The electric massage table introduces the new concept into these class of tables with the two self-acting retractable legs system with the electro-mechanical technology battery operated and a structural collapsible sliding cables set to support and strength the table once is unfolded, set up and loaded, designed and developed that allows it to move up and down by the touch of a single switch.
ELECTRIC VARIABLE HEIGHT PORTABLE COLLAPSIBLE TABLE

REFERENCES CITED

U.S. Patent Documents

- 3878797 April, 1975 Patterson
- 4575975 March, 1986 Eisenberg
- 4927128 May, 1990 O’Brien
- 4943041 July, 1990 Rennin
- 5173834 February, 1998 Palmer
- 5769005 June, 1998 Haynes
- 5913271 June, 1999 Lloyd 108/132
- 6076472 June, 2000 Lloyd 108/36

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claimed priority from U.S. Non-Provisional Patent Application Ser. No. 10/932,190, filed Sep. 1, 2004 which was rejected on its claims an objected to its specifications (confirmation 1785), and may be declared abandoned according to (35 U.S.C. 133). The present application has been modified according to the examiner’s recommendations.

FIELD OF THE INVENTION

The invention relates to tables that are collapsible, portable and adjustable on height by hand.

BACKGROUND OF THE INVENTION

Due to the growing collapsible massage table demand there is an interesting market. Standard collapsible massage tables have to be adjusted on its height by hand, the competitor’s design goals are: less weight, strength, capacity and stability. Our goals beside of the competitor’s are to create an electric variable height portable collapsible table.

Most of the collapsible tables existing in the market have variations on their design achieving the mentioned common goals without any automatic system to change its height. The electrical motorized adjustment mechanism to obtain it, is a new design concept making a new class of this kind of product, turning the practitioner job a lot easier and the best of all, it will prevent future health problems because his/her posture will be proper at all times.

SUMMARY OF THE INVENTION

The invention introduces the advantage over the available massage tables on the way to change its length to vary the height of the loaded table by the touch of a command using one finger, instead of unload and lift up the table to change the four legs extensions all by hand. The invention of the two self-acting retractable legs are formed each by two inverted opposed triangles sliding one over the other in a traveler guide by a traveler car structure, which use a patented electric linear actuator with a patented battery operated small portable power pack to lift the table up and down.

[0007] Each leg has a set of cable supports to keep them structurally steady and perpendiculares when the table is set up.

BRIEF DESCRIPTION OF THE FIGURES

[0008] FIG. 1 is a perspective bottom view of the table 10 showing the two self-acting retractable legs 15-16-19-20 with its set of cable supports 23 according to the invention.

[0009] FIG. 2 shows a bottom view of the table with the self-acting retractable triangular system legs structures in to the frame.

[0010] FIG. 3 is a perspective view of the table totally closed and ready to be transported.

[0011] FIG. 4 shows the leg stabilizer triangle structure.

[0012] FIG. 5 shows the leg main support triangle structure with the traveler guide 15a.

[0013] FIG. 6 shows the patented electric linear actuator used for these design.

[0014] FIG. 7 shows the traveler car structure.

[0015] FIG. 8 shows the structures of the FIGS. 5-6-7 with the patented electric linear actuator all ready assembled.

[0016] FIG. 9 shows the complete self-acting retractable leg structure ready assembled.

[0017] FIG. 10 shows in detail the patented electric linear actuator 20 pulled-up along with the stabilizer triangle structure 16 and the traveler car structure 19, on the traveler guide of the of the leg main support triangle 15.

[0018] FIG. 11 shows the V-flexible cable frame 23 which hooks its strengthened center 23b in to the hook of the traveler car structure 19 of FIG. 10.

[0019] FIG. 12 shows the detail of the designed lengthwise positioned pivoting separators hinges 22 on frames 11.

[0020] FIG. 13 shows the trapeze-shape central truss member.

DESCRIPTION OF THE INVENTION

[0021] FIG. 1 shows a perspective of the table 10 ready set up with the designed and developed invention of the two self-acting retractable leg systems and the sets of cables 23-26 to strengthen them, showing the patented electric linear actuator 20 necessary to operate the legs structures by connecting a patented small portable battery power pack to lift up and lift down the table. FIG. 2 shows the table 10 bottom view which includes table frames 11 FIG. 1, connected in a center region by lengthwise positioned pivoting separators hinges 22 making the table frames 11 substantially co-planar when table 10 is set up. When table 10 is collapsed, table frames 11 folds together making the necessary space between them to contain in all the mechanism shown in FIG. 1.

[0022] When table 10 is set up, it has two ends regions, one on each lengthwise opposite end of the table 10.

[0023] Unless otherwise stated, description of the support mechanism below one end region is the same for the other end region. The same numbers and letters are used to designate analogous structure under different regions of the table. The self-acting retractable legs structures with the patented electric linear actuators 20 FIG. 9, retracts against table frames 11 via pivotal links 16a FIG. 4.

[0024] The V-flexible cable frame 23 FIG. 11, secured on each lengthwise far opposite ends of the frame 11 FIG. 1, by holders 23a, has a strengthened center angle 23b FIG. 11, which hooks manually when table set up on the adjustable
hook 19i of the traveler car structure 19 FIG. 10, of the self-acting retractable leg structures.

[0025] When the table is set up the V-flexible outer cable frames 23 FIG. 11, tighten the inner cables 26 FIG. 1, which are connecting the center lower section of the leg main support triangle FIG. 5, 15c from one end of the table 10, to the upper section of the center of the leg main support FIG. 5, at the opposite end of the table 10, both of them forming an x-shaped tensors structure, making each of the two self-acting retractable legs table 10 rigid and strong when loaded and moving up and down. The trapeze-shaped central truss member FIG. 13, is pivotally attached under the center region of table frames 11 FIG. 1 via pivotal links 17a FIG. 13 and has two cables attachment points 17b FIG. 13, through which the flexible end-to-end cable 21 FIG. 1, passes when table 10 is set up, the cables 21 FIG. 1, provides a very important structural effect supporting the center region of the table 10 structuring the total strength of table 10.

[0026] When table 10 is set up, the self-acting retractable legs FIG. 9, is ready to move vertically up and down, activated by the patented electric linear actuator 20 FIG. 6 supported on the leg main support triangle FIG. 5, that has a vertical track 15a FIG. 5, allowing the traveler car structure FIG. 7, to slide up and down on the track along the U-guide 19e FIG. 7. The upper end of the traveler car structure 19a FIG. 7, and the upper end of the patented electric linear actuator 20 FIG. 6 and the central holder 165 FIG. 4 of the stabilizer triangle structure 16 FIG. 4, are connected by a bolt. The bottom of the stabilizer triangle structure 16c FIG. 4, and the bottom of the traveler car structure 19d FIG. 7 are connected with bolts. The system actuates by pulsing a patented electric switch placed on one corner of the frame 11 FIG. 1.

[0027] The upper ends of the stabilizer triangle structure 16a FIG. 4 are linked to the frames 11 of the table 10 FIG. 1, via pivots making it possible for the frames 11 of table 10 FIG. 1, to move up and down while maintaining great strength, stability and firmness.

We claim:
1. A collapsible table, comprising two folding table pieces hingably connected so that when the table is set up it has four corner regions and a center region, each corner region being supported by a self-acting retractable leg having an upper end connected to the table via a link that folds relative to the leg when the table is collapsed, and wherein each link has a V-shaped cable that hold the upper leg under tension that stabilizes the link perpendicular to the ground and also perpendicular to the table when the table is set up, stabilizing the table.
2. The table of claim 1, wherein a stabilizer triangle structure at the upper end of each self-acting retractable leg, being connected to the lower end of the leg via link to the traveler car structure making possible the upper end of the legs to slide up and down each self acting retractable leg.
3. The table of claim 1, wherein a main support triangle structure at the lower end of each self-acting retractable leg has a traveler guide, being connected to the upper end of the leg via link to the traveler car structure that makes possible the upper end of the legs to slide up and down.
4. The table of claim 1, wherein, a V-flexible cable frame on each self-acting retractable leg is secured on each far opposite end of the frame of the table, and by holders at the strengthened center angle of the V flexible cable frame, which hooks manually on the hook of the traveler car structure to stabilize the table, when the table is set up.
5. The table of claim 1, wherein a double rail guide track of the main support triangle structure of each self-acting retractable leg allow the traveler car structure slide up and down.
6. The table of claim 1, wherein the traveler car structure on each self-acting retractable leg makes possible the operation of each leg, stabilizing and holding together the table under the necessary strength.
7. The table of claim 1, wherein lengthwise positioned pivoting separators hinges that make possible to keep the separation between the two folding table pieces when the table is set up, or collapsed.

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