Feb. 25, 1930. I. C. MIERLEY 1,748,784

PHYSICAL AND SURGICAL APPARATUS

Filed Feb. 13, 1928

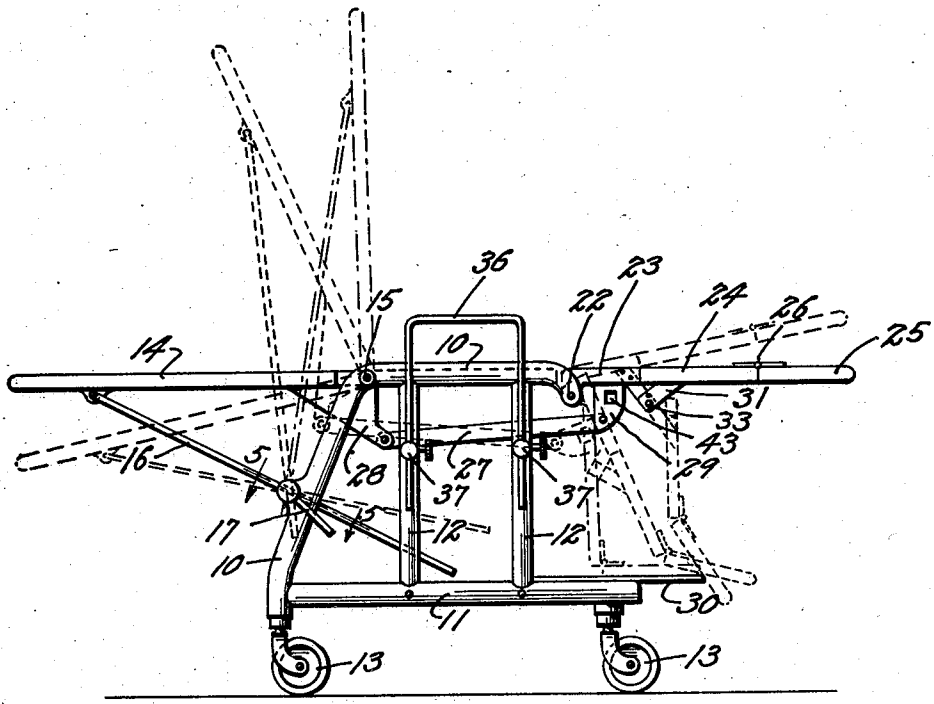

Fig 1

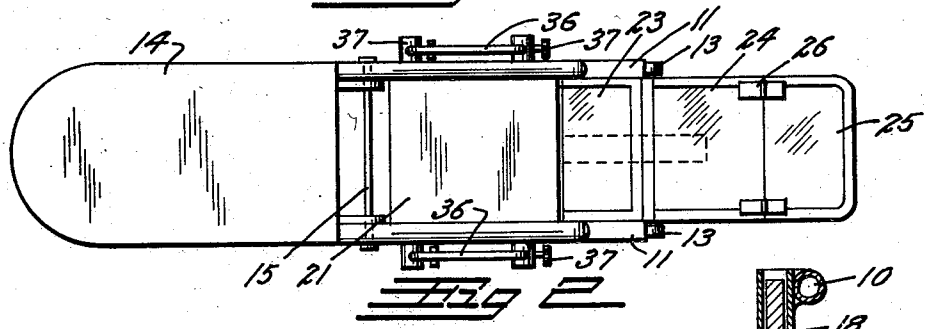

Fig 2

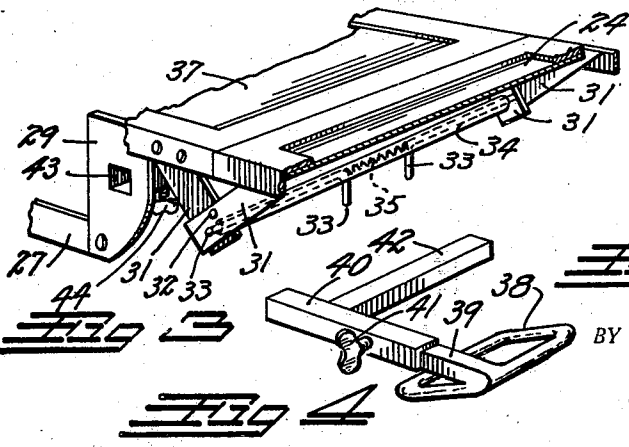

Fig 3

Fig 4

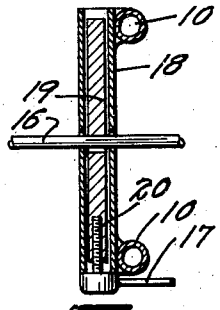

Fig 5

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UNITED STATES PATENT OFFICE

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PHYSICAL AND SURGICAL APPARATUS

Application filed February 13, 1928. Serial No. 253,915.

This invention relates to convertible, medical and surgical table or chair for use by physicians and surgeons, for office examinations and operations. The principal object of the invention is the provision of an examination chair which can be quickly converted into an operating table while the patient is in place thereon, and which can be used as a wheeled chair or stretcher for conveniently transporting the patient either in a sitting position or while prone.

Another object of the invention is to provide an adjustable operating table in which any operating or examining position, from a sitting posture with foot rest to a Trendelenburg posture, can be quickly and easily obtained while the patient is in position thereon.

Another object of the invention is to provide a leg rest structure which can be quickly dropped downwardly at the knee portion so that the patient's body from the knees upwardly can lie horizontally or in the Trendelenburg posture with the feed depending.

Still another object is to provide a foot rest which will automatically come into position to provide a stool when the table is adjusted to the chair position.

A still further object is to provide adjustable arm rests and hand holds for the convenience and relief of the patient which can be brought into position or completely removed from the zone of operations without disturbing the patient.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

Fig. 1 is a side elevation of my improved apparatus showing in solid line the horizontal or general operating position and in broken line other positions to which the table is convertible.

Fig. 2 is a plan view thereof.

Fig. 3 is a detail perspective view of the mid-leg-rest hinge and latch.

Fig. 4 is a detail perspective view of the heel stirrups employed in combination with the apparatus for elevated leg postures.

Fig. 5 is a detail longitudinal section through the back brace clamp.

The invention comprises a supporting frame formed from bent leg members 10 which also form the top members of the frame. The leg members 10 are supported from the base members 11 by vertical struts 12. The frame is carried on rubber tired castor wheels 13 for easy portability. The castor wheels 13 are preferably of one of the common types at present on the market provided with brakes so that they may be rigidly held in position while the device is being used as an operating table.

A back rest 14 is hinged at 15 to the members 10 and supported in any desired position by a hinged back brace rod 16. The back brace rod 16 is locked in position by means of a clamping lever 17, shown in detail in Fig. 5. The clamping member comprises a tube 18 which extends transversely between the members 10. Within the tube is a slidable rod 19 into the end of which a threaded stud 20 is screwed by means of a clamping lever 17. The back brace rod 16 passes entirely through the tube 18 and through a hole in the rod 19. Thus by tightening the lever 17, the rod 18 is pulled against the brace rod, firmly locking it in place. The back rest can be lowered below the horizontal position, to obtain the Trendelenburg posture or if necessary, to lower the patient's head for drainage or resuscitation purposes.

A seat portion 21 is fixedly secured between the horizontal portions of the members 10.

Pivoted to the forward extremities of the members 10 as shown at 22, is a leg rest portion comprising a thigh section 23 to which is hinged adjacent the patient's knees, a calf section 24 carrying a foot rest 25 hinged thereto at 26. The entire leg section is caused to move in unison with the back rest 14 by means of connecting links 27 passing under each side of the seat 21. The links 27 extend between rear brackets 28 carried by the back rest 14 and front brackets 29 secured to the thigh portion 23 of the leg rest. It is desired to call attention to the fact that the front brackets 29 are shorter than the rear brackets 28, so as to cause the back rest to swing through a larger arc than the leg rest.

By this construction, the leg rest will swing downwardly as the back rest swings upwardly. When the back rest has been raised sufficiently far to form a chair the foot rests 25 will contact with a projecting plate 30 fixed between the members 11. The member 30 will force the foot rest forwardly about its hinge 26 into a natural position to receive the feet of the patient seated in the chair.

Normally the calf section 24 is in alignment with the thigh section 23. It can, however, be dropped by means of a special hinge construction shown in detail in Fig. 3 and comprising two diagonally placed hinge plates 31 at each side of the chair. Two of the hinge plates being carried by the thigh section and two by the calf section. The hinge plates 31 at each side are pivoted together by hinge pins 32 and are locked in position by means of latch bolts 33 which slide within a hollow tube 34 and are forced outwardly through the two pivoted together hinge plates by means of a spring 35.

Hand holds 36 are provided at each side of the seat portion 21. These hand holds comprise inverted U shaped bars, the extremities of which pass through clamps 37 on the struts 12. By this arrangement the hand holds can be raised to any desired height and locked in place or, by loosening the clamp 37, they can be dropped entirely below the plane of the table.

For genito-urinary operations and the like requiring the legs of the patient to be raised and spread apart, two stirrups 38 are provided, illustrated in detail in Fig. 4. The stirrups are carried on square studs 39 which may be locked in any desired position within a head 40 on a T shaped support by means of a set screw 41. The T shaped support is provided with a square shank 42 which slides within the extremities of a square tubing 43 that extends between the bracket plates 29. The shanks may be withdrawn to provide any desired separation of the patient's legs. The pressure of the patient's heel upon the stirrups tends to twist the square shank 42 within the square tubing 43 so as to automatically clamp the shanks in any desired extended position. By lifting the stirrups so as to relieve the twisting weight, they can be easily moved inwardly or outwardly. An additional lock is provided by means of a set screw 44 to prevent the shanks from falling from the tubing. The stirrups can be adjusted forwardly or backwardly within the heads 40 to raise the patient's legs to any desired elevation.

The back rest 14, seat portion 21, and the leg portion, may if desired be covered with any suitable cushions as is usual in chairs of this character.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what I claim and desire secured by Letters Patent is:—

1. A combined surgical chair and table comprising a supporting frame; a seat portion rigidly carried in said supporting frame; a back rest hinged adjacent one extremity of said seat portion; a leg rest hinged adjacent the other extremity of said seat portion; brackets projecting from said back rest; other brackets projecting from said leg rest; links connecting said brackets so as to cause said leg rest to move in unison with said back rest; means for securing said back rest in any desired position, said leg rest comprising a thigh section, a calf; and a hinge between said calf section and said thigh section so that it may be dropped to a substantially vertical position while said thigh section is maintained horizontal and in alignment with said seat portion.

2. Means for providing stirrups for a surgical chair comprising a square tube extending transversely across said chair, its extremities being open; a T shaped member; a square shank on said latter member adapted to be fitted into said square tube; a head on said latter member, said head being hollow; and a stirrup having a projecting shank adapted to be received in said head.

3. Means for providing stirrups for a surgical chair comprising a tube extending transversely across said chair, its extremities being open; a T shaped member; a shank on said latter member adapted to be fitted into said tube; a head on said latter member, said head being hollow; a stirrup having a projecting shank adapted to be received in said head; means for locking said latter shank in any desired position in said head.

4. A combined surgical chair and operating table comprising: a seat portion; an adjustable back rest hinged to said seat portion; a thigh rest hinged to said seat portion and arranged to swing either at an upward

angle thereto or depend directly downwardly therefrom; means for locking said thigh rest in any desired position; a calf rest hinged to said thigh rest and means for allowing said calf rest to swing to a vertical depending position regardless of the position of said thigh rest; and means for locking said calf rest in alignment with said thigh rest.

In testimony whereof, I affix my signature.

IRA C. MIERLEY.