

1,331,041.

G. ANDERSON.
TILTING TABLE.
APPLICATION FILED JUNE 17, 1918.

Patented Feb. 17, 1920.

3 SHEETS—SHEET 1.

Fig. 2.

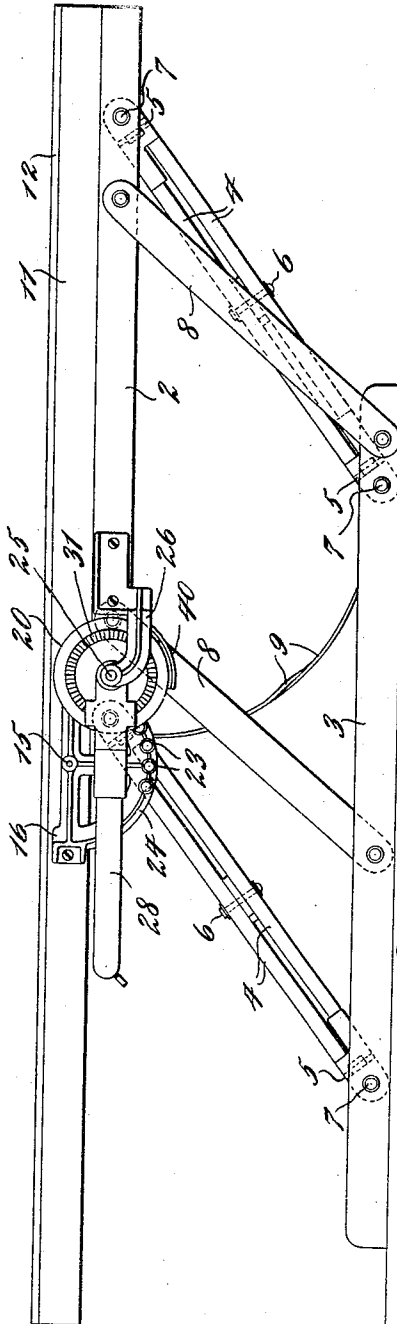
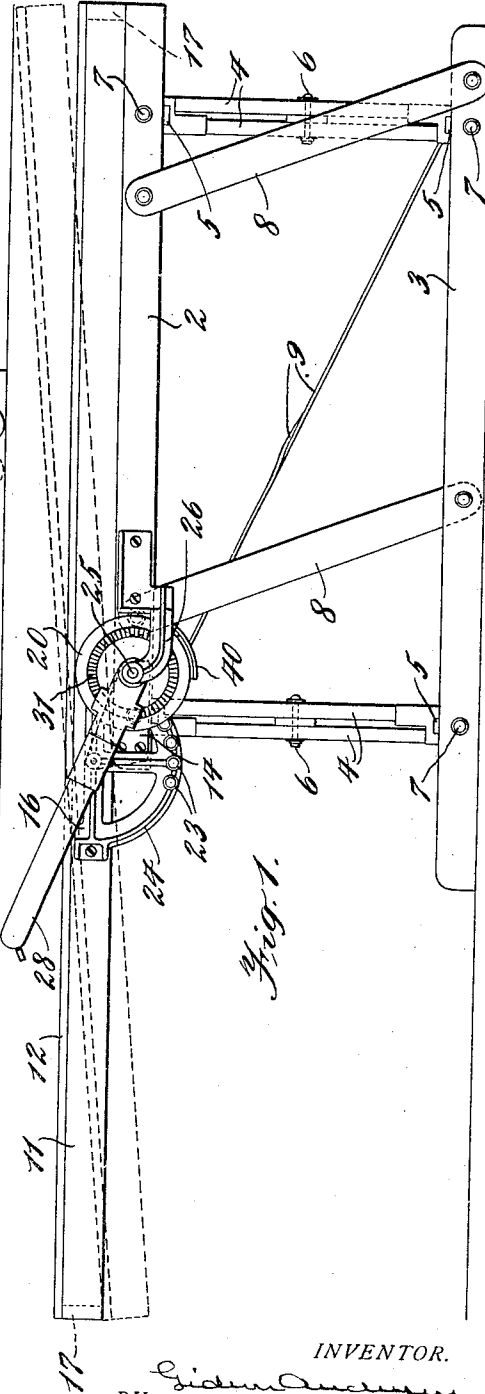


Fig. 1.



WITNESSES:

Geo. C. Cheney

INVENTOR.

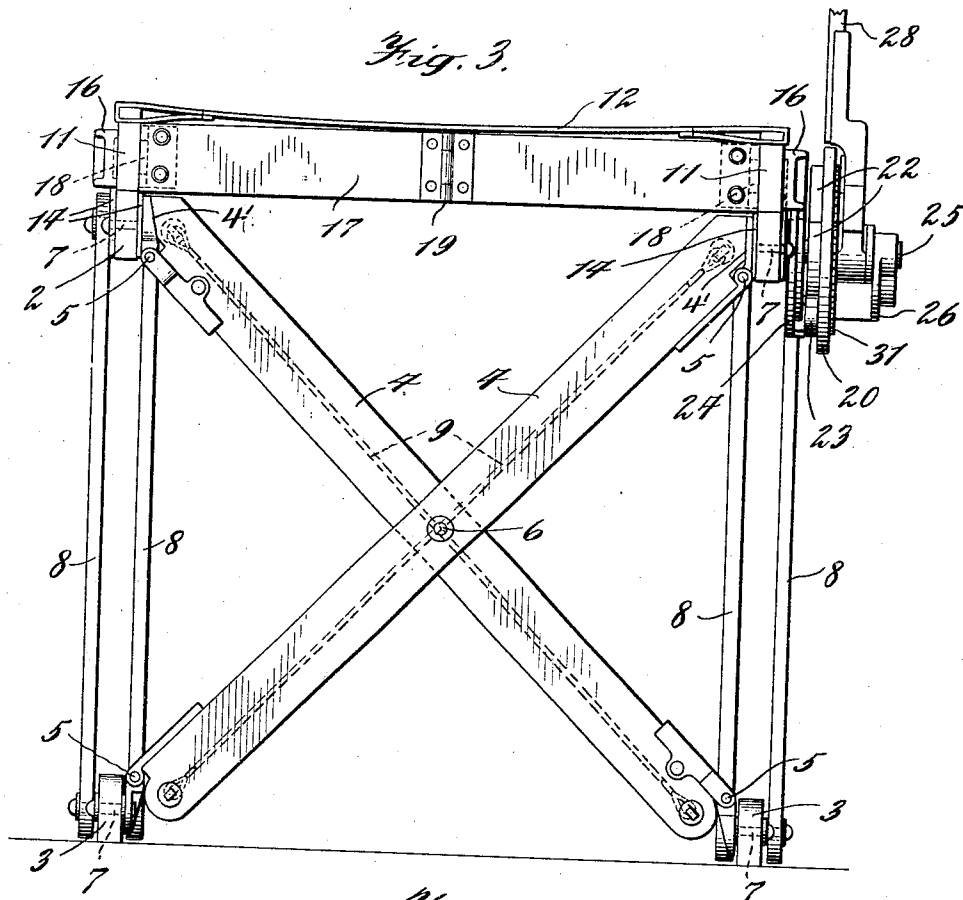
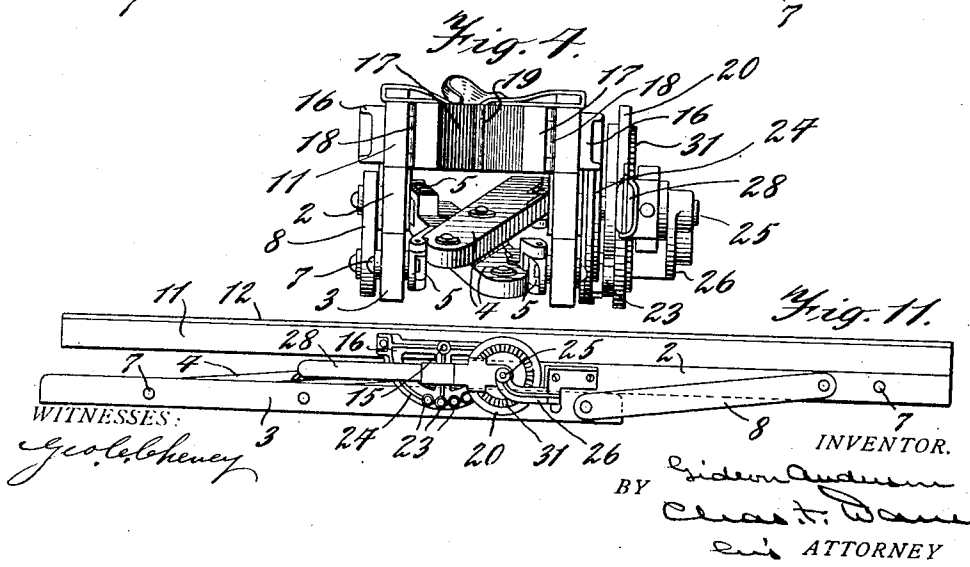
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3 SHEETS—SHEET 2.



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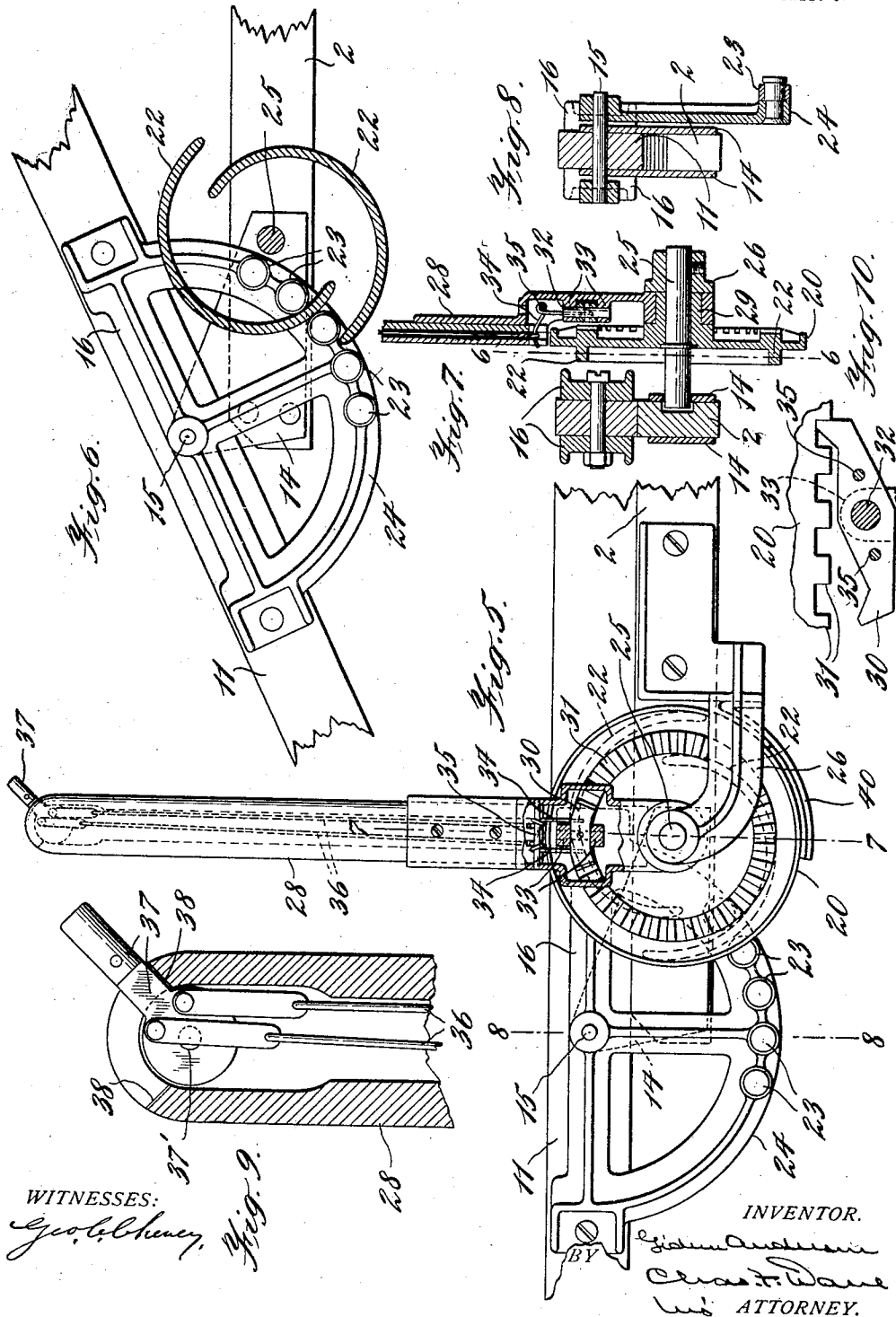
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

GIDEON ANDERSON, OF NEW YORK, N. Y., ASSIGNOR TO THE WEST GRAVITISER CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TILTING TABLE.

1,331,041.

Specification of Letters Patent.

Patented Feb. 17, 1920.

Application filed June 17, 1918. Serial No. 240,400.

To all whom it may concern:

Be it known that I, GIDEON ANDERSON, a subject of the King of Sweden, and a resident of the city of New York, in the county of Bronx and State of New York, have invented certain new and useful Improvements in Tilting Tables, of which the following is a specification.

My invention relates to an improved tilting table that may be used for various purposes, medical or otherwise, but which is intended primarily for use as a support upon which a person may rest at certain angles of inclination for the purpose of exercising within limits the vascular system, for curative or health purposes; this being accomplished by having the table upon which the user rests tilted at a series of prescribed angles below the horizontal.

A table of this general type is disclosed in my pending application, Serial No. 206,898, filed December 13, 1917, matured into Patent No. 1,299,894, dated April 8, 1919, in which the table is so constructed as to be capable, when not in use for exercising purposes, of being closed up in a way to present the appearance of an ordinary couch. The construction necessary for this, however, obviously makes the device somewhat heavy and cumbersome and therefore not conveniently portable.

It has been the object of my present invention to provide a tilting table susceptible of use in the manner referred to, that will be comparatively light and capable of being collapsed into small and compact form, whereby it will be readily portable. This object I attain by means of the novel construction, arrangement and combination of parts illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a tilting table embodying my invention, opened up and ready for use;

Fig. 2 is a similar view showing the same partly collapsed;

Fig. 3 is an end view of the same when opened up as shown in Fig. 1;

Fig. 4 is an end view of the same when wholly collapsed;

Fig. 5 is an enlarged detail showing the tilting mechanism for the body support or

table proper which latter is shown in its normal horizontal position;

Fig. 6 is a similar view showing the table in a tilted position and with the actuating cam of the tilting mechanism in section on the line 6—6 of Fig. 7;

Fig. 7 is a section taken on the line 7—7 of Fig. 5;

Fig. 8 is a section taken on the line 8—8 of Fig. 5;

Fig. 9 is an enlarged detail showing the upper end of the operating lever of the tilting mechanism in section and the device supported therein for adjusting the tilting mechanism to either raise or lower the table;

Fig. 10 is an enlarged detail showing a toothed portion of the cam disk forming part of the tilting mechanism and the pawl for rotating said disk.

Fig. 11 is a view similar to Figs. 1 and 2, showing the device wholly collapsed.

Similar reference characters indicate like parts in the several figures of the drawings.

The table here shown as embodying my invention comprises three main parts, to wit, a collapsible supporting frame, a table or body support pivotally mounted on said frame and collapsible therewith, and a tilting mechanism adapted to be operated either by the patient on the table or by an attendant for tilting said table to a desired angle of inclination.

The collapsible supporting frame comprises a pair of parallel top rails 2, 2, and a pair of parallel base rails 3, 3, the top rails being connected with the base rails by a plurality of pairs of diagonally arranged cross-braces 4, 4, which are hinged at their ends to the rails, as at 5, and pivoted together at their points of intersection, as at 6. Such connection of the cross-braces with the opposite side rails permits of the latter being brought or folded together laterally. In order now that the upper rails may be folded down against the lower rails and the whole supporting frame be caused to assume the small compact form shown in Fig. 4, the hinge members between the cross-braces and the rails are connected to the latter by pivots, such as 7, which are arranged transversely of the rails to permit of the cross-braces swinging in a direction longitudinally of the

rails, as will be understood by reference to Fig. 2..

As a means for controlling the opening and closing of this collapsible supporting frame, I have connected the upper and lower rails at each side of the frame by a plurality of pivoted links 8 which are somewhat longer than the distance between the upper and lower rails when the frame is in open position, as shown in Fig. 1, whereby, upon the closing or collapsing of the frame, the upper rails will be caused to move longitudinally a sufficient distance to draw the upper and lower ends of the cross-braces, and thereby the connected rails, together laterally. In this way, downward pressure upon either one or both of the top rails will cause a collapsing of the frame both vertically and laterally, while an upward pulling of either one or both of said top rails will likewise cause a similar opening up of the frame in both directions.

When the frame is opened up, it is held against collapsing in one direction by the obliquely extending links 8, and in the opposite direction by flexible connections 9 extending obliquely between the upper and lower rails, which connections preferably are in the form of chains or cables.

Suitably mounted upon this collapsible frame for tilting movement is the table proper, adapted to support the patient, said table, as here shown, comprising two side rails 11, 11, carrying an intermediate strip of canvas or like material 12. This table may be pivotally mounted on the supporting frame in any suitable manner. In the present case, the top rails of the supporting frame are each provided at one end thereof with a pair of spaced bracket plates 14, 14, carrying a pivot 15, upon which the opposite side rails 11 of the table are fulcrumed, as clearly shown in Fig. 8. As a means for obtaining a strong and firm bearing between the table and supporting frame, bearing plates 16, 16, are secured to the opposite sides of the table rails 11 to form an extended bearing for the ends of the pivots 15.

It will be understood that by reason of the connection of the side rails of the table with the side rails of the supporting frame, the table will be opened and collapsed with the opening and collapsing of the frame, this being permitted so far as the body support 12 is concerned by reason of its flexibility. As a means for holding the table in its open position, the side rails of the same are connected at their ends by cross-bars 17 which, in order to permit of the collapsing of the frame as described, are hinged at their ends to said rails, as at 18, and formed with a central hinged joint 19. Thus, when the device is to be closed up or collapsed, these cross-bars are folded in-

wardly at their center to permit of the said rails being brought together, as shown in Fig. 4, and when the device is opened up for use, they are straightened out to bracing position as shown in Fig. 3.

The mechanism for tilting the table comprises a rotatable disk 20 mounted on the supporting frame and having on its inner face spiral cams 22, which cams, upon rotation of the disk, are adapted to successively engage with spaced lugs 23 projecting from a bracket 24 attached to one of the side rails of the table and thereby rock said table on its fulcrum to any desired angle of inclination; the said lugs 23 being arranged in the arc of a circle described from the fulcrum point 15 of the table as shown.

The disk 20 may be mounted on the supporting frame in any suitable or desired manner, the same as here shown being mounted on an axle pin 25 which is supported at one end by one of the top rails 2 of the supporting frame and at its opposite end by a bracket 26 rigidly secured to said top rail, as will be readily understood by reference to Figs. 5 and 7.

As a means for operating the cam disk, I provide a lever 28, here shown as tubular, which is pivotally mounted at one end on a hub 29 at the outer side of said disk (see Fig. 7) for oscillatory movement in a plane parallel with that of the face of the disk, and which is provided with a pivoted pawl 30 for engaging with ratchet teeth 31 on said disk to impart rotary movement to the latter. This pawl is a double one—being pivoted at its center on a pin 32 between two lugs 33, 33 on the inner wall of the tubular lever—in order that it may be caused to engage at either end with the ratchet teeth according to the direction of rotation to be imparted to the disk for controlling the tilting movement of the table.

As a means for controlling the action of the pawl to cause either one or the other of its ends to engage the ratchet teeth, according to whether the table is to be raised or lowered, I mount two bell-cranks 34, 34, on a pivot pin 35 within the lower end of the tubular lever 28, the vertical arms of which loosely connect with the pawl at opposite sides of its center by entering openings therein, as shown in Figs. 5, 7 and 10, and the opposite or horizontal arms of which connect through links 36, 36, with a controlling lever 37, which latter is pivoted at 37' within the upper or handle end of the lever 28 with its operating end extending upwardly through an opening in said lever for movement between two stops 38, 38, thereon. By swinging this controlling lever against one stop, it acts to raise one of the connecting links and lower the other, thereby swinging the bell-cranks in opposite directions and so turning the connected pawl on its

pivot to bring one end thereof into position for engagement with the ratchet teeth, as shown in Fig. 10. It is of course obvious that the pawl should be yieldingly held in
 5 such position to permit of its engagement with the successive ratchet teeth, and this is provided for in the present case by forming the bell-cranks of spring wire. With the pawl thus positioned, the operator—whether
 10 patient or attendant—may impart a turning movement to the cam disk in one direction through the engagement of the pawl with the ratchet teeth on said disk, by a proper oscillating movement of the lever 28, which
 15 latter may be conveniently operated by a patient resting on the table. Such turning of the disk, as hereinbefore described, acts through the engagement of the cams 22 with the lugs 23 on the table, to operate the lat-
 20 ter in one direction. When it is desired to tilt the table in the opposite direction, the operating mechanism may be adapted for this by simply swinging the controlling lever 37 over against the opposite stop 38,
 25 which acts to reverse the position of the pawl 30 and render its opposite end operative for engagement with the ratchet teeth. Upon making such adjustment, oscillating movement of the operating lever 28 will im-
 30 part movement to the cam disk in the opposite direction and a consequent change of tilting movement to the connecting table.

It will be understood that the friction between the spiral cams 22 and the lug 23 on
 35 the table will ordinarily be sufficient to maintain the parts stationary when the table has been adjusted to the desired angle, but as an additional means for such purpose I prefer to employ a friction brake, such as
 40 40, for coöperating with the cam disk as shown in Fig. 5.

In the use of the device, the weight of the patient on the canvas support 12 has a tendency to tilt or cant inwardly the upper edges
 45 of the side rails 2, 2, of the support, and as a means to avoid this I form the upper ends of the diagonal braces 4, with bearing surfaces 4' which engage the inner faces of said side rails through the interposed hinge mem-
 50 bers, as shown in Fig. 3. These serve to brace said rails against inward canting as will be obvious.

What I claim is:

1. A device of the character described,
 55 comprising a vertically and transversely collapsible support, a table pivotally mounted on said support and collapsible therewith, and power table-tilting mechanism associated with both the table and support for
 60 movement therewith upon collapsing of the same.

2. In a device of the character described, a collapsible support comprising a pair of
 65 upper rails, a pair of lower or base rails, and cross-braces between the diagonally opposite

upper and lower rails having a hinged connection therewith permitting of a collapsing of the rails toward each other in both vertical and lateral directions, and a laterally
 70 collapsible table mounted on the upper rails of said support for longitudinal tilting movement and being collapsible therewith.

3. In a device of the character described, a collapsible support comprising a pair of up-
 75 per rails, a pair of lower or base rails, cross-braces between the diagonally opposite upper and lower rails having a hinged connection therewith permitting of a collapsing of the rails toward each other in both vertical
 80 and lateral directions, and links between the upper and lower rails at opposite sides of the support having a pivoted connection at their ends with the rails, and a table pivotally mounted on the upper rails of said support for longitudinal tilting movement.
 85

4. In a device of the character described, a collapsible support comprising a pair of
 90 upper rails, a pair of lower or base rails, cross-braces between the diagonally opposite upper and lower rails having a hinged connection therewith permitting of longitudinal movement of the upper rails relative to the lower ones, and obliquely extending links be-
 95 tween the upper and lower rails at opposite sides of the support having a pivoted connection at their ends with the rails, and a table pivotally mounted on the upper rails of said support for longitudinal tilting movement.

5. In a device of the character described,
 100 a collapsible support comprising a pair of upper rails, a pair of lower or base rails, cross-braces between the diagonally opposite upper and lower rails having a hinged connection therewith permitting of longitudinal
 105 movement of the upper rails relative to the lower ones, obliquely extending links between the upper and lower rails at opposite sides of the support having a pivoted connection at their ends with the rails and
 110 acting to hold the upper rails against longitudinal movement in one direction when the support is open, and means coöperative with said links for holding the upper rails against longitudinal movement in the opposite di-
 115 rection, and a table pivotally mounted on the upper rails of said support for longitudinal tilting movement.

6. In a device of the character described, a support, a table pivotally mounted on said
 120 support for longitudinal tilting movement and having a plurality of spaced projections or teeth, a wheel mounted on the support having a spiral cam engaging said teeth and also having ratchet teeth, an operating lever
 125 having a double-acting pawl for engaging said ratchet teeth of the cam wheel, and controlling means for rendering said pawl operative to rotate the cam wheel in either direction, for the purpose described.
 130

7. In a device of the character described, a support, a table pivotally mounted on said support for longitudinal tilting movement and having a plurality of spaced projections or teeth, a wheel mounted on the support having a spiral cam engaging said teeth and also having ratchet teeth, an operating lever having a double-acting pawl for engaging said ratchet teeth of the cam wheel, and controlling means carried by the operating lever for rendering said pawl operative to rotate the wheel in either direction, for the purpose described.

8. In a device of the character described, a support, a table pivotally mounted on said support for longitudinal tilting movement and having a plurality of spaced projections or teeth, a wheel mounted on the support having spiral cams engaging said teeth and also having ratchet teeth, a tubular operating lever having a double-acting pawl for engaging said ratchet teeth of the cam wheel, and controlling means supported within the tubular operating lever for rendering said pawl operative to rotate the cam

wheel in either direction, for the purpose described.

9. In a device of the character described, a support, a table pivotally mounted on said support for longitudinal tilting movement and having a plurality of spaced projections or teeth, a wheel mounted on the support having spiral cams engaging said teeth and also having ratchet teeth, an operating lever having a double-acting pawl for engaging said ratchet teeth of the cam wheel, and controlling means for rendering said pawl operative to rotate the cam wheel in either direction, said controlling means embodying an adjusting member carried at the handle end of the operating lever, for the purpose described.

Signed at New York, in the county of New York, and State of New York, this 5th day of June A. D. 1918.

GIDEON ANDERSON.

Witnesses:

CHAS. F. DANE,
C. J. BUTLER.