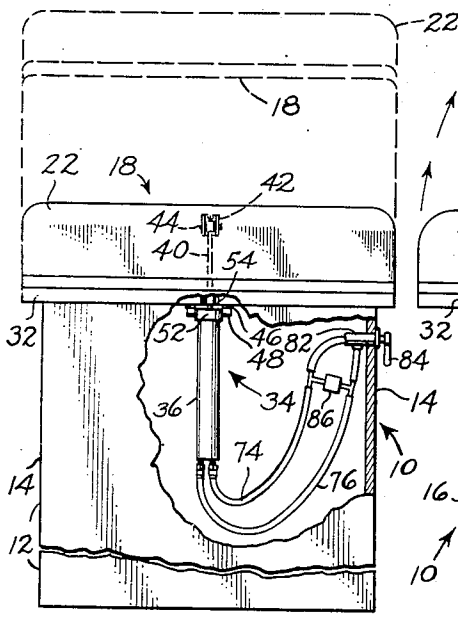


Fig. 2.

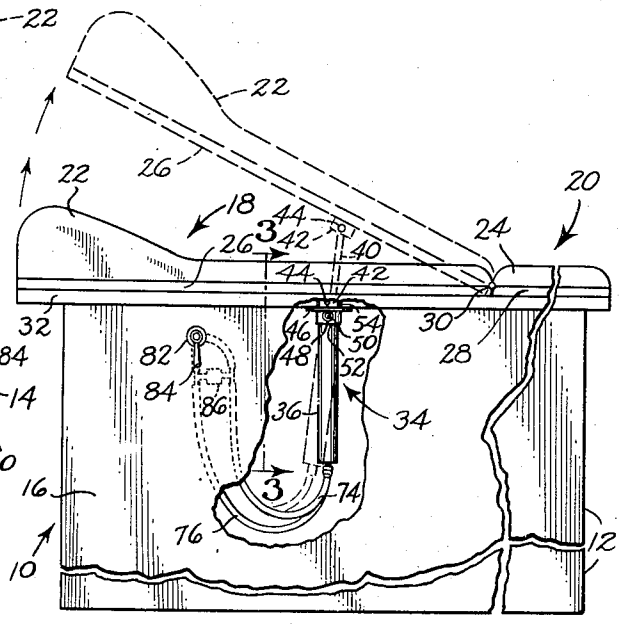


Fig. 1.

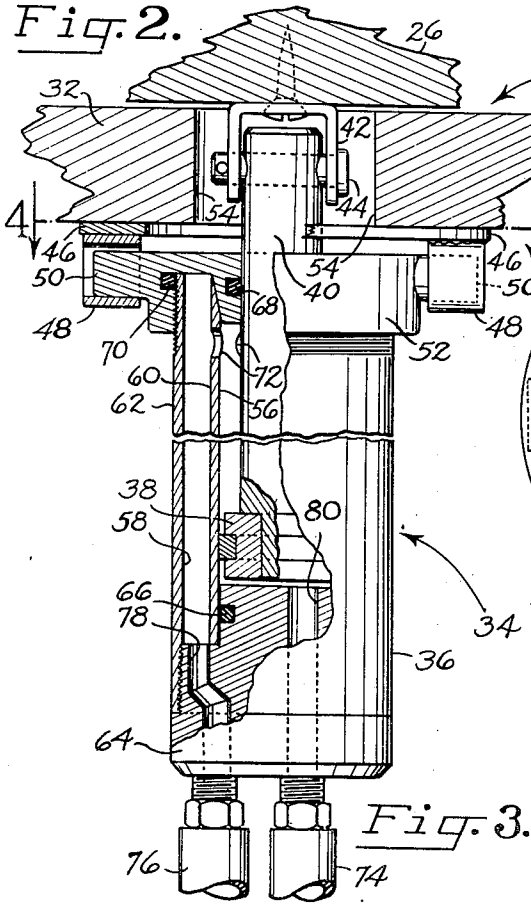


Fig. 3.

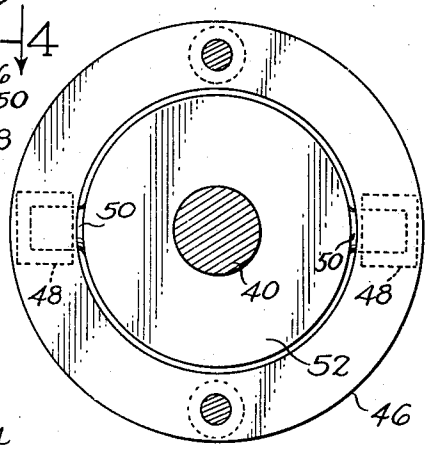


Fig. 4.

INVENTOR.
Cecil F. Perry
BY
Ramsey and Kolisch
Attys.

United States Patent Office 2,832,656 Patented Apr. 29, 1958

2,832,656

MEDICAL EXAMINING TABLE

Cecil F. Perry, Portland, Oreg.

Application October 1, 1957, Serial No. 687,472

6 Claims. (Cl. 311—7)

This invention relates to medical examining equipment, and more particularly to an improved medical examining table such as is used in medical offices in diagnosing and conducting preliminary examinations of patients.

Medical examining tables conventionally have a table surface mounted on a suitable frame for supporting the patient during examination. The table surface includes a section which is pivotable relative to the frame enabling the section to be adjustably positioned between raised and lowered positions so as to vary the posture of the patient resting on the table. The medical examining table of this invention is characterized by a novel construction for locking the pivoting table section in different positions of adjustment, which is releasable to permit easy and accurate adjustment of the table height.

In general terms, this invention contemplates the inclusion of an hydraulic positioning means which is set in a locked state or released by turning a valve in the hydraulic circuit for the positioning means. The hydraulic positioning means comprises a piston pump interposed between the frame and the pivoting table section and pivotally connected to the two. When the pivoting table section is raised to an adjusted position, the pump is actuated so that a column of fluid is drawn up into one end of the piston bore accommodating the piston for the pump. A control valve in the fluid supply line to the pump when closed retains this column of fluid in the piston bore and locks the pivoting table section in a raised position.

The fluid which is drawn up into one end of the piston bore to support the piston in the bore is stored in the other end of the piston bore, and flows from this other end through suitable conduit means to the first mentioned end of the bore. This conduit means includes flexible hose connections and the control valve regulating the supply, and exhaust at the end of the piston bore. In a preferred embodiment, a check valve is included accommodating unidirectional flow of fluid into the one end of the piston bore. This enables the pivoting table section to be raised without the manipulation of a valve.

The hydraulic positioning means permits fast and accurate table settings between an infinite number of positions. A negligible amount of friction exists between the parts so that the pivoting table section may be raised smoothly and evenly with very little agitation of a patient resting on the table. The table is readily lowered without first having to raise the patient simply by adjusting the control valve so as to permit exhaust of fluid from the one end of the piston bore.

The invention further features a novel mounting for the piston pump. The housing or cylinder for the piston pump is pivoted at at upper end to a portion of the frame for the examining table which lies closely adjacent the pivoting table section when the pivoting section is in its lowered position. In the usual instance, the frame for the table includes a cover surface which extends beneath the pivoting table section, and the piston pump extends

through this cover surface. The pivot connection for the pump cylinder reduces the clearance which must be provided in the cover surface to enable the piston to swing freely as the table is raised and lowered. This results in reduced cleaning problems, an important factor in medical offices.

Other objects, features and advantages of this invention will become apparent as the invention is described in conjunction with the following drawings wherein:

Fig. 1 is a side view of an examining table constructed according to an embodiment of this invention, the table having a pivotable table section shown in dotted lines in its raised position and in solid lines in its lowered position;

Fig. 2 is an end view of the examining table showing the pivotable table section in a lowered position;

Fig. 3 is a section view, with parts broken away, along the line 3—3 in Fig. 1; and

Fig. 4 is a section view along the line 4—4 in Fig. 3.

Referring now to the drawings for a description of an embodiment of this invention, the medical examining table is indicated generally at **10**. The table shown is comprised of a generally rectangular frame **12** comprised of side walls **14** and **16** supporting table sections or portions **18** and **20** carried at the top end of the table. Table sections **18** and **20** constitute a table means for supporting a patient. The table sections are upholstered for comfort with padding **22**, **24** laid over rigid sheets **26**, **28**. Padding **22** for table section **18** has a built-up portion which serves as a head rest. Section **18** is pivotable relative to the frame of the table, between raised and lowered positions. In the construction shown, hinges such as hinge **30** hinge connect pivoting table section **18** to table section **20** which is fixed in position.

If desired, the front portion of the table may be provided with shelves under fixed table section **20**. In the embodiment illustrated, for simplicity, a straight wall is shown. The table frame also includes under pivoting section **18** and section **20** a cover **32** which extends over the top of the table underneath the table sections. The cover is provided to keep dirt and foreign matter from falling into the interior of the table frame and for reasons of eye appeal. If desired, the portion of cover **32** under table section **18** may be used for momentarily resting equipment during the examination of a patient when the table section is in a raised position.

Interposed between the pivoting table section and the frame of the table is a piston pump mechanism **34**. The pump mechanism is comprised of a housing or cylinder portion **36** and a piston **38** which is connected through a rod **40** to table section **18**. Rod **40** is pivotally connected at its upper or outer end to the under side of sheet **26** of section **18**. The connection is made by means of bracket **42** affixed as by screws to sheet **26** and carrying a pivot pin **44** extending through the upper end of the rod.

Cylinder **36** of the piston pump is pivotally mounted at its upper end to a portion of the frame which is spaced directly below the pivoting table section when the section is in the lowered position shown in Fig. 1. Specifically, secured to cover **32** of the frame is a retainer ring **46**. The retainer ring has a pair of mount portions **48** spaced diametrically on opposite sides of the ring. Rotatably mounted in the mount portions are protrusions **50** integral with an end member **52** of housing **36**. The rotatable connection permits the housing to pivot relative to the retaining ring. An aperture **54** accommodates rod **40** which extends through cover **32** to reach table section **18**.

Housing **36** is provided with a pair of passages extending longitudinally within the housing, a cylindrical

piston bore 56 centrally in the housing, and an annular passage 58 arranged concentrically therewith. Walls 60 and 62, together with end members 52 and 64, define these passages. Piston 38 and rod 40 reciprocate in bore 56, with the end of rod 40 extending outwardly of the housing through an accommodating hole formed in member 52. Seals 66, 68, and 70 are included to prevent leaking of hydraulic fluid.

Interconnecting passages 56 and 58 at one of their ends are a number of ports or passages 72, radially spaced around cylindrical wall 60 at the upper end of the housing. The lower or base ends of passages 56, 58 are connected by flexible hose segments, or conduits 74 and 76. Hose 76 communicates with a bore 78 and passage 58, and hose 74 communicates with a bore 80 and passage 56. Conduits 74, 76 connect at their other ends with a conventional two-way valve 82 mounted in the frame of the table and having a handle 84 carried outwardly of the frame. Handle 84 may be turned to close the flow between the conduits 74, 76. Handle 84 may also be turned to open valve 82 and the connection between the two conduits. A conventional check valve 86 arranged as a bypass across valve 82 permits fluid to flow freely from conduit 76 to conduit 74, but shuts off the flow of fluid from conduit 74 to conduit 76, or in the other direction. Ports 72, conduits 74, 76, and valve 82 constitute fluid conduit means accommodating fluid exchange between the two ends of piston bore or passage 56.

In operating the herein-disclosed table, hydraulic fluid is deposited within annular passage 58, piston bore 56, and in the various conduits to fill completely the system. When table section 18 is pivoted upwardly and the piston pump extended, fluid is drawn up into the base end of piston bore 56 and a column of fluid builds up under piston 38. The fluid flows from the portion of bore 56 above the piston head through ports 72 into annular passage 58 and thence through conduits 76, 74 to the bottom of piston bore 56. Fluid flows from conduit 76 to conduit 74 either through check valve 86, or valve 82 if the valve is open. Closing of valve 82 prevents the table section from settling from its raised position.

The table is lowered merely by turning valve 82 to permit flow of fluid in a reverse direction from the base of piston bore 56 through conduits 74 and 76 to the upper end of the piston bore. In practice, by turning handle 82 only slightly, it is possible to permit the table to settle slowly without having a patient lift himself from the table. It will be apparent that fast, accurate table settings are possible with a minimum amount of discomfort to any occupant of the table.

As mentioned hereinabove, the piston pump extends through an aperture 54 in cover 32. In moving between raised and lowered positions, the piston pump swings about a horizontal axis coinciding with the axial center of protrusions 50. The piston pump is pivoted at its upper end to reduce to a minimum the space subtended by the piston pump along the plane of cover 32 when swinging between raised and lowered positions. In this manner, aperture 36 need not be very large, and the difficulties in cleaning the examining table are reduced.

It is recognized that modifications and variations in the parts and their arrangement from the specific embodiment illustrated are possible. It is desired not to be limited to the specific form of invention illustrated, but rather to cover all variations which would be apparent to one skilled in the art and that come within the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. A medical examining table comprising a frame, table means mounted on said frame defining a support for a patient carried thereon, said table means having a table portion pivotable relative to said frame and adjustable between raised and lowered positions, and hydraulic positioning means interposed betwen said table portion and frame for fixing said table portion in selected positions

of adjustment, said positioning means comprising a piston pump having a housing with a piston bore mounting the piston for the pump, said housing having a passage communicating with said bore for the supply of fluid thereto on actuation of the piston pump, and valve means for closing off said passage.

2. A medical examining table comprising a frame, table means mounted on said frame defining a support for a patient carried thereon, said table means having a table portion pivotable relative to said frame and adjustable between raised and lowered positions, and hydraulic positioning means interposed between said table portion and a portion of said frame for fixing said table portion in selected positions of adjustment, said positioning means comprising a piston pump having a housing pivoted to one of said portions, said housing having a piston bore and a passage communicating with said bore for the supply of fluid thereto on actuation of the piston pump, a piston and rod mounted for reciprocation in said piston bore, said rod being pivotally connected to the other of said portions, and valve means for closing off said passage.

3. A medical examining table comprising a frame, table means mounted on said frame defining a support for a patient carried thereon, said table means having a table portion pivotable relative to said frame and adjustable between raised and lowered positions, a piston pump comprising a housing and a piston and rod interposed between said table portion and frame, said housing having a piston bore mounting the piston for the pump and a pair of passages, one connected to each end of the piston bore, and fluid conduit means interconnecting said pair of passages accommodating fluid exchange between the two ends of the piston bore, said fluid conduit means having a valve for opening and closing the conduit means.

4. In a medical examining table a frame, a table portion mounted on an upper portion of said frame and pivotable relative thereto for adjustment between raised and lowered positions, an elongated piston pump comprising a housing and piston and rod interposed between said table portion and frame, said housing being pivotally connected at its upper end to a portion of said frame spaced adjacent said table portion when it occupies its lowered position, the outer end of said rod being pivotally connected to said table portion, said housing having a piston bore mounting the piston for the pump and a passage communicating with said bore for the supply of fluid thereto on actuation of the piston pump, and valve means for closing off said passage.

5. In a medical examining table a frame, a table portion mounted on an upper portion of said frame and pivotable relative thereto for adjustment between raised and lowered positions, an elongated piston pump comprising a housing and piston and rod interposed between said table portion and frame, said housing being pivotally connected at its upper end to a portion of said frame spaced adjacent said table portion when it occupies its lowered position, the outer end of said rod being pivotally connected to said table portion, said housing having a piston bore mounting the piston for the pump and a pair of passages, one connected to each end of the piston bore, and fluid conduit means interconnecting said pair of passages accommodating fluid exchange between the two ends of the piston bore, said fluid conduit means having a valve for opening and closing the conduit means.

6. In a medical examining table a frame, a table portion mounted on an upper portion of said frame and pivotable relative thereto for adjustment between raised and lowered positions, an elongated piston pump comprising a housing and piston and rod interposed between said table portion and frame, said housing being pivotally connected at its upper end to a portion of said frame spaced adjacent said table portion when it occupies its lowered position, the outer end of said rod being pivotally connected to said table portion, said housing having

a piston bore mounting the piston for the pump and a pair of passages, one connected to each end of the piston bore, and fluid conduit means interconnecting said pair of passages accommodating fluid exchange between the two ends of the piston bore, said fluid conduit means having check valve means accommodating fluid flow in one direction between the two ends of said bore and a manually controlled valve mounted on said frame for regulating fluid flow in the other direction.

References Cited in the file of this patent

UNITED STATES PATENTS

1,544,117	Wyatt	June 30, 1925
2,217,783	Bell	Oct. 15, 1940
2,314,778	Froelich	Mar. 23, 1943
2,520,455	Clachko	Aug. 29, 1950
2,588,174	Spielberg	Mar. 4, 1952
2,606,801	Shampaine	Aug. 12, 1952