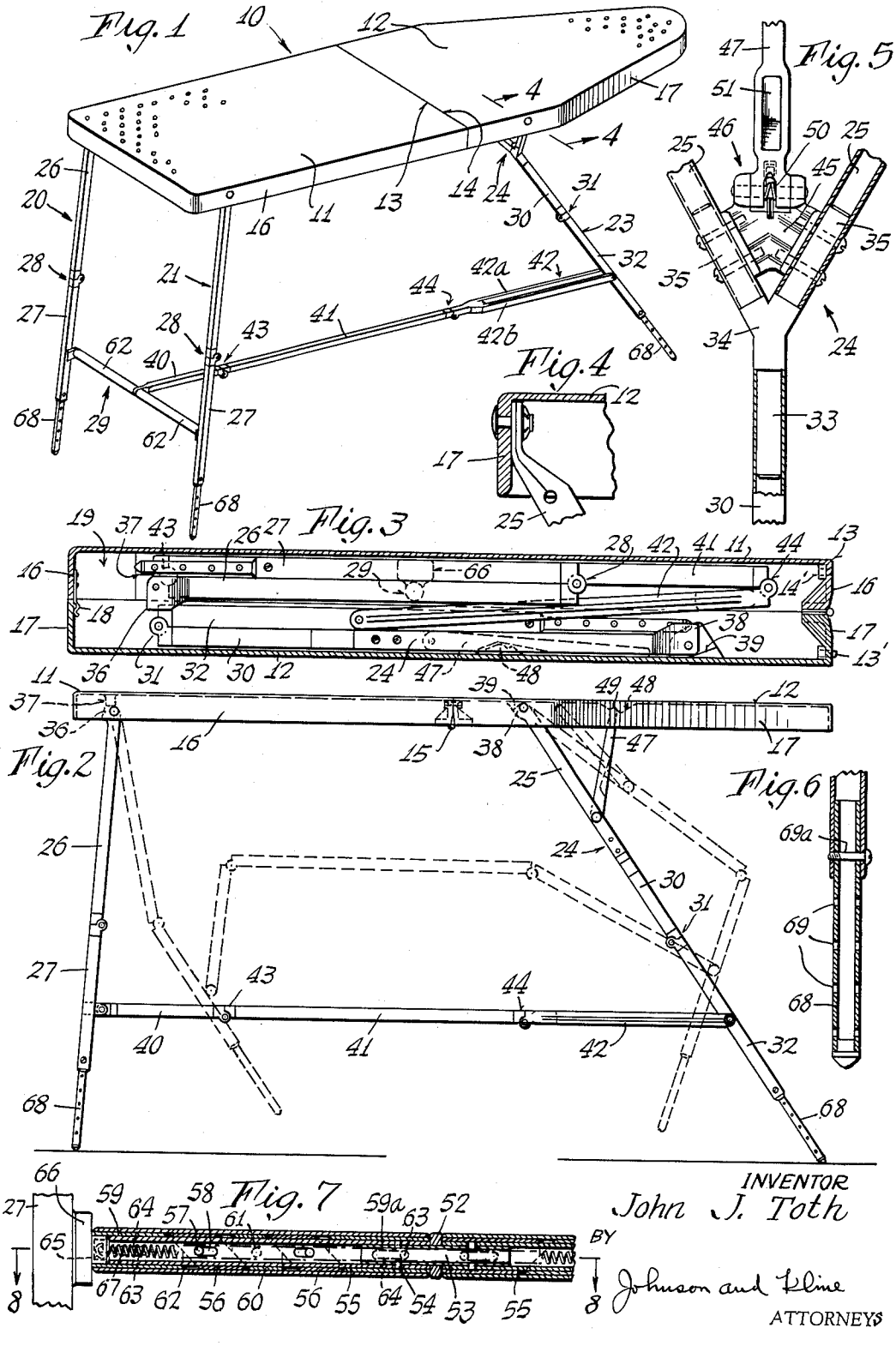
March 20, 1956 J. J. TOTH 2,738,604

FOLDING IRONING BOARD

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FOLDING IRONING BOARD

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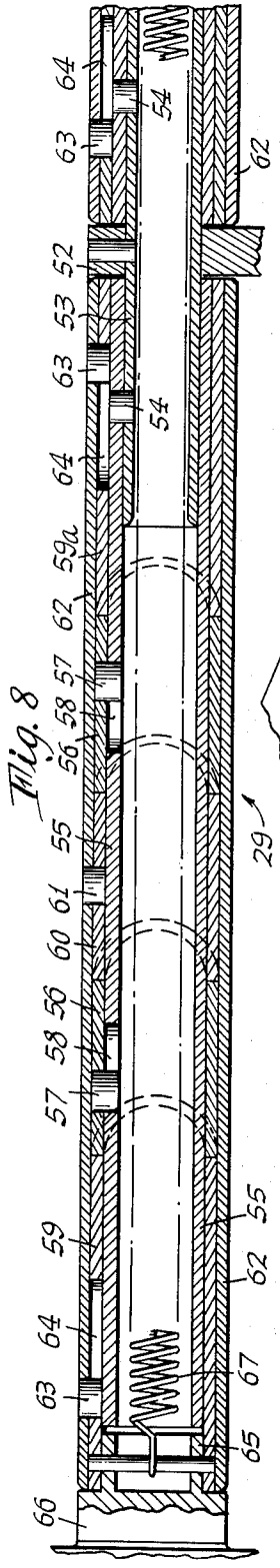


Fig. 8

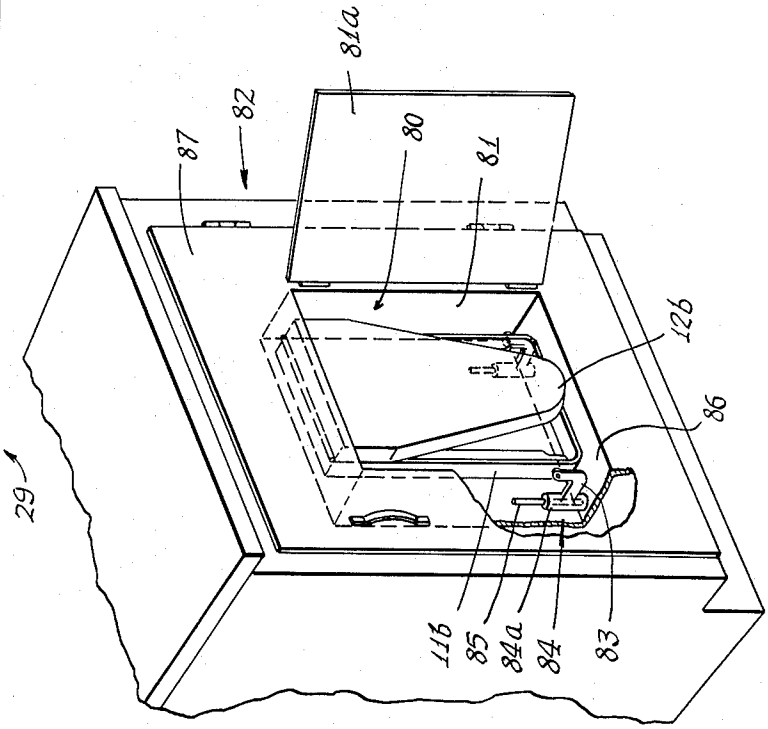


Fig. 9

INVENTOR

John J. Toth

BY Johnson and Kline

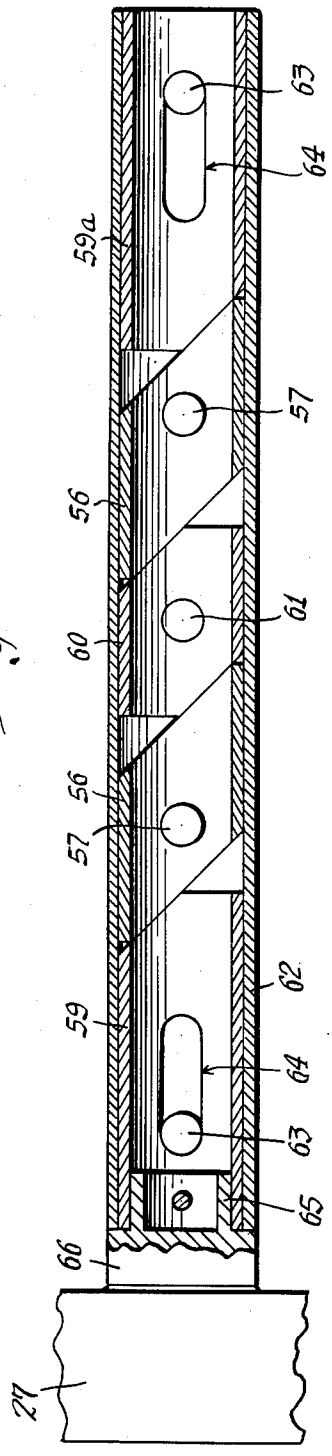
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Fig. 10



INVENTOR.
John J. Toth
BY
Johnson and Kline
ATTORNEYS

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FOLDING IRONING BOARD

John J. Toth, Bridgeport, Conn.; Minnie L. Toth, administratrix of said John J. Toth, deceased

Application May 6, 1952, Serial No. 286,293

4 Claims. (Cl. 38—117)

This invention relates to folding ironing boards, and more particularly to boards comprising a plurality of hinged leaves which constitute the ironing surface.

This application is a division of my copending application Serial No. 82,199 filed March 18, 1949, now Patent No. 2,609,628, granted September 9, 1952.

The present invention is concerned with improvements in a folding ironing board of the type described and claimed in copending application Serial No. 9,548 filed February 19, 1948, entitled "Ironing Board," now Patent No. 2,675,635, granted April 20, 1954.

The ironing board of this copending application comprises a pair of leaves hingedly connected together, each leaf separate from the other pivotally carrying an articulated foldable leg and also an articulated foldable strut connected between the leaf and the leg whereby the struts and legs may be extended to support the leaves in open position, or folded against the leaves and then the leaves folded to collapse the ironing board. The construction of this ironing board is such that each leg is extended or collapsed independently of the other leg, and while this has proved to be satisfactory for the purpose of rigidly supporting the ironing board when in use, it has not maintained the board in operative position if a user should lift the board at points between its ends, for the purpose of shifting the board slightly or carrying it to another spot, since such upward pressure results in the leaves folding on each other, as occurs when the board is being collapsed, even though the legs remain locked in extended position.

An object of the present invention is to overcome the above disadvantage of collapse of the leaves when the ironing board is lifted after being set up. This object is accomplished by the provision of an improved folding ironing board having articulated legs which are interconnected so that they are extentable or collapsible simultaneously rather than independently of each other (and concurrently with folding or unfolding of the leaves), whereby when the legs are locked in extended position they also lock the leaves in open position. Thus there is prevented the collapse of the leaves when, after the board has been set up, it is lifted at points intermediate its ends, to shift or transport it.

Another object of the invention is to provide an improved folding ironing board as characterized above, in which the operations of setting up and collapsing the board may be very simple and quickly carried out, without the operator requiring detailed instructions or any material degree of skill.

Yet another object of the invention is to provide an improved folding ironing board in accordance with the above, wherein a pair of legs at one end of the board is provided with simple effective means automatically spreading them apart at their lower extremities during the setting up movement of the board.

A further object of the invention is to provide an improved ironing board as set forth above, which is light

in weight and when collapsed is relatively small and compact.

Another object of the invention is to provide an improved ironing board as characterized above, in which the articulated legs and struts follow natural movements in being extended or collapsed, thereby enabling a user to easily operate the movable parts in the required manner.

Yet another object of the invention is to provide an improved folding ironing board having foldable leaves, legs, and struts, in which the opening movement of the leaves results in the legs and struts being automatically moved to an extent toward their extended positions, thereby facilitating the setting up of the board.

Still another object of the invention is to provide an improved folding ironing board in accordance with the above, which has but few parts, of simple construction, and which is accordingly simple and economical to produce.

Another object of the invention is to provide a simple and sturdy collapsible ironing board, arranged in combination with a cabinet whereby the board may be very quickly and easily set up for use, or collapsed and stored in a relatively small space available in the cabinet, in a door compartment.

In one embodiment of the invention, illustrating the combination ironing board and cabinet, the ironing board is completely removable from the storage space in the cabinet, and may be set up on its own supports and transported to any desired location.

A further object of the invention is to provide an ironing board in accordance with all of the above, which is extremely reliable in its operation over an extended period of use, and which is very stable and firm when set up for use.

A feature of the invention is the provision, in a folding ironing board, of simplified, economical means whereby the board may be easily and quickly adjusted for height.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is a perspective view of the ironing board of the present invention as set up for use.

Fig. 2 is a side elevational view of the ironing board shown in Fig. 1, this view also showing in dotted lines the positions of the legs and struts when these are partially collapsed.

Fig. 3 is a longitudinal sectional view through the ironing board when it is completely collapsed or folded, the legs and struts being shown in side elevation.

Fig. 4 is a fragmentary sectional view taken on line 4—4 of Fig. 1, through one of the pivots for the front leg.

Fig. 5 is a detail showing the construction of the yoke portion of the front leg, together with the adjacent portion of a manually releasable locking strut and the pivotal connection between these parts.

Fig. 6 is a detail in section showing one of the adjustable feet of the ironing board, whereby the height of the board may be adjusted.

Fig. 7 is a longitudinal section through the horizontal strut or cross brace between the pair of legs at one end of the board.

Fig. 8 is a horizontal section taken on line 8—8 of Fig. 7.

Fig. 9 is a perspective view of an ironing board and cabinet combination, the ironing board being collapsed and stored in a door compartment of the cabinet.

Fig. 10 is a longitudinal section through the horizontal strut or cross brace between the pair of legs at one end of the board in which the tubular assembly 53 and 55

is omitted to illustrate the camming members in solid lines.

Referring to Figs. 1 and 2, an ironing board made in accordance with the invention is shown as comprising a flat, top structure **10** formed of a back leaf **11** and a front leaf **12**, the leaves **11** and **12** having juxtaposed edges **13** and **14** respectively, which are connected together by a hinge **15**.

The leaves **11** and **12** are hollow, having flat top portions and having depending flanges **16** and **17** arranged so that the resulting organizations form a pair of squat box-like structures open at their bottoms.

As shown in Fig. 3, the leaves **11** and **12** may be folded together in superposed relationship and held therein by a spring clip **18**. When so folded, the tops of the leaves are separated by an intervening space **19**, in which the supporting structure for the leaves is folded and disposed. When the leaves **11** and **12** are opened or aligned with each other, the juxtaposed edges **13** and **14** are in abutment together with the usual aligning pins **13'** and apertures **14'** and serve to position the leaves whereby they form a continuous flat and horizontal ironing surface. The flanges **16** and **17** at the edges **13** and **14** may also engage each other when the leaves are open and aligned.

In accordance with the present invention, an improved extendable and collapsible supporting structure comprising articulated, interconnected legs is provided for the leaves **11** and **12**, the said structure when extended supporting the leaves in operative position and when collapsed occupying the intervening space **19** between the leaves after the latter have been folded together. This supporting structure is characterized by concurrent operation of the legs, and of the legs and leaves, resulting in extreme ease and simplicity of operation and enabling the board when set up for use, to be lifted at or near its center without folding or collapsing of the leaves **11** and **12** occurring; by the utilization of natural movements whereby an unskilled person may readily set up or collapse the ironing board without requiring instructions or directions; and by extreme simplicity and ruggedness of the parts whereby the leaves **11** and **12** are held very stable and whereby the useful life of the ironing board is greatly extended.

Referring to Figs. 1 and 2 this improved, novel, leaf-supporting structure comprises a pair of articulated rear legs **20** and **21** permanently pivotally secured respectively to the flanges **16** of the rear leaf **11** adjacent the rear edge **22** thereof, and comprises a front articulated leg **23** having a yoke **24** connected with angularly extending divergent arms **25** which are permanently pivotally connected to the flanges **17** of the front leaf **12** at points removed a slight distance from the hinged edge **14** thereof.

Each of the articulated legs **20**, **21** comprises an upper leg part **26** connected to a lower leg part **27** by a pivotal knee joint **28**. A horizontal strut **29** interconnects the lower leg parts **27**. The front articulated leg **23** comprises an upper leg part **30** hingedly connected by means of a pivotal knee joint **31** to a lower leg part **32**. The upper leg part **30** is preferably hollow and is rigidly secured to a shank or stud **33** of a Y-shaped connector member **34** having integral divergent fingers or studs **35** which are received in and bolted to the arms **25** forming the uppermost parts of the front articulated leg **23**.

The leg parts **25** and **26** may be tubular throughout, and may be secured to the flanges **16** and **17** by flattening the ends of the parts, perforating the ends and passing pivot studs through them as shown in Fig. 4, equipped with spring washers which compensate for wear. The tension of these springs can be regulated to control the sequence of movement of the legs.

The upper extremities of the leg parts **26** have abutting portions **36** engageable with stops **37** secured to the back leaf **11** whereby the rear legs **20**, **21** are positioned as shown in Figs. 1 and 2 to properly support the leaves **11** and **12** horizontally. Also, the upper extremities of the arms **25** of the front articulated leg **23** have abutting portions **38** engageable with stops **39** secured to the flanges **17** of the front leaf **12** to properly position the front leg for supporting the leaves horizontally.

It will be observed from Fig. 2 that the knee joints **28** and **31** are so arranged that the lower parts of the legs may be folded inward on the upper parts, and so that the associated parts of the individual legs may be positioned in alignment with each other when supporting the leaves **11** and **12** horizontally.

According to the invention, a novel and improved strut means is provided, interconnecting the front and rear articulated legs **20**, **21** and **23** to hold the legs firmly in their extended positions supporting the leaves, and operative to enable the leg parts to be folded against each other and against the leaves when the board is collapsed. This strut means comprises a plurality of strut sections **40**, **41** and **42** pivotally connected together by knee joints **43** and **44**, the section **41** being located intermediate the other sections. The strut section **40** is pivotally carried by the brace **29** intermediate the ends of the latter, and the strut section **42** has a pair of arms **42*a*** and **42*b*** spaced from each other and at their extremities pivotally connected to the front leg part **32**. The knee joints **43** and **44** are arranged to position the strut sections **40**, **41** and **42** in alignment with each other when the ironing board is set up for use, and as shown in Fig. 2 the said joints enable the end strut sections **40** and **42** to be folded as shown by the broken lines, so that eventually they lie against the intermediate strut section **41** when the ironing board is collapsed.

Referring to Figs. 2 and 5, the yoke portion **24** of the front articulated leg **23** is provided with a fitting **45** having a hinged connection **46** with a manually operable locking arm **47** adapted to engage a locking projection **48** having a recess **49** for receiving the extremity of the arm **47**, the said projection being immovably carried by the underside of the front leaf **12** of the board. A wire spring **50** is carried by the pivotal joint **46**, and normally urges the locking arm **47** in a clockwise direction as viewed in Fig. 2. The arm **47** has a recess **51** to provide clearance for the projection **48** when the ironing board is folded, as clearly shown in Fig. 3.

In accordance with the present invention the strut **29** which connects together the pair of legs **20**, **21** is so arranged and constructed that the swinging movement of the strut part **40** with respect to the legs, during the opening or setting up of the ironing board, causes the lower extremities of the legs to be spread further apart. The structure by which this is accomplished is shown in Figs. 1, 7, 8 and 10. The strut part **40** has an eye **52** which encircles and is rigidly secured to a short tubular member **53** in turn rigidly connected by pins **54** with tubular members **55** which internally receive at their juxtaposed ends the short tubular member **53**. Thus the strut part **40** and eye **52** thereof, together with the tubular members **53** and **55** constitute a single, rigid assembly.

Each of the tubular members **55** carries a pair of spaced, cam members **56** which act as thread elements and are in the form of collars partially encircling the members **55**. The members **56** may be made of sections of tubing, the ends of which are cut off at an inclined angle. Driving connections are established between the cam members **56** and tubular members **55** carrying the same, by pins **57** secured to the cam members and extending into short, longitudinally extending slots **58** in the tubular members **55**.

Cooperable with the cam members **56** are complementary cam members **59**, **59*a*** and **60**, also slidably carried on the tubular members **55** and having the form of collars partially encircling said members.

The collars **60** are rigidly connected by means of pins **61** with external tubular members or sleeves **62** which encircle and are slidable on the collars or members **56**. The cam members **59** and **59*a*** are keyed to the sleeves **62** by

means of pins 63 carried by the sleeve, extending into longitudinally extending slots 64 in the cam members.

Considering the portion of Fig. 7 to the left of the eye 52, the cam member 59, better seen in Fig. 10, is rigidly secured to a boss 65 carried by a fitting 66 which is in turn secured to the leg part 27.

A spiral extension spring 67 is provided, extending through the tubular members 53 and 55, the ends of the spring being connected to the bosses 65 on fitting 66 of the leg parts 27. The extension spring 67 tends to normally urge the leg parts 27 toward each other.

It will be seen that the strut construction as set forth above is in the nature of a pair of screws and nuts, the screw parts being constituted by the tubular members 55 and cam members 56 carried thereby, and the nut parts being constituted by the sleeves 62 and cam members 59, 59*a* and 60 associated with the sleeves. The extension spring 67 normally tends to maintain the cam members 56, 59, 59*a* and 60 in engagement with each other, since all of said members except the members 60 are axially movable to a limited extent by virtue of the pin and slot connections associated with them.

The operation of the strut 29 is as follows: When the ironing board is being opened and set up for use, referring to Fig. 2, the strut part 40 will swing clockwise with respect to the sleeve parts 62 of the strut 29. Considering Fig. 7, if the eye 52 of the strut part 40 is viewed from the left end of the figure, it would move clockwise, with respect to the sleeve 62, during the opening or setting up movement of the ironing board. This will result in the cam members 56 keyed to the tubular member 55 traveling along the cooperable cam members 59, 59*a* and 60 in such a way as to shift the sleeve 62 (in the left part of the figure) toward the left. The tubular member 55 will be caused to partially emerge from the adjacent end of the sleeve 62 by virtue of such shifting, and as a consequence the two sleeves 62 will be caused to separate axially, thereby spreading apart the leg parts 27.

Upon the ironing board being collapsed, the reverse of the above operation will take place and the sleeves 62 will be moved axially toward each other, resuming the positions shown in Figs. 1 and 7.

To provide for adjusting the height of the ironing board, the parts 27 and 32 of the articulated legs telescopically receive feet 68 having a plurality of openings 69 whereby the feet may be secured, by means of screws 69*a* passing through the leg parts, in a number of different extended or retracted positions.

The operation of the ironing board is as follows:

Referring to Figs. 1 and 2, if it should be desired to collapse and fold the board from extended position, it is merely necessary to unlock the front leg 23 by moving the locking arm 47 to the left as viewed in Fig. 2, out of engagement with the locking projection 48, and then move inward or toward the leaves 11 and 12 the intermediate strut section 41. The dotted line positions of the parts indicates the result of such movement. The rear legs 20, 21 commence to fold inward with respect to the rear leaf 11, and also the lower leg parts 27 fold inward with respect to the upper leg parts 26. The lower part 32 of the front leg 23 folds inward with respect to the upper portion of the front leg, and said upper portion folds upward toward the front leaf 12. The locking arm 47 meanwhile is guided by the undersurface of the front leaf 12 and turns counterclockwise as viewed in Fig. 2 toward a position coplanar with the arms 25 of the front leg. The folding movements of the legs and struts are continued and simultaneously therewith the leaves 11 and 12 are folded, with the result that the legs and struts will nest within the folded leaves when the latter attain the position shown in Fig. 3.

To set up the ironing board, a reverse of this operation is required, that is, the leaves 11 and 12 are first swung apart. During such movement the spring 50 will be acting on the locking arm 47 and will automatically move the arm toward its locking position. The force of the spring 50 will tend to extend the articulated legs, moving these from their positions folded against the leaves, and as the opening movement of the leaves is continued the legs will, by virtue of their being interconnected by the strut sections 40, 41 and 42, become further extended, whereupon the operator may grasp the intermediate strut section 41 and move it away from the leaves 11 and 12, causing the entire supporting structure to assume its fully open position. The locking arm 47 will, under the action of the spring 50 automatically engage the locking projection 48 and will lock in the recess 49 thereof, and the ironing board will be fully set up and locked, ready for use.

It will be noted that the natural inclination of a user in collapsing the ironing board is to shift the intermediate strut section 41 toward the leaves 11 and 12, and that in setting up the ironing board the natural inclination is to move the strut section 41 away from the leaves. Thus the operation of setting up or collapsing the ironing board is found to be extremely simple, and no skill or instruction is required by the operator in carrying out these operations.

Another embodiment of the invention is shown in Fig. 9, wherein a folding ironing board 80 made in accordance with the disclosure of Figs. 1 through 8, is carried or stored in a door compartment 81 of a cabinet 82, the said compartment having a hinged panel or closure 81*a*.

The back end of the leaf 11*b* of the ironing board 80 is pivotally connected to L-shaped arms 83 of brackets 84 which have hubs or sleeves 84*a* carried on upright rods 85 secured to the bottom or floor surface 86 of the compartment 81. It will be understood that the front leaf 12*b* of the ironing board when the latter is in collapsed position, is folded against the underside of the back leaf 11*b*, as clearly shown in Fig. 9.

When it is desired to remove the ironing board 80 for use, the hinged panel 81*a* is swung open, exposing the interior of the compartment 81. The folded ironing board 80 is then swung partially downward toward horizontal position and lifted, so as to remove the brackets 84 from the rods 85 carrying them. The ironing board 80 may then be completely removed from the compartment 81 and set up for use in the manner described previously in connection with Figs. 1 through 8 and 10.

Variations and modifications may be made within the scope of the claims and portions of the improvements may be used without others.

I claim:

1. The invention as defined in claim 4 in which the said arm in moving to locking position moves the folded upper part of the front leg means away from its associated leaf to partially extend said upper part, said spring being strong enough to move the arm and partially extend the said upper part when the leaves are being unfolded.

2. A folding ironing board comprising a front and back leaf hingedly connected together at one end each, and foldable one on the other from extended aligned positions to collapsed, superposed positions; front and back articulated multipart foldable legs, each leg having upper and lower leg parts, the upper parts of which are permanently pivotally connected to said front and back leaves respectively, said front and back legs being foldable from extended positions wherein they extend downwardly from the leaves to positions flat against their respective leaves and two of said legs forming the back legs being paired with each other at one end of the ironing board; and brace means interconnecting the lower part of said front and back legs, said brace means including means having a single, straight, extensible and retractible strut and interconnecting the lower parts of the paired back legs, for automatically causing the lower extremities of the said back legs to spread further apart when the back legs are moved to extended positions, said means automatically bringing the back leg extremities closer to each other when the back legs are folded, said strut comprising

cooperable, telescoping parts having mutually engageable cam members which act as thread elements, and said brace means including also an articulated strut interconnecting the first mentioned strut with the lower leg part of said front leg, said articulated strut including an actuating member for operating one of said telescoping parts.

3. A folding ironing board comprising a front and back leaf hingedly connected together at one end each, and foldable one on the other from extended aligned positions to collapsed, superposed positions; front and back articulated multipart foldable legs, each leg having upper and lower leg parts, the upper parts of which are permanently pivotally connected to said front and back leaves respectively said front and back legs being foldable from extended positions wherein they extend downwardly from the leaves to positions flat against their respective leaves and two of said legs forming the back legs being paired with each other at one end of the ironing board; brace means interconnecting the lower parts of said front and back legs, said brace means having means including a single, straight, extensible and retractible strut forming a part of said brace means and interconnecting the lower parts of the paired back legs, for automatically causing the lower extremities of the back legs to spread further apart when the back legs are moved to extended positions, said means automatically bringing the back leg extremities closer to each other when the back legs are folded, said strut comprising cooperable telescoping parts having mutually engageable cam members which act as thread members, and said brace means also including an articulated strut connected to the first mentioned strut and to a lower leg part of the front leg, said articulated strut including an actuating member for operating some of said cam members; and spring means carried within the first mentioned strut, operable on the telescoping parts thereof for normally urging the extremities of said paired back legs toward each other.

4. A folding ironing board comprising a front and back leaf hingedly connected together at one end each and foldable one on the other from open, aligned and abutting positions to closed, superposed positions wherein a space intervenes; articulated multipart foldable front and back

leg means, each having upper and lower parts, the upper parts being permanently pivotally connected to said front and back leaves respectively, said front and back leg means being foldable from downwardly extended positions to positions flat against said respective leaves, said back leg means being pivoted adjacent an outer end of said back leaf and the front leg means being pivoted to the front leaf adjacent the hinged connection of the leaves; cooperable stop means on said front leaf and an upper part of the front leg means pivoted thereto, operative to properly position said upper part when the latter is extended; articulated strut means independent of said leaves and permanently pivotally connected between the lower parts of said front and back leg means and operative to hold said leg means extended and supporting the aligned leaves, and to fold and enable the said leg means and leaves to be folded together, said strut means and front and back leg means when folded occupying the said intervening space between the folded leaves; leg locking means coacting with said stop means for locking said upper part of the front leg means in its extended position; said leg locking means comprising an arm pivotally carried by the upper part of said front leg means and including a notched abutment on said front leaf, engageable by said arm; and spring means acting on said arm, normally urging the latter toward its locking position.

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