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W. GRAUPE

ADJUSTABLE KNEE SUPPORT

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Fig. 1.

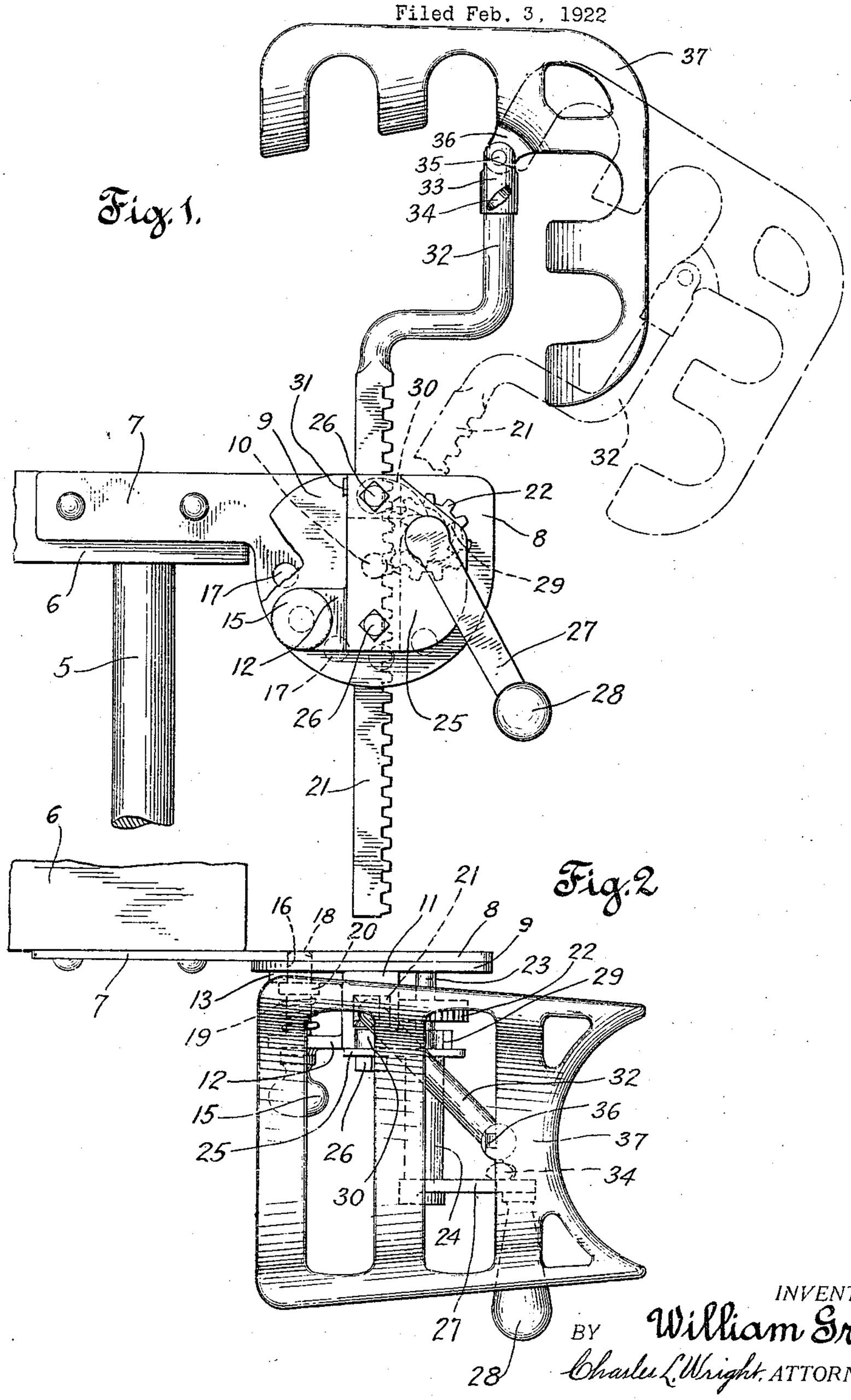

Fig. 2

INVENTOR

BY William Graupe

Charles L. Wright, ATTORNEY

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WILLIAM GRAUPE, OF NEW YORK, N. Y., ASSIGNOR TO HOSPITAL SUPPLY COMPANY AND WATTERS LABORATORIES, CONSOLIDATED, BOTH OF NEW YORK, N. Y.

ADJUSTABLE KNEE SUPPORT.

Application filed February 3, 1922. Serial No. 533,841.

To all whom it may concern:

Be it known that I, WILLIAM GRAUPE, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Adjustable Knee Supports, of which the following is a specification.

The purpose of this invention is primarily to provide means for supporting the lower limbs of persons in a recumbent position, and particularly to devices capable of being engaged to operating tables or beds used by parties undergoing surgical operations, obstetrical cases, for rest purposes by invalids, and other similar reasons.

Another object is to furnish means whereby the parts contacting with the limb are adjustably mounted to pivot from a horizontal plane, turn on a vertical axis, be elevated or depressed and rocked relative to their supports, in a manner to accommodate different sizes of individuals, preferred postures and the like, contributing to comfort and convenience.

A further aim is in the provision of means for raising the limb after it has been placed on the support, and also to move it in a plane parallel with the side of the table, all of these several adjustments being easily performed by one individual, thus dispensing with extra attendants.

These objects are attained by the novel construction, combination and arrangement of parts hereinafter described and shown in the accompanying drawing, forming a material part of this disclosure, and in which:—

Figure 1 is a side elevational view of a knee rest made in accordance with the invention, certain of the parts being duplicated in broken lines to illustrate the position which they may assume.

Figure 2 is a plan view of the same.

In the drawing the numeral 5 designates an operating table support and 6 its body, to each side of which is securely and permanently attached an arm 7 extending from a plate 8 having a semi-circular lower side projecting in a vertical plane below the surface of the table.

A second plate 9 is engaged by a pivot 10, at the center of the semi-circular portion of the plate 8.

Extending laterally outward from about the center of the plate 9 is a fixed bracket 11, having at its lower end a pair of spaced lugs, respectively 12 and 13, pierced in register to receive a pin 14, provided at its outer end with a knob or head 15.

The opposite end of the pin 14 normally extends through an opening 16 near the edge of the plate 9 and engages in any of the similar registering openings 17 in the plate 8, the pin being urged into engagement by a compression spring 19, encircling the body of the pin between a collar 20 fixed on it and the inner side of the lug 12, the arrangement being such as to lock the respective plates when in various positions of adjustment.

Passing longitudinally through the bracket 11 is a rack-bar 21, its teeth engaging a pinion 22 fixed on a spindle 23, guided in a sleeve 24 fixed rigidly on a plate 25 secured by screws 26 to the bracket 11.

The outer end of spindle 23 has fixed to it a crank arm 27 provided with an actuating handle 28. Also secured to the spindle 23, adjacent the pinion, is a ratchet wheel 29 engageable by a pawl 30, which when turned into inoperative position, rests upon the stop 31.

Integral with the upper end of rack-bar 21, which may be of any preferred length, is a stem 32 offset diagonally outward and then upward, parallel with the bar.

The extremity of the stem is reduced and fitted to enter a socket 33 revoluble thereon and provided with a set screw 34 by which it may be clamped in axial adjustment.

The upper end of the socket is forked and carries a pivot 35 connecting a lug 36 extending from the inner corner of the knee support 37.

This support is formed of two integral concavo-convex members disposed substantially at right angles, their upper sides being shaped to suit the limb at the knee in a manner clearly apparent.

Due to the tilting or oscillating effect obtained by the pivot 35, the support is automatically adjustable to suit the posture of the limb and obviously the support can move on the axis of the upper element 32 of the rack-bar.

The support is adjustable in height relative to the table, due to the rack-bar 21 by

operating the handle 28, and it will be clear that the rack-bar may be angularly adjusted on the pivotal axis 10 and positively held when so adjusted.

In operation, the person occupying the table in a recumbent position, places the lower limbs on the supports 37 the angular portion being directly below the knee joint, the support being preferably in a lowered or depressed position at that time.

As the support is free to pivot, it will automatically incline and pivot in conformity to the position of the limb and may then be raised to a desired height by the handle 28.

Should it be desired to extend the limb, the knob 15 is drawn outwardly and the plate 9 turned on its axis to move the support outward or away from the body, the pin being re-entered when the adjustment has been attained.

It will also be apparent that these adjustments may be made by one person with facility, thus dispensing with numerous attendants ordinarily required.

However as changes of construction could be made within the scope of the invention, it is intended that all matter contained in the foregoing descripton or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An attachment for operating tables and the like, comprising a pair of angular knee supports, offset sustaining bars on which said supports are freely pivoted and mounted to swing in a plane parallel to the table, means for adjusting the angularity of each support individually, means for mechanically raising or lowering each of said supports, and means including a pawl and ratchet for maintaining said supports in vertical adjustment.

2. An attachment for operating tables and the like comprising a pair of angular knee supports, pivotal and oscillatable means on which said knee supports are mounted, mechanical means for positively mechanically adjusting the height of said mounting means, means permitting inclination of the last named means in planes parallel to the sides of the table and spring actuated detents locking the said last named means when in adjustment.

3. An attachment engageable with operating tables and the like comprising a concavo-convex limb support bent to present a right angle, a forked socket pivotally engaging therewith at the apex of the angle, a rack-bar having an offset portion on which said socket is pivotally mounted, a pivoted bracket for said rack-bar whereby it may be inclined at various angles, an arm on said bracket for attachment to the operating table, spring actuated means for locking said bracket when in adjustment, and mechanical means carried by said bracket for positively adjusting the operative height of said rack bar.

4. An attachment for operating tables and the like comprising brackets removably engaging one end of each side of the table, a plate pivoted on a horizontal axis to each bracket, spring actuated means permitting adjustment of said plate on its axis, a rack-bar slidably engaged on said plate, a pinion meshing with the teeth of said rack-bar, means for actuating said pinion, means for retaining said rack-bar in adjustment, an offset stem on said rack-bar, and a knee support pivotally carried on said stem.

In testimony whereof I have signed my name to this specification.

WILLIAM GRAUPE.