Aug. 31, 1965 A. S. KING 3,203,373

IRONING BOARD

Filed March 13, 1964 2 Sheets-Sheet 1

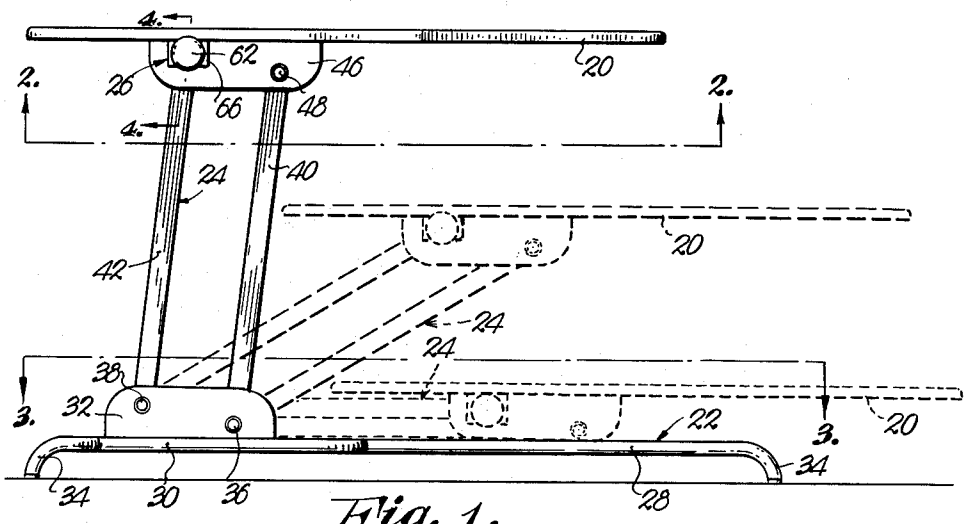


Fig. 1.

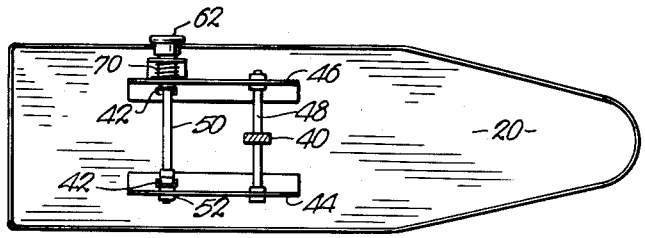


Fig. 2.

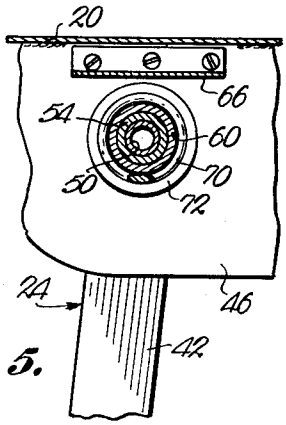


Fig. 5.

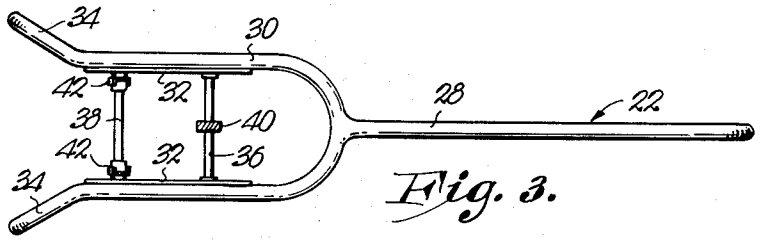


Fig. 3.

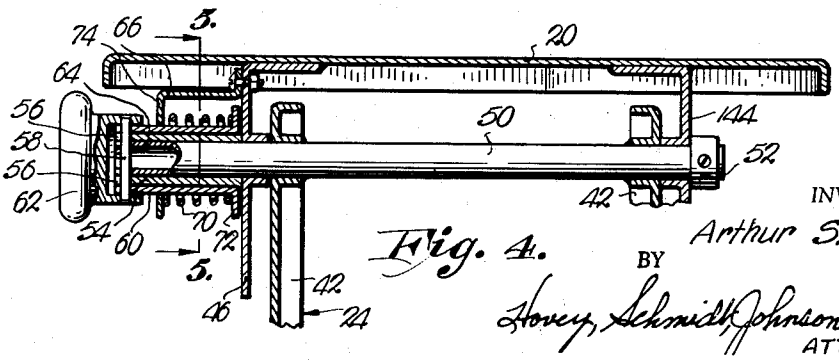


Fig. 4.

INVENTOR.
Arthur S. King
BY
Hovey, Schmidt, Johnson & Hovey
ATTORNEYS.

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IRONING BOARD

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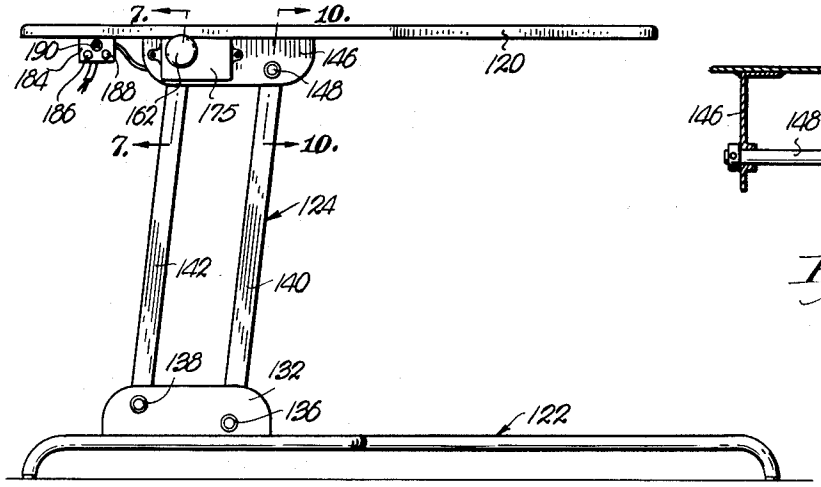


Fig. 6.

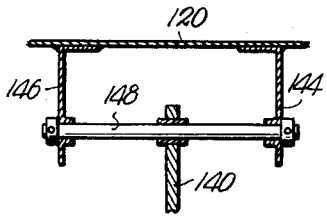


Fig. 10.

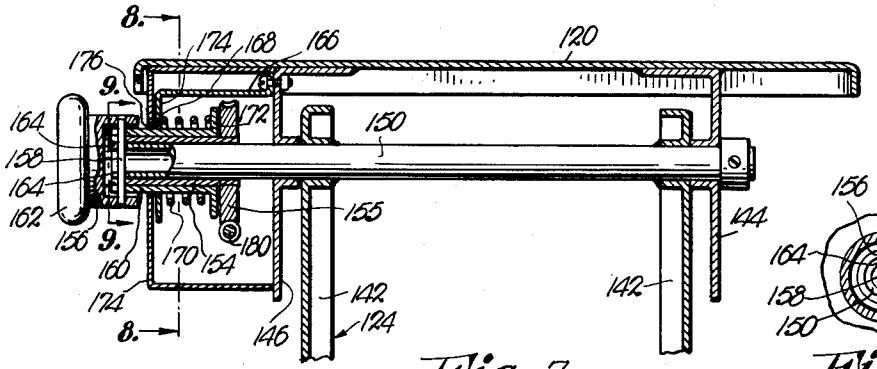


Fig. 7.

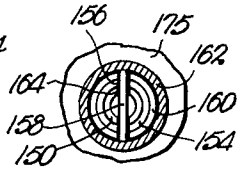


Fig. 9.

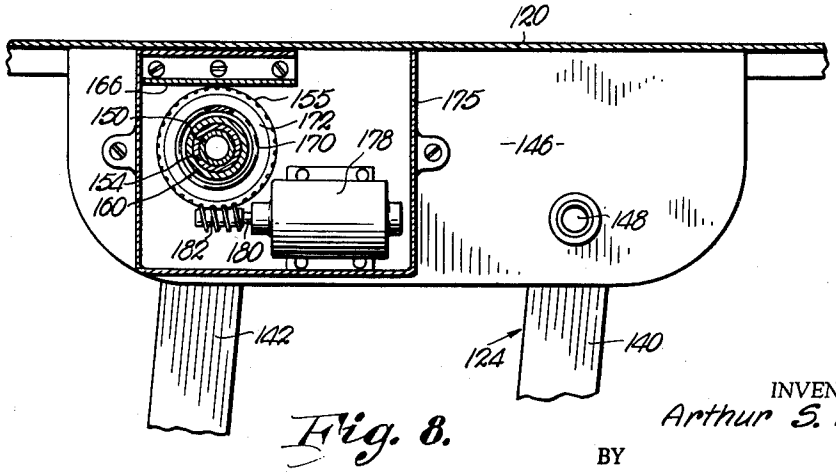


Fig. 8.

INVENTOR.
Arthur S. King

BY

Hovey, Schmidt, Johnson & Hovey
ATTORNEYS.

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3,203,373

IRONING BOARD

Arthur S. King, Prairie Village, Kans., assignor to Murry W. Maxwell, Shawnee Mission, Kans., Sam D. Capper and Nelle Ferguson, both of Kansas City, Mo.

Filed Mar. 13, 1964, Ser. No. 351,767
17 Claims. (Cl. 108—138)

This invention relates to an ironing board for household use and has as its primary object the provision of a practical ironing board which is constructed in such a manner as to provide adequate leg room beneath the ironing board so that the user of the same may actually do the ironing while comfortably sitting at the side of the ironing board with his or her legs therebeneath and which may be readily raised or lowered by improved means for holding, adjusting and collapsing the support structure for the board.

Commercially available ironing boards generally utilize collapsible legs secured to the underside of the ironing board itself and which cross each other at a location below the ironing board so as to effectively obstruct the space therebelow. While these ironing boards are satisfactory for use when the user is in a standing position, such ironing boards are not satisfactory for use when the user is in a sitting position adjacent thereto. The crossed legs of an ironing board of this type do not permit the user to sit comfortably close to the ironing board and the user must, therefore, lean forwardly so as to be in the proper position to do the ironing. The user's legs are prevented from being moved under the ironing board to any appreciable degree; hence, the user must continue to lean forwardly while doing the ironing, all of which results in a strain on various parts of the user's body, particularly the back and shoulders. This strain will cause the user to become fatigued and the ironing must periodically be interrupted in order to relieve the strain.

The present invention utilizes parallel linkage structure between an ironing board and a base frame or support with the linkage being disposed adjacent one end of the ironing board so that a person using the ironing board may sit in a comfortable position at the side of the ironing board with his or her legs therebeneath in the space to the side of the linkage and perform the ironing without interference from the linkage itself. The present invention, therefore, overcomes the problem inherent in the ironing boards utilizing the crossed legs because the user of the present invention can sit as close as is necessary to the ironing board and need not lean toward the same in order to be in position to do the ironing.

The present invention also permits the ironing board to be completely collapsed, notwithstanding the presence of the parallel linkage coupling the ironing board to the base frame. In addition, the collapsing may be accomplished manually or automatically and requires no special skill on the part of the user.

It is, therefore, another object of the present invention to provide an ironing board for household use which not only provides adequate leg room beneath the ironing board itself, but which can be completely collapsed to form a compact unit suitable for storage in a minimum of space and readily movable from place-to-place.

Another object of the invention is to provide an ironing board of the type described which can be releasably locked in any one of a number of operative positions disposed at various heights above the base frame so that the ironing board may be adjusted to a comfortable height for the user.

In the drawings:

FIGURE 1 is a side elevational view of one embodiment of the ironing board made pursuant to the present invention illustrating the collapsed and various operative positions thereof;

FIG. 2 is a view taken along line 2—2 of FIG. 1;

FIG. 3 is a view taken along line 3—3 of FIG. 1;

FIG. 4 is an enlarged, cross-sectional view taken along line 4—4 of FIG. 1;

FIG. 5 is a cross-sectional view taken along line 5—5 of FIG. 4;

FIG. 6 is a view similar to FIG. 1 but illustrating another embodiment of the present invention;

FIG. 7 is an enlarged, cross-sectional view taken along line 7—7 of FIG. 6;

FIG. 8 is a cross-sectional view taken along line 8—8 of FIG. 7;

FIG. 9 is a cross-sectional view taken along line 9—9 of FIG. 7; and

FIG. 10 is a cross-sectional view taken along line 10—10 of FIG. 6.

The present invention provides a household ironing board utilizing parallel linkage structure for swingably mounting an ironing board on a floor-engaging base frame so that the ironing board will be maintained level regardless of its position with respect to the base frame. Means is provided to releasably lock the ironing board in any one of a number of positions above the base frame so that the height of the ironing board above a floor may be adjusted to suit the desires of the user. A reversible motor may be coupled with the ironing board and the parallel linkage to automatically raise or lower the ironing board when the motor is energized.

The parallel linkage includes a pair of links pivotally connected at offset positions on the base frame and the ironing board so that the latter will be completely collapsed when the ironing board is moved to a location directly adjacent the base frame. The links are coupled to the ironing board adjacent one end thereof so that an unobstructed space beneath the ironing board will be provided to assure adequate leg room for a user of the ironing board when the user is in a sitting position adjacent thereto.

One embodiment of the present invention is illustrated in FIGS. 1–5 and includes an ironing board or table **20** of the usual construction mounted on a floor-engaging support or base frame **22** by means of a parallel linkage **24**. A coupling unit **26** connected to ironing board **20** and linkage **24** releasably maintains ironing board **20** in any one of a number of positions above base frame **22**. For instance, ironing board **20** may be disposed in the full-line position of FIG. 1 in an intermediate position as shown in the dashed-lines substantially midway between ironing board **20** and base frame **22**, or in the collapsed position shown in dashed-lines in relatively close proximity to and above base frame **22**.

Base frame **22** may be of any configuration, but a preferred configuration thereof is shown in FIG. 3 wherein a horizontal stretch **28** is rigid to a U-shaped section **30** having a pair of upright side plates **32** thereon extending along the sides thereof. Stretch **28** and section **30** are substantially coplanar as shown in FIG. 1 and are provided with floor-engaging legs **34**, legs **34** of section **30** flaring outwardly as shown in FIG. 3 to provide stability for base frame **22**.

A pair of horizontal, parallel shafts **36** and **38** are rigid to and span the distance between plates **32**. As shown in FIG. 1, the height of shaft **38** above section **30** is greater than that of shaft **36**.

Linkage **24** includes a first leg or link **40** mounted for rotation at its lower end thereof on shaft **36** intermediate the extremities of the latter as shown in FIG. 3. A pair of second legs or links **42**, having the same

length as leg 40, are mounted at the lower ends thereof for rotation on shaft 38 adjacent the extremities of the latter.

A pair of flanged plates 44 and 46 are secured by means of the flanges thereof to the underside of ironing board 20 as shown in FIGS. 2 and 4. A shaft 48 is rigid to and spans the distance between plates 44 and 46. Link 40 is journaled on shaft 48 for rotation relative thereto. An elongated element or shaft 50 is rotatably received in plates 44 and 46 as shown in FIG. 4 and is rigidly coupled to the upper ends of links 42 for rotation therewith about the axis of shaft 38. Shaft 50 extends through plates 44 and 46 and outwardly therefrom in opposed directions. A collar 52 is secured to the end of shaft 50 adjacent plate 44 to anchor the latter in close proximity to the corresponding link 42. The end of shaft 50 adjacent plate 46 extends a substantial distance outwardly of the latter for coupling with means 26 in a manner to be described.

Unit 26 includes an elongated member or tube 54 rigid at one end thereof to the outer face of plate 46 and in surrounding relationship to the corresponding end of shaft 50. Tube 54 has a pair of diametrically opposed notches or slots 56 which provide openings which receive a pin 58 carried by a flanged, tubular retainer 60 having a knob or handle 62 thereon at the outer end thereof. The corresponding end of shaft 50 is provided with a number of pairs of diametrically opposed notches or slots 64 which are alignable with slots 56 so that pin 58 may be simultaneously disposed within notches 56 and 64 to releasably interconnect shaft 50 and tube 54.

An L-shaped bracket 66 is rigid to plate 46 and has an opening 68 of sufficient diameter to receive retainer 60. A coil spring 70 is disposed about retainer 60 and normally bears against the flange 72 thereof and the inner face 74 of bracket 66 to bias pin 58 within slots 56 and 64. By pulling knob 62 away from plate 46, pin 58 will be moved out of slots 56 and 64 and shaft 50 may be rotated within and relative to tube 54 and thereby permit links 42 to be shifted relative to ironing board 20. As a result, the ironing board may be raised or lowered to a desired position above base frame 22. When the desired position is reached and a pair of slots 64 are aligned with slots 56, knob 62 is released and pin 58 is then directed into the aligned slots 56 and 64 to releasably interconnect shaft 50 with tube 54. Links 42 will then be rigidly coupled to ironing board 20 and the latter may not move in either direction since link 40 provides a brace therefor so long as shaft 50 and tube 54 are interconnected.

In operation, and assuming the ironing board 20 is in the collapsed position of FIG. 1, the user of the ironing board need only pull outwardly on knob 62 and then, while maintaining the knob 62 pulled outwardly, lift ironing board 20 into the desired position or a position at which a pair of slots 64 and shaft 50 will be aligned with slots 56 in tube 54. The user may then release knob 62 and the bias force of spring 70 will direct pin 58 into the aligned slots 56 and 64 to interconnect shaft 50 and tube 54. Ironing board 20 will, therefore, be maintained at the desired elevation above base frame 22. To change the height of ironing board 20, the user need only repeat this operation.

Links 40 and 42 are disposed adjacent one end of ironing board 20 to provide adequate leg room therebeneath so that the user of the unit may sit comfortably at the side thereof while actually doing the ironing thereon. It is noted that the relative positions of shafts 48 and 50 are the same as that of shafts 36 and 38 so that links 42 will at all times be parallel with link 40. Moreover, the offset positions of shafts 38 and 50 with respect to shafts 36 and 48, permit ironing board 20 to move into the collapsed position thereof and still be as close as possible to base frame 22. In the collapsed position, as shown in FIG. 1, links 42 are still parallel with link 40, but links 42 are in substantial juxtaposition to shaft 38 and the horizontal plane formed by the adjacent longitudinal edge of link 40.

Although shaft 50 has been described as being provided with a number of pairs of diagonally opposed slots 64, it is conceivable, of course, that tube 54 could be provided with a series of diagonally opposed slots 56 rather than shaft 50 if desired. Shaft 50 may be rigidly coupled with links 42 in any suitable manner, such as by set-screws or the like, if desired. This permits the removal of ironing board 20 from linkage 24.

The second embodiment of the invention illustrated in FIGS. 6–10, is substantially identical as the first embodiment thereof illustrated in FIGS. 1–5 except for the way in which the parallel linkage is coupled with the ironing board and moved to raise and lower the latter.

In the embodiment of FIGS. 6–10 the ironing board 120 is swingably mounted on a base frame 122 by parallel linkage 124 having a first link 140 journaled at its ends on shafts 136 and 148, and a pair of links 142 parallel to link 140 journaled at their lower ends on shaft 138 and rigid at their upper ends to shaft 150. Shafts 136 and 138 are rigid to upright plates 132 carried by base frame 122, and shaft 148 is rigid to plates 144 and 146 secured to the underside of ironing board 120.

Shaft 150 projects through and is rotatable with respect to plates 144 and 146. A tube 154 is telescoped over the end of shaft 150 adjacent plate 146, and a worm gear 155 is rigid to the inner end of tube 154. Tube 154 is rotatable on shaft 150 and has a pair of diametrically opposed slots 164 in shaft 150. A pin 158 carried by a flanged retainer 160 and secured to a knob 162, is received within slots 156 and 164 when the latter are aligned. A coil spring 170 to bias pin 158 in slots 156 and 164 is disposed about retainer 160 and between the flange 172 thereof and the inner face 174 of a bracket 166 secured in any suitable manner to plate 146 and having an opening 168 through which retainer 160 passes. A housing 175 is carried by plate 146 and encloses the major portion of the outer end of shaft 150, tube 154, and retainer 160. Housing 175 has an opening 176 adjacent opening 168 and surrounding retainer 160.

A reversible motor 178 is secured to plate 146 within housing 175 and has a drive shaft 180 rotatable about a horizontal axis perpendicular to shaft 150. A worm 182 is carried on drive shaft 180 and is in mesh with worm gear 155.

A panel 184 secured in any suitable manner to the underside of ironing board 120 (FIG. 6) has a pair of push button switches 186 and 188 electrically coupled with motor 178 and adapted to be coupled with a source of electrical power for operating motor 178 to cause rotation of drive shaft 180 in opposed directions. An outlet receptacle 190 is also carried by panel 184 so that the cord of an electric iron may be coupled in receptacle 190 to supply electrical power to the iron.

In operation, and assuming that ironing board 120 is in the collapsed position thereof adjacent base frame 122, the proper switch on panel 184 is actuated to energize motor 178 and cause the same to rotate worm gear 155 in a counterclockwise sense when viewing FIG. 8. This will cause tube 154 to rotate and, since pin 158 is normally disposed within slots 156 and 164, rotation will be imparted to shaft 150 and links 142. This action will, in turn, cause links 142 to rotate about shaft 138 in a counterclockwise sense to raise ironing board 120. The switch will be actuated until the proper height of ironing board 120 is attained. The switch is then released and the ironing board 120 is locked in place for the reason that the weight of the ironing board 120 will tend to cause it to collapse once again, but worm 182 will prevent the clockwise rotation of worm gear 155 (viewing FIG. 8). The ironing may then commence by inserting the plug on the cord of the iron into receptacle 190.

Linkage 124 is so positioned to provide adequate leg

room beneath ironing board **120** so that the user thereof may comfortably sit at the side thereof and do the ironing without interference with links **140** and **142**. When the ironing is completed, ironing board **120** may be collapsed by actuating the other of the two switches **186** and **188** to energize motor **178** in a manner to reverse the rotation of worm gear **155**, i.e., to rotate it in a clockwise sense when viewing FIG. 8. This rotation will be imparted to shaft **150** and thereby links **142** to cause the latter to rotate in a clockwise sense about shaft **138**. The motor **178** will continue to be energized until ironing board **120** is in its collapsed condition.

The relative positions of shafts **136**, **138**, **148** and **150** are such as to provide complete collapsibility for ironing board **120** in the same way as described above in the case of the embodiment illustrated in FIGS. 1–5.

Ironing board **120** may be rapidly collapsed by pulling outwardly on knob **162** to move pin **158** out of slots **156** and **164**. Shaft **150** will, therefore, be rotatable with respect to tube **154** so that links **142** may rotate relative to ironing board **120**.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In ironing board structure having a pair of parallel links pivotally mounted at their normally upper and lower ends thereof to an ironing board and a base frame respectively, and disposed for swingably mounting the ironing board on the base frame while maintaining the ironing board level regardless of its operative position above the base frame, the combination with said ironing board and said links of means for locking said ironing board in any one of a number of operative positions, said means including:

an elongated element rigidly coupled to one of said links adjacent the upper end thereof;

a coupling unit carried by said ironing board and extending along said element; and

means releasably interconnecting said element and said coupling unit.

2. In ironing board structure having a pair of parallel links pivotally mounted at their normally upper and lower ends thereof to an ironing board and a base frame respectively, and disposed for swingably mounting the ironing board on the base frame while maintaining the ironing board level regardless of its operative position above the base frame, the combination with said ironing board and one of said links of means for locking said ironing board in any one of a number of operative positions, said means including:

an elongated element having a number of spaced openings therein and rigidly secured to said one link adjacent the upper end thereof;

a coupling unit carried by said ironing board and having a member extending along said element, said member being provided with an opening alignable with any one of the openings in said element; and

means receivable within said openings when the same are aligned to interconnect said element and said coupling unit.

3. In ironing board structure having a pair of parallel links pivotally mounted at their normally upper and lower ends thereof to an ironing board and a base frame respectively, and disposed for swingably mounting the ironing board on the base frame while maintaining the ironing board level regardless of its operative position above the base frame, the combination with said ironing board and one of said links of means for locking said ironing board in any one of a number of operative positions, said means including:

a first tube rigid to and extending laterally from said one link;

a second tube carried by said ironing board, one of said tubes being telescopically received within the other tube; and

means releasably connecting said tubes together when said one tube is received within said other tube.

4. In ironing board structure having a pair of parallel links pivotally mounted at their normally upper and lower ends thereof to an ironing board and a base frame respectively, and disposed for swingably mounting the ironing board on the base frame while maintaining the ironing board level regardless of its operative position above the base frame, the combination with said ironing board and one of said links of means for locking said ironing board in any one of a number of operative positions, said means including:

a shaft rigid to and extending laterally from said one link and provided with a number of spaced slots therein;

a tube carried by said ironing board and being telescoped over said shaft, said tube being provided with a slot in one end thereof alignable with any one of the slots of said shaft; and

a pin receivable within aligned slots of said shaft and tube to interconnect the same.

5. In ironing board structure as set forth in claim **4**, and means biasing said pin in said slots.

6. In ironing board structure having a pair of parallel links pivotally mounted at their normally upper and lower ends thereof to an ironing board and a base frame respectively, and disposed for swingably mounting the ironing board on the base frame while maintaining the ironing board level regardless of its operative position above the base frame, the combination with said ironing board and one of said links of means for locking said ironing board in any one of a number of operative positions, said means including:

a shaft rigid to and extending laterally from said one link and provided with a number of spaced openings therein;

a tube telescoped over and rotatable on said shaft, said ironing board having a stationary plate depending therefrom, said tube being rigid to said plate, said tube having an opening alignable with any one of the openings in said shaft; and

a pin releasably receivable within aligned openings of said shaft and tube to interconnect the same.

7. In ironing board structure as set forth in claim **6**, and a tubular retainer telescoped over and shiftable along said tube, said pin being carried by said retainer.

8. In ironing board structure as set forth in claim **7**, said retainer having a flange at one end thereof, and including a bracket rigid to said plate and spaced from said flange longitudinally of said retainer, and a spring between said bracket and said flange and disposed to bias the pin into said aligned openings.

9. In ironing board structure as set forth in claim **8**, said retainer having a knob at the opposite end thereof for facilitating the longitudinal shifting thereof, whereby said pin may be moved out of said openings.

10. In ironing board structure as set forth in claim **6**, and means biasing said pin in said aligned openings.

11. In ironing board structure having a pair of parallel links pivotally mounted at their normally upper and lower ends thereof to an ironing board and a base frame respectively, and disposed for swingably mounting the ironing board on the base frame while maintaining the ironing board level regardless of its operative position above the base frame, the combination with said ironing board and one of said links of means for raising and lowering said ironing board and for locking the same in any one of a number of operative positions, said means including:

a shaft rigid to and extending laterally from said one link;

a reversible motor secured to said ironing board adjacent said shaft;

means controlling the energization of said motor for forward and reverse operation thereof; and

gear means extending along the shaft for releasably interconnecting said motor and said shaft to permit

rotation of the latter in a corresponding direction when said motor is energized, said gear means being operable to prevent rotation of the shaft when said motor is deenergized.

12. In ironing board structure as set forth in claim 11, said gear means including a worm gear and a worm.

13. In ironing board structure as set forth in claim 11, said motor having a drive shaft, said gear means including a worm attached to said drive shaft and a worm gear attached to the shaft on said one link.

14. In ironing board structure as set forth in claim 11, said gear means including a worm gear, a tube rigid to said worm gear and slidably telescoped over said shaft, and structure interconnecting said shaft and said tube.

15. In ironing board structure as set forth in claim 14, each of said shaft and said tube having an opening therein, said openings being alignable, said structure comprising a pin releasably receivable within said openings when the latter are aligned.

16. In ironing board structure as set forth in claim 15, and means biasing the pin in said aligned openings.

17. In ironing board structure having a pair of links of equal length and transverse width for swingably mounting an ironing board on and above a base frame and for maintaining the ironing board level regardless of its operative position above the base frame, the combination with said ironing board and said links of means for locking said ironing board in any one of a number of operative positions and for permitting complete collapsibility thereof, said means including:

a pair of spaced first journals adapted for pivotally mounting the lower ends of the links on said base frame;

a pair of spaced second journals for pivotally mounting the upper ends of the links on said ironing board and to position the links in parallelism with each other, the distance between said first journals being equal to the distance between the second journals, one of the journals of each pair thereof being disposed at a height above the other journal of the same pair substantially equal to the transverse width of each link to permit the ironing board to be completely collapsed on the base frame when the links are horizontally disposed and when a first of said links is in superposition to the other link;

an elongated element rigidly coupled to one of said links adjacent the upper end thereof;

a coupling unit carried by the ironing board and extending along said element; and

means releasably interconnecting said element and said coupling unit.

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FRANK B. SHERRY, *Primary Examiner.*