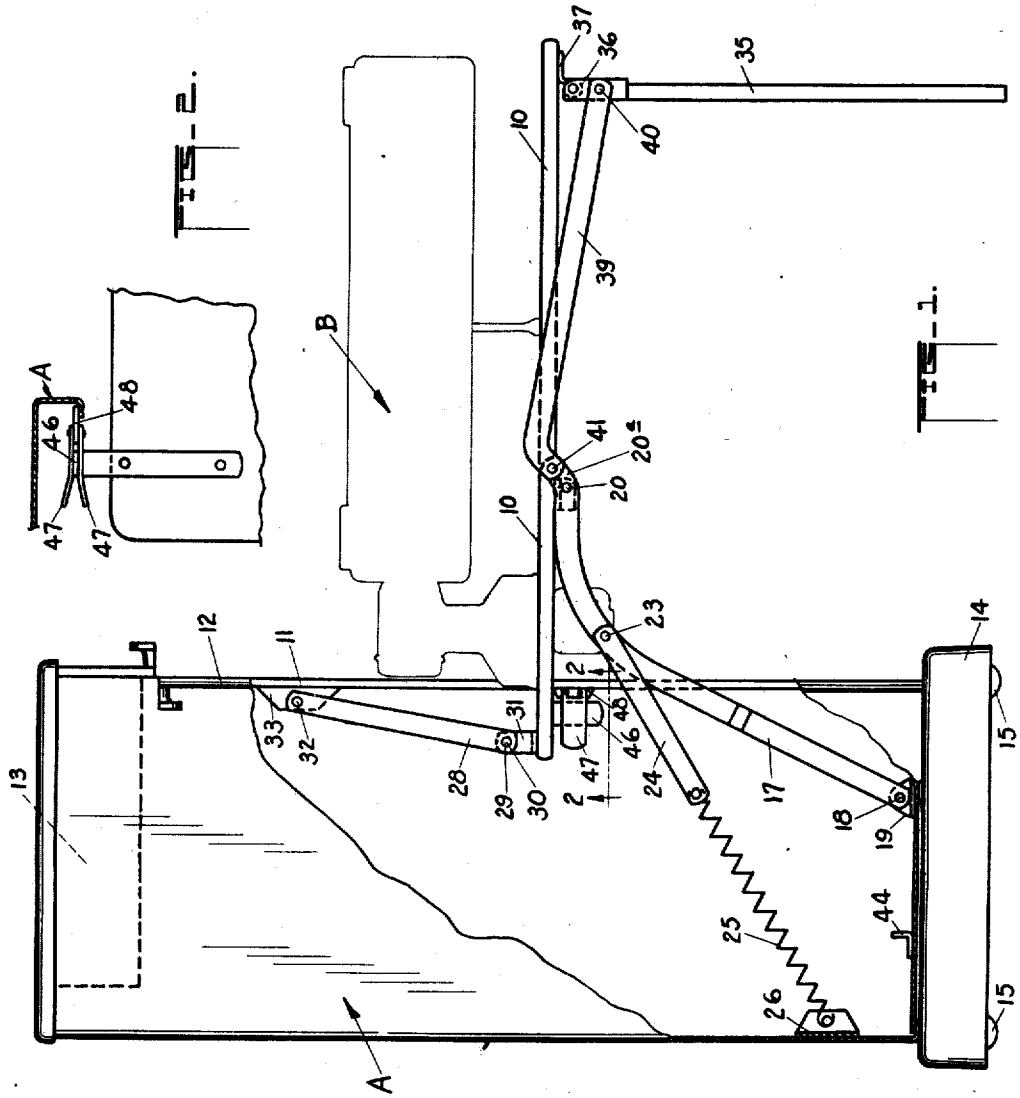
July 26, 1938. E. ENGEL 2,124,972

CABINET IRONER

Filed Dec. 28, 1936 3 Sheets-Sheet 1



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CABINET IRONER

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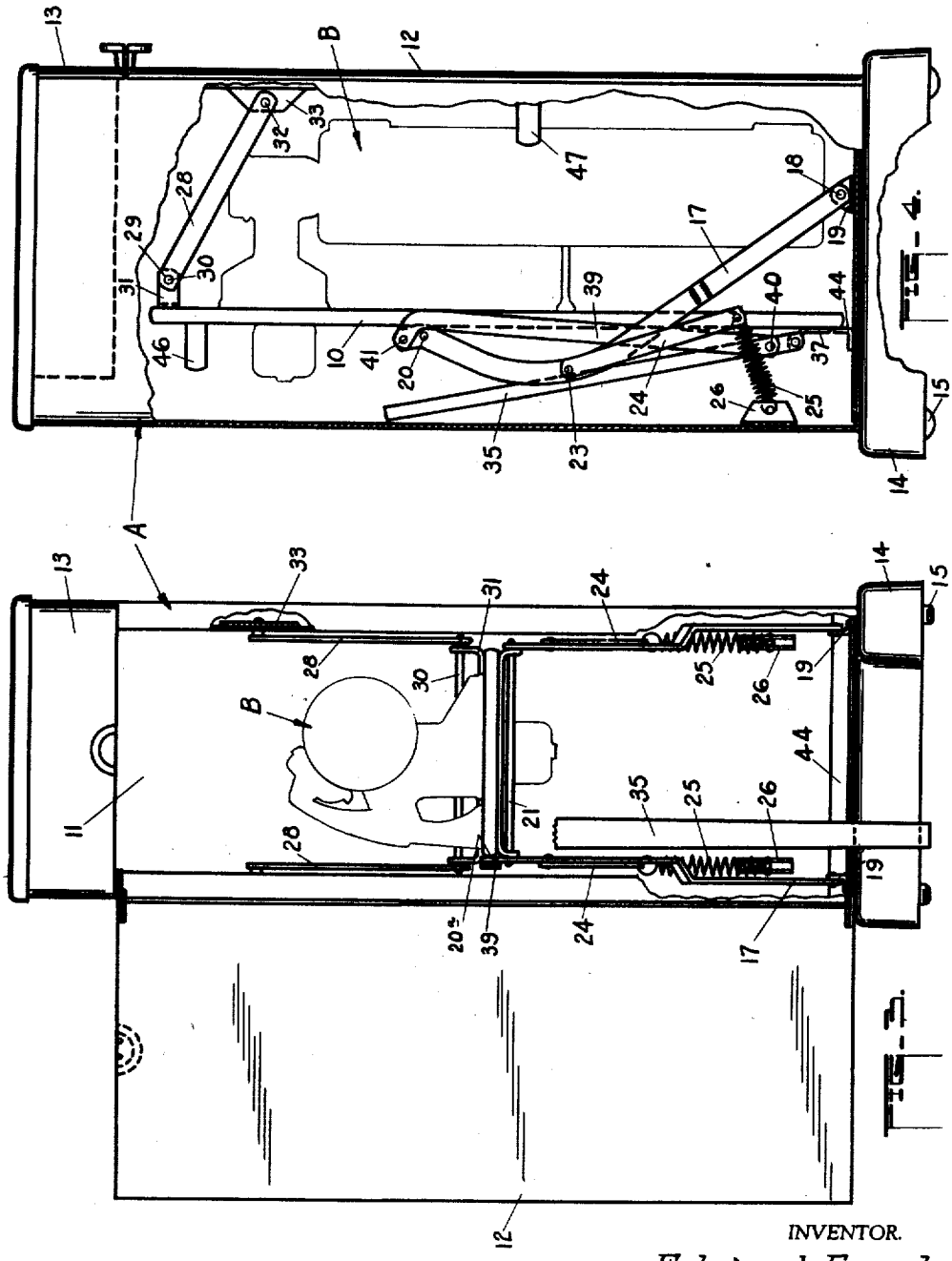


FIG. 4.

FIG. 3.

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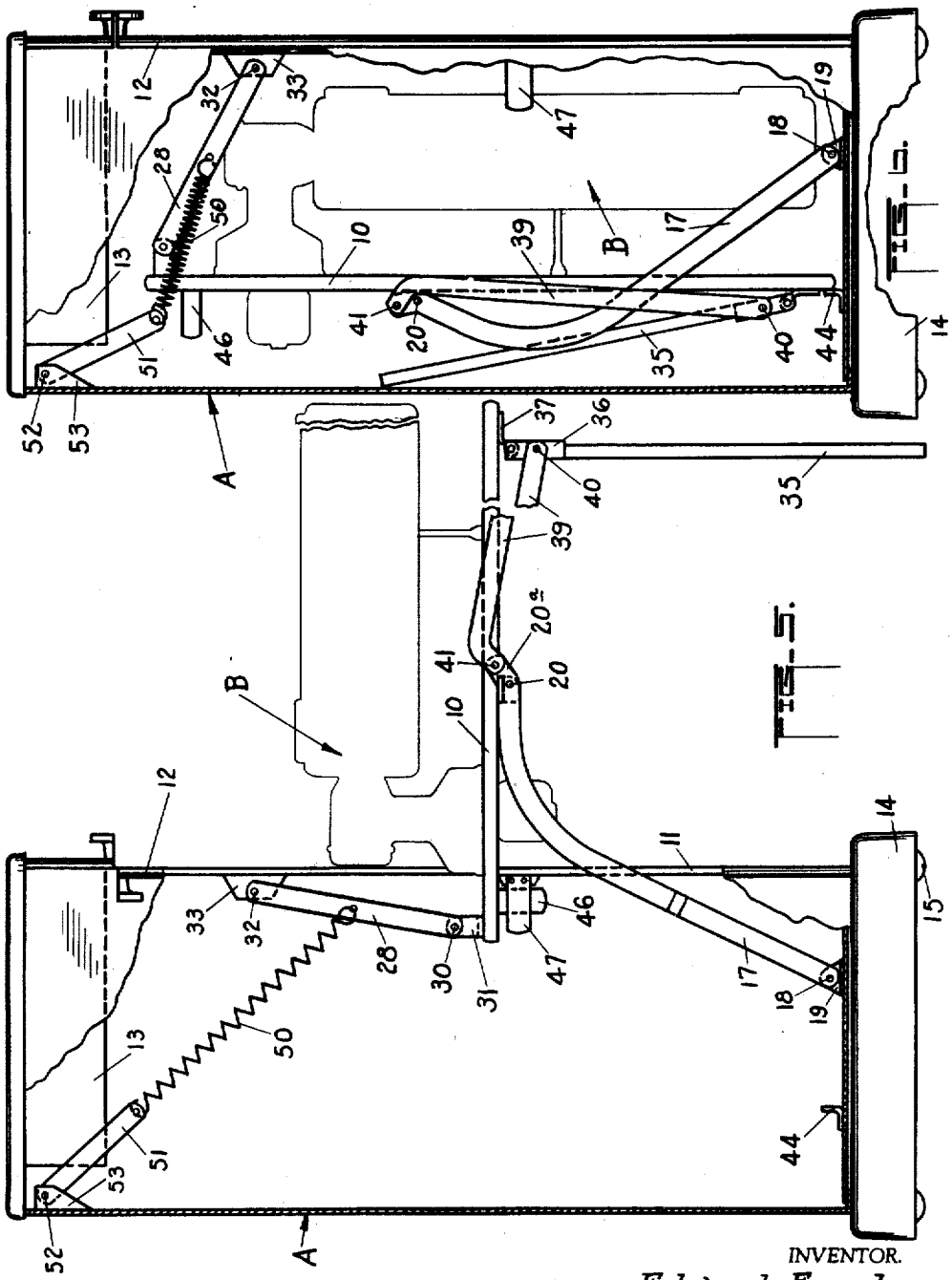


FIG. 5.

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2,124,972

CABINET IRONER

Edward Engel, Bloomington, Ill., assignor to Electric Household Utilities Corporation, Chicago, Ill., a corporation of Illinois

Application December 28, 1936, Serial No. 117,834

12 Claims. (Cl. 312—27)

This invention relates to cabinet ironing machines, of the domestic type, wherein the ironer is of unitary form and is associated with a cabinet in a manner so as to be folded into and completely housed within the cabinet when not in use, and adapted to be withdrawn from the cabinet and placed in properly supported operating position for use.

More particularly, the present invention is directed to mechanism for supporting the ironer unit when it is moved to either folded position within the cabinet or to operating position outside of the cabinet, and for supporting and guiding the ironer unit during its transition from folded position to operating position and vice versa. Such guiding and supporting mechanism desirably is constructed and arranged so as to be automatically actuated incident to the movement of the ironer unit to or from operative position.

One of the objects of this invention is to provide a novel and generally improved supporting and guiding mechanism of the character indicated which is constructed in a manner so as to require a relatively small amount of physical effort on the part of the attendant in moving the ironer unit into or out of the cabinet.

Another object is to provide improved mechanism of the character indicated which is constructed in a manner to stabilize the ironer unit and associated cabinet during the movement of the ironer unit, and particularly when the center of gravity of the ironer unit is displaced relative to the cabinet to an extent which would otherwise disturb the equilibrium of the cabinet.

A further object of this invention resides in the provision of improved supporting and guiding mechanism of the character indicated, including resilient means adapted to receive and sustain a portion of the load of the ironer unit while it is being moved to operative position outside of the cabinet.

Still another object is to provide improved supporting and guiding mechanism of the character indicated, including spring means adapted to be tensioned by the load of the ironer unit as it is moved to operative position and serving to assist in returning the ironer unit to folded position within the cabinet.

A still further object of this invention is to provide improved means for stabilizing the ironer unit relative to the cabinet when said unit is disposed in operating position.

And still another object is to provide novel and improved supporting and guiding means of the character indicated which is of simple construction, positive in operation and which may be economically fabricated.

Other objects and advantages of this invention will be apparent from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a side elevational view of an ironer unit and associated cabinet, embodying the improvements constituting the present invention; the ironer being shown in extended operating position with the side wall of the cabinet broken away to clearly disclose the mechanism contained therein.

Fig. 2 is a transverse section taken as indicated at line 2—2 on Fig. 1, showing means for stabilizing the ironer unit when it is disposed in extended operating position.

Fig. 3 is an end elevation of the ironer and cabinet with the ironer mechanism disposed in operating position as seen in Fig. 1.

Fig. 4 is a side elevation showing the ironer mechanism folded within the cabinet, the wall of the cabinet being broken away to clearly show the position of the parts in such folded relation.

Fig. 5 is a view similar to Fig. 1 showing a modified form of guiding and supporting means for the ironer unit.

Fig. 6 is a side elevation of the modified construction represented in Fig. 5 showing the ironer unit folded within the cabinet and the cabinet being broken away to show the relative position of the parts.

The construction embodying the present invention, as illustrated in the drawings, comprises a cabinet indicated at A, and an ironer mechanism indicated at B, arranged to be folded within the cabinet for storage therein when not in use. The cabinet A is preferably made of sheet metal and is of generally upright rectangular box-like shape and is of sufficient height to accommodate the ironer unit therein in an upright or vertical position.

The ironer mechanism designated at B is of unitary form and may be understood to be of the domestic type, comprising a roll, a cooperating shoe and driving mechanism therefor, all so related as to constitute a unit which may be bodily swung out of the cabinet to horizontal operating position and swung back into the cabinet in upright stored position. For convenience the total ironer mechanism is disclosed merely in outline since the exact details of construction thereof do not constitute any part of the

present invention. The ironer mechanism includes an elongated flat baseboard 10 on which the ironer mechanism proper is fixedly mounted. The baseboard 10 is permanently connected to the cabinet A and is movable with respect thereto so as to permit the ironer unit to be folded within the cabinet or swung out of the cabinet to operating position as will be presently described. For this purpose suitable connections are provided between the baseboard and the cabinet to properly guide and support the ironer unit during such movement and when it is in folded upright position within the cabinet, or when it is withdrawn therefrom and disposed in horizontal operating position.

The cabinet A is provided with a door opening 11 through which the ironer mechanism is passed in withdrawing the same from the cabinet or returning it to folded upright position therein. The opening 11 is adapted to be closed by a suitable door 12 hingedly connected at one vertical edge to the cabinet proper. For convenience the cabinet is formed of sufficient height so that the uppermost portion thereof provides support and a housing for a horizontally slidable drawer indicated at 13. The cabinet proper is mounted on a suitable supporting base 14 provided with casters, designated at 15. As may be seen in Fig. 1 of the drawings when the ironer unit is disposed in operating position the roll and cooperating shoe, together with its supporting base 10, extends substantially horizontal and the rear end of the baseboard 10 projects a slight distance within the cabinet A.

The novel guiding and supporting mechanism constituting the present invention includes a pair of transversely spaced apart upwardly extending lever arms or links 17 which are pivotally connected at 18 at their lower ends to brackets 19 secured to the bottom of the cabinet A. The upper ends of said arms extend outside of the edges of said baseboard 10 and are pivotally connected at 20 on a cross rod 21, secured to the under side of said baseboard. The location of the pivot connection of the upper end of said arm 17 on said rod 20, preferably is adjacent the center of gravity of the total ironer mechanism designated at B to facilitate control and bodily movement of the ironer mechanism into and out of the cabinet. Pivotally connected at 23 to the lever arms 17 are link members 24, the opposite ends of which are connected by coil springs 25 to brackets 26 secured to the back wall of the cabinet A. To assist in properly guiding the ironer mechanism into and out of the cabinet there is provided a pair of transversely spaced apart upwardly extending link members 28 pivotally connected at 29 at their lower ends on a cross rod 30 carried in a bracket 31 secured upon the upper surface of the baseboard 10 adjacent its rear end, while the upper ends of said links are pivotally connected at 32 to brackets 33 secured to the side walls of the cabinet A as may be seen in Figs. 1 and 3. The links 28 in addition to guiding the path of movement of the ironer unit B serve as thrust links acting on the rear end of the ironer unit to maintain said unit in substantially horizontal position when it is extended. Disposed adjacent the forward end of the baseboard 10, of the ironer unit B is a foldable leg 35 which is adapted to rest upon the floor and is provided at its upper end with a fixture 36 including a hinge element having a portion 37 secured to the under side of the baseboard 10 to permit said leg to be swung about said hinge connection so as to be disposed in folded relation adjacent the under side of the baseboard when the ironer unit is disposed within the cabinet, or to be disposed in substantially upright supporting position as seen in Fig. 1 when the ironer unit is in operative position. This supporting leg is automatically moved into and out of operating position incident to the movement of the ironer unit B, out of or into the cabinet respectively, by virtue of a tie link 39 one end of which is pivotally connected at 40 to said leg 35, while its opposite end is pivotally connected at 41 to an extension 20a of one of the side links 17.

Assuming that the parts are in the position disclosed in Fig. 1 and that it is desired to place the ironer unit in the cabinet A for storage, the attendant merely grasps the end of the roll of the ironer unit and pushes the unit longitudinally toward the cabinet. Because the link members 17 are connected to the ironer unit adjacent its center of gravity, the ironer unit is easily moved from horizontal operating position to vertical folded position within the cabinet. As said unit is moved longitudinally the links 17 swing about their pivotal connections 18, simultaneously causing upward movement of the entire ironer unit until it reaches a position at which the rear end portion within the cabinet is free to swing upwardly under the control of the links 28, about the pivot connection 29 of said links 17, to assume a vertical position totally within the cabinet as seen in Fig. 4. Immediately upon initiating longitudinal movement of the ironer unit B, the springs 25, which have remained tensioned while the ironer is disposed in operating position, become effective to exercise force for assisting in drawing the ironer unit into the cabinet, so as to greatly reduce the physical effort required on the part of the attendant in manipulating the ironer unit.

Almost instantly upon commencing longitudinal movement of the ironer unit, the supporting leg 35 commences to fold toward the baseboard 10 due to the connection of the tie link 39 to the upper end of one of the side lever arms 17, so that by the time that the ironer unit approaches vertical position within the cabinet, said leg 35 is folded to a position so as to permit its lower end to travel freely through the opening 11 of the cabinet to assume a position as indicated in Fig. 4.

Due to the fact that the pivot supporting connection 20 of the side members 17 passes beyond the vertical plane of the pivot connections 18 of the lower ends of said links, there is a natural tendency due to the mass of weight of the ironer unit supported on the pivot connection 20, to continue moving in the same direction, and to definitely limit such movement an angle bracket 44 is secured to the bottom of the cabinet in a position to be engaged by the extreme outer end of the baseboard 10 to insure arresting the entire ironer unit in substantially upright vertical position within the cabinet, as seen in Fig. 4.

In withdrawing the ironer unit from the cabinet, the attendant grasps the end of the ironer roll and pulls outwardly thereon, whereupon the ironer unit bodily moves outwardly of the cabinet to a horizontal operating position, during which period of transition the leg 35 is automatically disposed in vertical supporting position. During the latter portion of such movement the springs 25 become tensioned and resiliently assume a portion of the load of the ironer unit as it approaches operating position.

To insure adequate stability of the ironer unit against lateral displacement relative to the cabinet when said unit is disposed in operating position, I provide means comprising a depending leg 46 on the under side of the rear end portion of the baseboard 10, which, as the ironer mechanism approaches horizontal operating position, frictionally engages between a pair of spaced finger elements 47 which are rigidly secured by a bracket 48 to the cabinet A, as seen in Figs. 1 and 2. Although the elements 47 serve to provide substantial support for the ironer unit against lateral displacement, they also permit easy disengagement of the lug 46 as the ironer unit is moved to folded position within the cabinet.

The construction represented in Figs. 5 and 6 is similar to the construction above described with the exception of the location of the spring elements. In this construction the spring elements designated at 50 are connected intermediate the lengths of the respective control links 26 and have their opposite ends connected to link elements 51 which in turn have their opposite ends pivoted at 52 to brackets 53 secured adjacent the upper end of the cabinet A. The purpose and function of the springs 50 is substantially the same as the spring elements 25 in the construction above described. The entire supporting and guiding mechanism disclosed in Figs. 5 and 6 otherwise is identical with the construction and operation to that above described.

Although I have herein shown and described certain preferred embodiments of my invention, manifestly it is capable of further modification and rearrangement of the parts without departing from the spirit and scope thereof. I do not, therefore, wish to be understood as limiting this invention to the precise constructions herein disclosed, except as it may be so limited in the appended claims.

I claim as my invention:

1. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside of the cabinet, link means pivotally connected at opposite ends to the cabinet and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, link means pivotally connected at opposite ends respectively to the cabinet above the unit, when it is disposed in horizontal position, and to the rear end of said unit for assisting in guiding the latter in its movement from one position to another, and a supporting leg hingedly connected to the unit adjacent the forward end for supporting said end of said unit when it is withdrawn from the cabinet.

2. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside of the cabinet, link means pivotally connected at opposite ends to the bottom of the cabinet and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, link means pivotally connected at opposite ends respectively to the cabinet and to the rear end of said unit for assisting in guiding the latter in its movement from one position to another, and a supporting leg hingedly connected to the unit adjacent the forward end for supporting said end of said unit when it is withdrawn from the cabinet.

3. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside of the cabinet, link means pivotally connected at opposite ends to the cabinet below said unit and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, link means pivotally connected at opposite ends respectively to the cabinet above said unit and to the rear end of said unit for assisting in guiding the latter in its movement from one position to another, and a supporting leg hingedly connected to the unit adjacent the forward end for supporting said end of said unit when it is withdrawn from the cabinet.

4. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside of the cabinet, link means pivotally connected at opposite ends to the cabinet and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, a pair of transversely spaced apart links pivotally connected at their corresponding opposite ends respectively to the cabinet and to the rear end of said unit for assisting in guiding the latter in its movement from one position to another, and a supporting leg hingedly connected to the unit adjacent the forward end for supporting said end of said unit when it is withdrawn from the cabinet.

5. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside the cabinet, a pair of upwardly extending transversely spaced apart links pivotally connected at their corresponding opposite ends to the cabinet below the unit and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, a pair of transversely spaced links pivotally connected at their corresponding ends to the cabinet, above said unit, and pivotally connected at their opposite ends to the rear end of said unit for guiding the rear end of the latter in its movement from one position to the other, and a supporting leg hingedly connected to the unit adjacent the front end for supporting said end of the unit when it is withdrawn from the cabinet.

6. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside of the cabinet, link means pivotally connected at opposite ends to the cabinet and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, link means pivotally connected at opposite ends respectively to the cabinet and to the rear end of said unit for assisting in guiding the latter in its movement from one position to another, a supporting leg hingedly connected to the unit adjacent the forward end

for supporting said end when the unit is withdrawn from the cabinet, and a link pivotally connected at opposite ends to the first mentioned link means and to said leg, whereby movement of the unit to and from operative position simultaneously moves said leg to unfolded supporting position or folded inoperative position respectively.

7. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside the cabinet, a pair of upwardly extending transversely spaced apart links pivotally connected at their corresponding opposite ends to the cabinet below the unit and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, a pair of transversely spaced links pivotally connected at their corresponding ends to the cabinet, above said unit, and pivotally connected at their opposite ends to the rear end of said unit for guiding the rear end of the latter in its movement from one position to the other, a supporting leg hingedly connected to the unit adjacent the front end for supporting said end of the unit when it is withdrawn from the cabinet, and a link pivotally connected at its ends to one of the first mentioned pair of links and to said leg.

8. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside of the cabinet, link means pivotally connected at opposite ends to the cabinet and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, link means pivotally connected at opposite ends respectively to the cabinet and to the rear end of said unit for assisting in guiding the latter in its movement from one position to another, spring means connected to said cabinet and to one of said links means adapted to be tensioned upon movement of the unit to horizontal position for assisting in returning said unit to vertical position inside the cabinet, and a supporting leg hingedly connected to the unit adjacent the forward end for supporting said end of said unit when it is withdrawn from the cabinet.

9. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside the cabinet, a pair of upwardly extending transversely spaced apart links pivotally connected at their corresponding opposite ends to the cabinet below the unit and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, a pair of transversely spaced links pivotally connected at their corresponding ends to the cabinet, above said unit, and pivotally connected at their opposite ends to the rear end of said unit for guiding the rear end of the latter in its movement from one position to the other, spring means connected at one end to said cabinet and at opposite end to the first mentioned pair of links, adapted to be tensioned upon movement of the unit to horizontal position for assisting in returning said unit to vertical position inside the cabinet, and a supporting leg hingedly connected to the unit adjacent the front end for supporting said end of the unit when it is withdrawn from the cabinet.

10. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside the cabinet, a pair of upwardly extending transversely spaced apart links pivotally connected at their corresponding opposite ends to the cabinet below the unit and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, a pair of transversely spaced links pivotally connected at their corresponding ends to the cabinet, above said unit, and pivotally connected at their opposite ends to the rear end of said unit for guiding the rear end of the latter in its movement from one position to the other, spring means connected at one end to said cabinet and at opposite end to the last mentioned pair of links, adapted to be tensioned upon movement of the unit to horizontal position for assisting in returning said unit to vertical position inside the cabinet, and a supporting leg hingedly connected to the unit adjacent the front end for supporting said end of the unit when it is withdrawn from the cabinet.

11. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside the cabinet, a pair of upwardly extending transversely spaced apart links pivotally connected at their corresponding opposite ends to the cabinet below the unit and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, a pair of transversely spaced links pivotally connected at their corresponding ends to the cabinet, above said unit, and pivotally connected at their opposite ends to the rear end of said unit for guiding the rear end of the latter in its movement from one position to the other, spring means connected at one end to said cabinet and at opposite end to the first mentioned pair of links, adapted to be tensioned upon movement of the unit to horizontal position for assisting in returning said unit to vertical position inside the cabinet, a supporting leg hingedly connected to the unit adjacent the front end for supporting said end of the unit when it is withdrawn from the cabinet, and a link pivotally connected at its ends to one of the first mentioned pair of links and to said leg, whereby movement of said unit to and from operative position simultaneously moves said leg to unfolded and folded position, respectively.

12. In a structure of the character described, the combination with a cabinet, of an elongated instrument or a like unit movable into and out of the cabinet and adapted to occupy a vertical position in the cabinet and a horizontal position outside the cabinet, a pair of upwardly extending transversely spaced apart links pivotally connected at their corresponding opposite ends to the cabinet below the unit and to the unit adjacent its center of gravity, for supporting and guiding said unit in its movement from one position to the other, a pair of transversely spaced links pivotally connected at their corresponding ends to the cabinet, above said unit, and pivot-

ally connected at their opposite ends to the rear end of said unit for guiding the rear end of the latter in its movement from one position to the other, spring means connected at one end to said cabinet and at opposite end to the last mentioned pair of links, adapted to be tensioned upon movement of the unit to horizontal position for assisting in returning said unit to vertical position inside the cabinet, a supporting leg hingedly connected to the unit adjacent the front end for supporting said end of the unit when it is withdrawn from the cabinet, and a link pivotally connected at its ends to one of the first mentioned pair of links and to said leg, whereby movement of said unit to and from operative position simultaneously moves said leg to unfolded and folded positions respectively.

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DISCLAIMER

2,124,972.—*Edward Engel*, Bloomington, Ill. CABINET IRONER. Patent dated July 26, 1938. Disclaimer filed November 8, 1939, by the assignee, *Electric Household Utilities Corporation.*

Hereby enters this disclaimer to claim 4 of said patent.

[*Official Gazette November 28, 1939.*]

ally connected at their opposite ends to the rear end of said unit for guiding the rear end of the latter in its movement from one position to the other, spring means connected at one end to said cabinet and at opposite end to the last mentioned pair of links, adapted to be tensioned upon movement of the unit to horizontal position for assisting in returning said unit to vertical position inside the cabinet, a supporting leg hingedly connected to the unit adjacent the front end for supporting said end of the unit when it is withdrawn from the cabinet, and a link pivotally connected at its ends to one of the first mentioned pair of links and to said leg, whereby movement of said unit to and from operative position simultaneously moves said leg to unfolded and folded positions respectively.

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