ABSTRACT

A table with a top that automatically lowers when a load on the table is heavy and automatically raises when the weight of the load is light. The table has pivoted supports between the top and a base of the table and these pivoted supports are pivotally joined to interconnecting leveling means. A series of springs connected to the supports engage at different heights of the top and smoothly urge the top upwardly from the base.

5 Claims, 7 Drawing Figures
This invention relates to a table having a height that is responsive to the weight of the load carried by the top of the table. The top lowers when the load is heavy and raises when the load is light to keep the upper portion of the load within easy reach of persons loading or unloading the table. This table is useful to support many different types of stacked articles, such as canned foods, crates of industrial parts, library books, piles of laundry, etc.

One particularly useful adaptation of the table is in the commercial laundry field. If one can visualize the familiar sight of a pile of laundry for a family of four or five piled on a sorting table, one can readily comprehend the very large laundry piles of perhaps 250 sheets or more that are created in the laundry rooms of hotels, motels, hospitals, etc. Such large piles of laundry make it difficult for workers to feed the laundry into ironing machines after the laundry has been washed. The ironing machines have an input section that is at a fixed height of about three feet above the floor of the laundry room. Attempts to use shorter tables so the upper portion of the pile of laundry was more easily accessible created additional problems, because workers feeding the ironing machine had to stoop to get the last piece of laundry from the table and then lift it up to the input section of the ironer. For decades there has been a problem with feeding large piles of laundry into an ironing machine.

We have overcome this problem by providing a table which is simple in construction and which has a top that lowers when the load on the table is heavy and which raises as portions of the load are removed. Thus, the uppermost article of the load can always be easily reached by the persons loading or unloading the table.

The table of this invention has pivoted supports between a base and a top of the table and the supports are spring biased by a plurality of springs engageable at different heights of the top to urge the top upwardly and smoothly raise the top as portions of the load are removed. The table also has a leveling member pivotally connected to the supports to hold the top horizontal and keep the top from wobbling as it raises and lowers.

Perhaps the invention can be better understood with reference to the attached drawings, in which:

FIG. 1 is a perspective view of the table showing the table in raised position;
FIG. 2 is a side elevational view of the table in raised position;
FIG. 3 is a left end elevational view of the table in raised position;
FIG. 4 is an enlarged left end elevational view of the table shown fully loaded with laundry with the table top in a lowered position, which table is shown next to a flatwork ironing machine;
FIG. 5 is an enlarged left end elevational view of the table similar to FIG. 4, but showing the table nearly unloaded with the top in a higher position;
FIG. 6 is a fragmentary perspective view of the lower left end portion of the table, with the perspective view taken from a rear of FIG. 1 to clearly show the springing structure that urges the table's top upwardly; and

FIG. 7 is an enlarged fragmentary side elevational view taken from the rear of FIG. 2 showing the left half of the table in FIG. 2.

Referring in detail to these drawings, the table includes a base 1 and a top 2 positioned above the base. The base is preferably formed of two low profile A-frame members 3 and 4 joined to lateral cross bars. As shown in FIGS. 2 and 3, the table is divided into four quadrants by a longitudinal vertical axial plane 5 and an intersecting lateral vertical axial plane 6. To support the top 2 above base 1, each quadrant of the table has a support designated respectively as 7, 8, 9 and 10. Supports 7 and 10 have their upper ends pivotally connected at fixed locations to the top at 11 and 12 and have their lower ends pivotally connected at fixed locations to the base at 13 and 14. Between the upper and lower ends of supports 7 and 10 are intermediate pivot joints 15 and 16. The supports 8 and 9 are likewise pivotally joined at their upper and lower ends to fixed locations of the top and base and have intermediate pivot joints at 17 and 18.

To keep the table top 2 in a predetermined attitude as the top raises and lowers, there are rigidly elongated couplers 19 and 20 extending across the lateral vertical axial plane 6 and these couplers are connected at their ends to the intermediate pivot joints of the supports. Thus, the supports all bend in the same direction; for example, to the right in FIG. 1. Preferably, the top is level and parallel to the base and moves up and down in a rectilinear motion perpendicular to the base. Working in conjunction with these rigid couplers 19 and 20 are two leveling bars 21 and 22 which are very important features of this invention. In FIG. 1, taking leveling bar 21 as illustrative, the leveling bar 21 has one end pivotally connected at 23 to support 7 above its intermediate pivot joint and has its opposite end pivotally connected at 23a to opposite support 10 below its intermediate joint. The leveling bar 22 is likewise connected to opposite supports 8 and 9.

The table of this invention is responsive to the amount of weight supported on top 2 of the table. As best shown in FIGS. 1 and 2, the pivoted supports have springs connected between the base 1 and a hitching member 24, which is in turn connected to the supports 7 and 8. The tension springs indicated at 25 pull at the portions of the supports below the intermediate pivot joints 15 and 17 and urge the supports toward a more straightened position to raise the table top. The uppermost limit to which the top can raise before the tension springs completely relax is adjustable by varying the length of a link chain 26 having one end joined to a cross bar 27 between the intermediate pivot joints of the supports and having the other end joined to a cross bar 28 of the base.

When the table raises and lowers in response to the load, the table operates as illustrated in the rear perspective view of FIG. 6. The supports 7 and 8 have sections below their intermediate pivot joints 15 and 17 joined to legs of the U-shaped hitching member 24, which legs are preferably at an angle, such as 45°, to the supports below their intermediate pivot joints. This relationship between the hitching member and the supports allows the top of the table to sink when fully loaded to less than one-half of its tallest height without the top hitting the hitching member 24. A sample table made in accordance with this invention exhibited a vertical range between 15 inches and 33 inches above the
The table of the invention is best illustrated in FIGS. 4 and 5 where the table is moved adjacent a commercial ironing machine shown here in a fragmentary schematic drawing. The table has rollers 33 and 34 to make it easy to roll the table up to the ironing machine. The ironing machine has a moving belt 31 onto which articles of laundry, such as sheets, are fed into the ironer. The sheets are then moved between padded rollers and steam chambers to smooth and iron the sheets. In FIG. 4, the table is loaded with a full load of approximately 250 sheets and the table has automatically lowered to a position where it is easy to pull sheets off the top of the laundry pile. In FIG. 5, the table is nearly unloaded and the "compound springing" mentioned above has moved the table top upwardly where it is easy to grasp the last few sheets and feed them into the ironing machine. When the table is used for wide piles of laundry, for instance sheets, a hinged flap 32 of the table can be raised to increase the size of the top. This flap 32 can be lowered, as shown in dotted lines, when smaller articles, such as pillow cases, are piled on the table. When the flap 32 is down, the table with small articles can be rolled more closely to the ironer 30.

In the preceding specification, the table of the invention has been described as used in a commercial laundry by way of example. However, the table can be designed for many other uses. Also, only one embodiment of the table has been shown. It is understood that persons skilled in the art will know how to make certain modifications to this invention without departing from the spirit and scope of the invention.

We claim:

I. A table having ends comprising: a base; a top; a pair of spaced apart supports, each having ends pivotally connected to the top and base adjacent ends of the table, with an intermediate pivot joint in each support between its ends; spring means connected to the table which upwardly biases the top so that the top moves up as its load decreases and down as its load increases, which spring means has a plurality of springs, each engageable at different vertical heights of the top to insure a smooth vertical movement of the top as it raises and lowers in response to the amount of weight carried by the top; a leveling and vertical movement stabilization system including a pair of crossed coupler members, one coupler member having end portions pivotally connected to the intermediate joints of the supports, and the other coupler member having one end portion pivotally connected to the table adjacent one end of the table above the intermediate joint of one support and an opposite end portion pivotally connected to the table adjacent an opposite end of the table below the intermediate joint of the other support.

2. A table having ends comprising: a base; a top positioned above the base; said table having four quadrants of approximately equal size defined by a longitudinal vertical axial plane and an intersecting lateral vertical axial plane; a support in each quadrant, each support having ends pivotally connected to the top and base adjacent ends of the table, with an intermediate pivot joint in each support between its ends; a hitching member extending across the longitudinal vertical axial plane, which hitching member is joined to the two supports that are on the same side of the lateral vertical axial plane; a spring under tension joined to the base and to the hitching member and upwardly biasing the top so that the top moves up as its load decreases and down as its load increases; a leveling and vertical movement stabilization system including a pair of crossed coupler members, one coupler member having end portions pivotally connected to the intermediate joints of two of the supports, and the other coupler member having one end portion pivotally connected to the table adjacent one end of the table above the intermediate joint of one support and an opposite end portion pivotally connected to the table adjacent an opposite end of the table below the intermediate joint of another support.

3. A table as set forth in claim 2, wherein the hitching member is generally U-shaped with a back and two legs, said legs forming an acute angle with the supports and being joined to the supports below their intermediate pivot joints, whereby the spring under tension has a lever advantage to pull the table upwardly from the top's lowest position.

4. A table as set forth in claim 2, wherein the two supports on an opposite side of the lateral vertical axial plane also are connected together by a second hitching member extending across the longitudinal vertical axial plane, and there is a second spring under tension joined to the base and to said second hitching member.

5. A table as set forth in claim 2, wherein there is a plurality of springs connected between the base and hitching member, each spring being engageable at a different vertical height of the top to insure a smooth vertical movement of the top as it raises and lowers in response to changes in the amount of weight carried by the top.

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