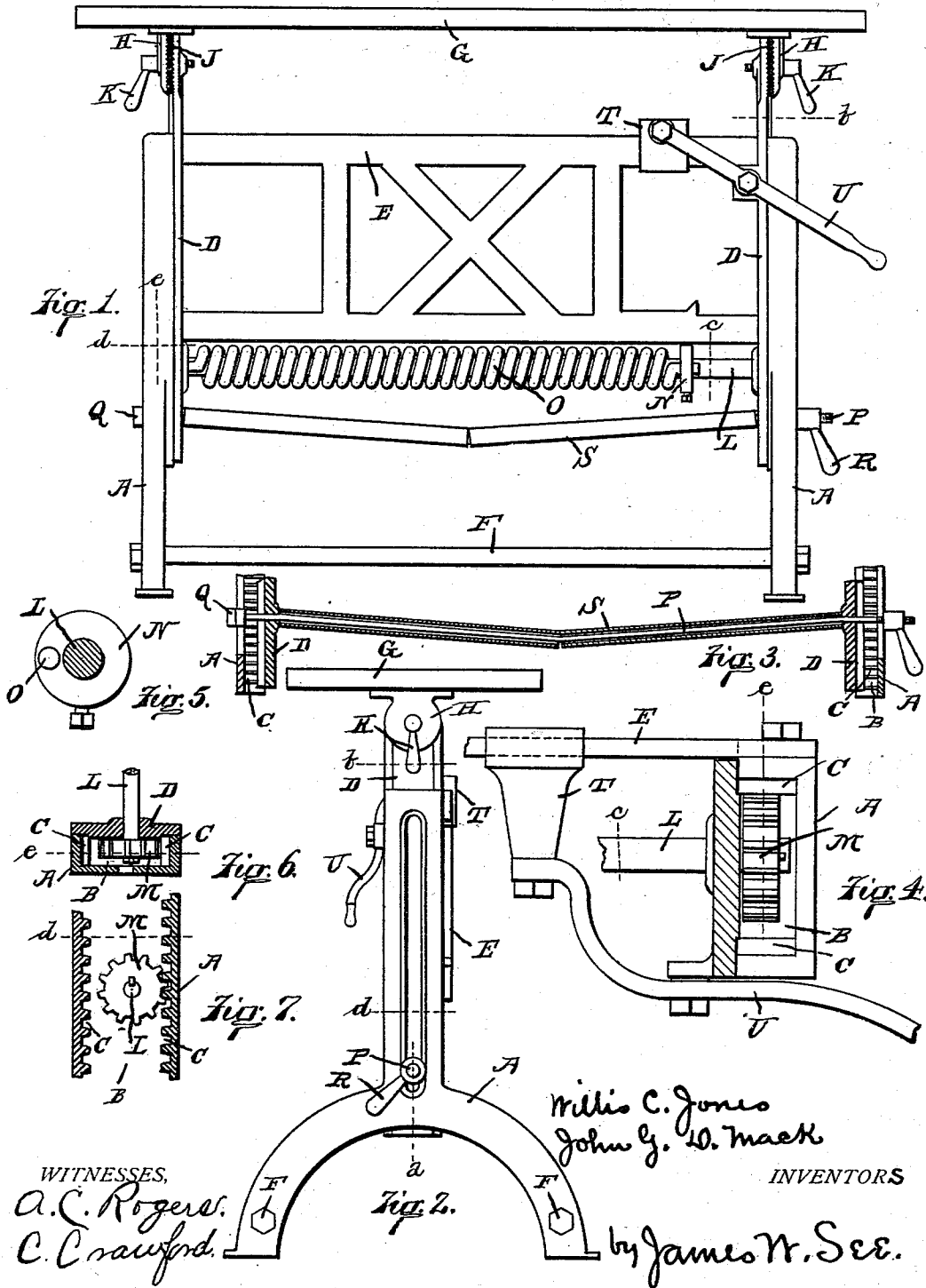


(No Model.)

W. C. JONES & J. G. D. MACK.
TABLE.

No. 439,159.

Patented Oct. 28, 1890.



UNITED STATES PATENT OFFICE.

WILLIS C. JONES AND JOHN G. D. MACK, OF CINCINNATI, OHIO.

TABLE.

SPECIFICATION forming part of Letters Patent No. 439,159, dated October 28, 1890.

Application filed September 19, 1889. Serial No. 324,420. (No model.)

To all whom it may concern:

Be it known that we, WILLIS C. JONES and JOHN G. D. MACK, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Tables, of which the following is a specification.

This invention pertains to tables of that adjustable class often employed by draftsmen.

Our improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a front elevation of the table, illustrating our improvements; Fig. 2, a side elevation of the same; Fig. 3, a vertical section of portions of the device in the plane of line *a*; Fig. 4, a horizontal section, enlarged, in plane of line *b*; Fig. 5, a vertical section, enlarged, of the pinion-shaft in the plane of line *c*; Fig. 6, a horizontal section in the plane of line *d*, and Fig. 7 a vertical section in plane of line *e*.

In the drawings, A indicates a pair of legs, each consisting of a slotted upright expanded into feet at the base; B, an inwardly-open vertical groove in the inner face of the upright portion of each leg; C, rack-teeth formed upon the side walls of these grooves; D, extension-pieces fitted to slide vertically in the grooves of the legs, these pieces fitting against the inner surfaces of the legs and having ribs projecting somewhat into the grooves, so as to be guided by the grooves, the upper portion of each extension-piece being provided with a serrated disk, presenting a vertical face; E, a brace bolted against the rear of the legs and serving to make the leg structure rigid; F, stretcher-rods at the base of the legs for the same purpose; G, the table-top, the same forming either the top proper of the table or a surface to receive a superposed top or drawing-board; H, serrated disks secured to the under surface of the table-top and presenting their faces vertically and opposite the serrated faces of the disks at the upper ends of the extension-pieces; J, disks of semi-elastic material, as leather, interposed between the contiguous faces of the serrated disks which form the joints uniting the table-top to the extension-pieces; K, hand-screws, engaging the serrated disks of the table-top

and extension-pieces and serving each to clamp one of the leather disks between its appropriate pair of serrated disks; L, a pinion-shaft journaled in the two extension-pieces and extending across the leg structure and projecting at each end into the racked grooves of the legs; M, two pinions, one fast on each end of the pinion-shaft, these pinions both gearing into the racks upon the rear walls of the leg-grooves; N, a collar secured to the pinion-shaft, so as to be capable of rotary adjustment thereon, as by means of the set-screw shown; O, a spiral spring encircling a portion of the pinion-shaft and having one of its ends secured to the collar N and the other of its ends secured to one of the extension-pieces, in which the pinion-shaft has its bearing; P, a bolt extended across the leg structure from one leg to the other and through the vertical slots of the legs, this bolt passing also through the extension-pieces D, this bolt, instead of being straight, having a deflection, as indicated; Q, a head upon one end of this bolt and engaging the outside of one of the legs; R, a hand-nut on the other end of the bolt, engaging the outer surface of the other leg; S, a tube or jacket surrounding the bolt P and bearing with its two ends against the inner faces of the extension-pieces, this jacket being formed, preferably, in two pieces abutting endwise at about the center of length of the bolt; T, a fulcrum-block fitted to slide horizontally on the brace E, and U a hand-lever pivoted to one of the extension-pieces and to the block T.

The screws K form horizontal pivots, on which the table-top may be tipped to angles, and by which it may be fixed after adjustment. A firm fixture at these joints is desired. Hence the serrations of the disks of the joints is as usual; but these serrations when interlocked require in adjusting the table-top that the clamping-disks shall separate a distance equal to the depth of the serrations and involves that the least adjustment made shall equal at least the circumferential spacing of the serrations. This involved separating movement of the disks calls for an undesired springing either of the table-top or of the extension-pieces, the appropriate disks being rigidly secured to the table-top. By

interposing the semi-elastic disks between the serrated disks we obtain to a satisfactory degree the rigid fixing incident to the use of serrations without the ordinary attendant disadvantages. The serrations embed themselves a trifle into the elastic disks and find a proper seating at any point of angular adjustment desired, and the angular adjustment can be made by a comparatively trifling separation of the disks which clamp the semi-elastic material.

When the table is to be adjusted vertically, the extensions slide up and down in the leg-grooves, and the parts should be fixed after adjustment. If a clamp-bolt were provided for the purpose at each leg, then two clamping manipulations would be called for. If a single bolt like P, but straight, were extended across from leg to leg and employed tensionally, it would require a rigid stretcher of some kind between the extension-pieces to prevent their approaching each other, and the legs would require to be movable, so that they could be drawn tightly against the extension-pieces; but it is desirable that the two legs form a unified rigid structure. This would interfere with the mode of operations just indicated and would require that provision be made for acting outwardly upon the two extension-pieces to clamp them against the unyielding legs. We accomplish this and by means of a single manipulating-screw. The deflecting bolt P, with its jacket, forms practically a toggle between the extension-pieces. If the hand-nut R be tightened, it does not alter the distance between the nut and head of the bolt, that constant distance being represented by the total width of the rigid leg-structure; but the tightening of the nut tends to lessen the deflection of the bolt, and therefore tends to increase the distance between the extreme ends of the jacket-tube, the ends of the jacket-tube thus clamping the extension-pieces firmly against the inner faces of the legs. The bolt, therefore, furnishes at its two ends two clamps, each acting tensionally upon an extension-piece and leg. Virtually we cause a bolt acting tensionally between its two ends at constant distance to form a clamp acting outwardly under compression.

Where a table is of considerable length great difficulty is found in effecting the vertical adjustment of the two ends equally and simultaneously. We overcome this objection by means of the pinion-shaft arrangement. A vertical movement of one extension-piece causes a rotation of the pinion at that extension-piece. Both pinions must revolve together, being both fixed on the pinion-shaft, and consequently any vertical movement of one extension-piece must result in an equal simultaneous movement of the other extension-piece.

Both side walls of the leg-grooves are provided with rack-teeth; but the teeth upon the rear walls only are used. Providing both walls with teeth permits the two leg-castings

to be formed from the same pattern instead of from separate patterns formed right and left. We plane the inner faces of the upright portions of the legs, and also dress the inner faces of both sets of rack-teeth in the groove, and we plane the outer faces of the extension-pieces where they bear against the legs, and we also plane the shores of the ribs which project in between the two racks, thus securing with little labor a neat guiding fit between the extension-pieces and the leg-piece.

The parallel-motion qualities secured by means of the pinion-shaft arrangement permits of the table being vertically adjusted by manipulations at one end of the table. We provide the hand-lever U for this purpose, and its action is obvious. The block T forms a sliding fulcrum, and a proper substitute for this block would be found in any other sliding fulcrum which might be provided at either pivot of the lever U.

The spring O serves in counterbalancing the weight of the vertically-adjustable parts. The spring being of great length can have a practically constant counterbalancing value. As the pinion-shaft turns in the direction due to the descent of the table, the spring becomes wound up, as it were, against its own resistance, and the power thus stored in the spring serves as an aid when the table is to be elevated. By loosening the collar N and rotating and tightening it in a new and proper position the normal tension of the spring may be adjusted to suit the weight of the vertical adjustable parts.

We claim as our invention—

1. In an adjustable table, the combination, substantially as set forth, of a leg structure supporting a pair of disks with serrated vertical surfaces, a table-top provided with a pair of disks presenting serrated surfaces contiguous to the first-mentioned disks, pivot-screws at each pair of contiguous disks, and a disk of semi-elastic material, as leather, interposed between the contiguous serrated disks of each pair.

2. In an adjustable table, the combination, substantially as set forth, of a vertically-slotted leg structure, a table-top, two extension-pieces secured to said table-top and engaging inwardly-presenting surfaces of the leg structure and fitted for vertical movement thereon, a bolt passing through said leg structure and extension-pieces and engaging outside the leg structure and provided with a nut, and provided also with a deflection between the two extension-pieces, and a deflected jacket-tube surrounding the deflecting portion of said bolt and abutting with its extreme ends against the inner faces of said extension-pieces.

3. In a clamping device, the combination, substantially as set forth, of a deflected bolt provided with a head and nut and a deflected jacket-tube on said bolt.

4. In an adjustable table, a leg structure, a table-top, a pair of extension-pieces attached to the table-top and adapted for vertical move-

ment in the leg structure, a pinion-shaft, a pinion fast on each end of the pinion-shaft, a vertical rack for each pinion, and a spiral spring upon said pinion-shaft and having one end fixed to said shaft and the other end fixed with reference to said shaft, all combined substantially as and for the purpose set forth.

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10 5. In an adjustable table, the combination, substantially as set forth, of the leg structure, the table-top, the two extension-pieces attached to the table-top and adapted to slide in the leg structure, the pinion-shaft, the two

pinions fast on the ends of the shaft, the vertical racks, the spring upon the pinion-shaft and having one end fixed with relation to said shaft, and a collar fixed to the other end of said spring and arranged for rotary adjustment upon the shaft. 15

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Witnesses:

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