April 14, 1953 L. A. STEBBINS ET AL 2,635,030

LETDOWN CABINET

Filed Sept. 9, 1950 2 SHEETS--SHEET 1

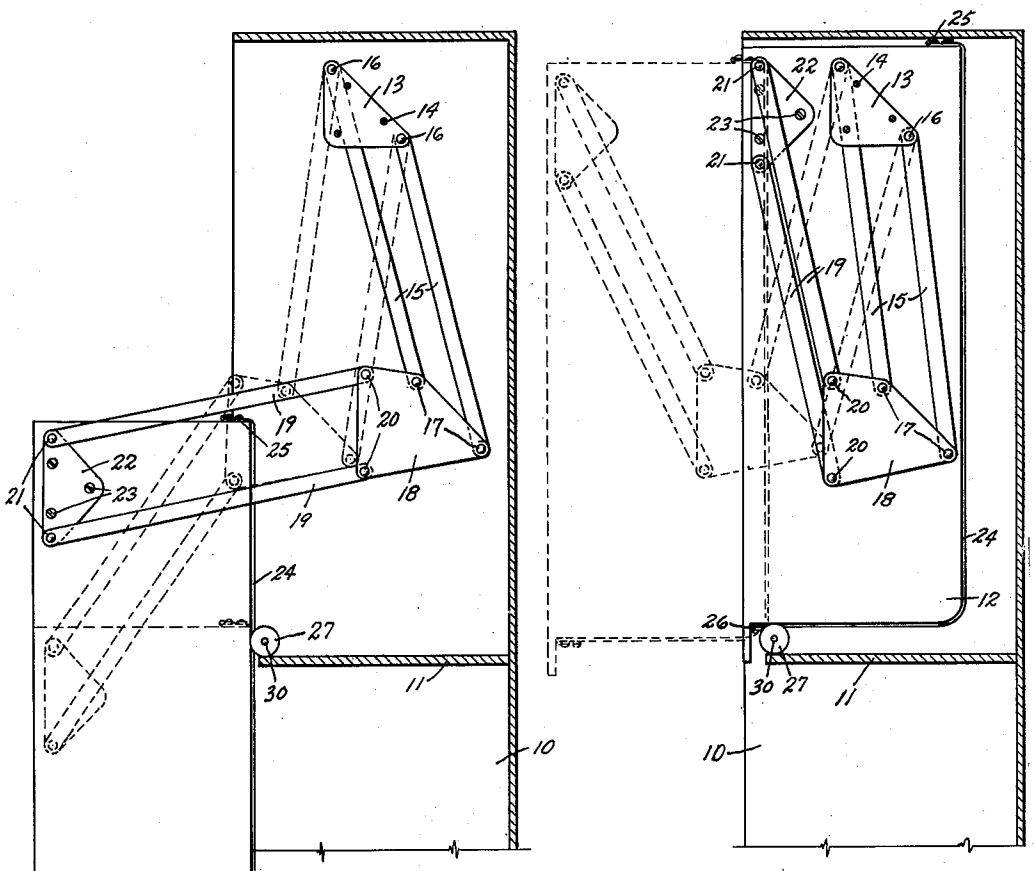


FIG. 2.

FIG. 1.

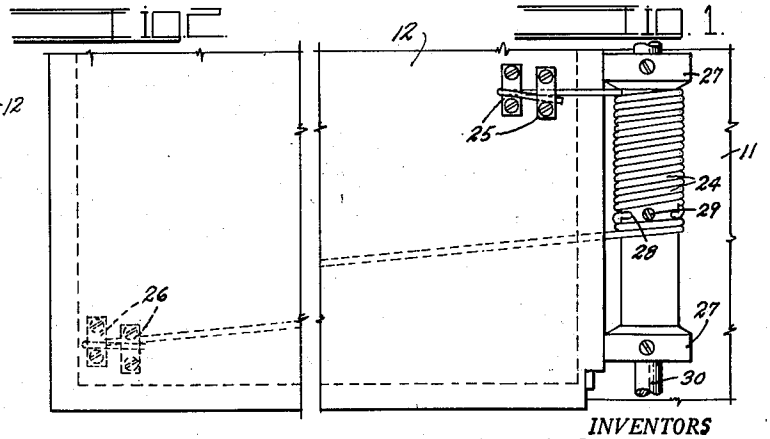


FIG. 3.

INVENTORS
LEO A. STEBBINS
BY SERGE P. KHATUNZEFF
ATTORNEY

April 14, 1953 L. A. STEBBINS ET AL 2,635,030

LETDOWN CABINET

Filed Sept. 9, 1950 2 SHEETS--SHEET 2

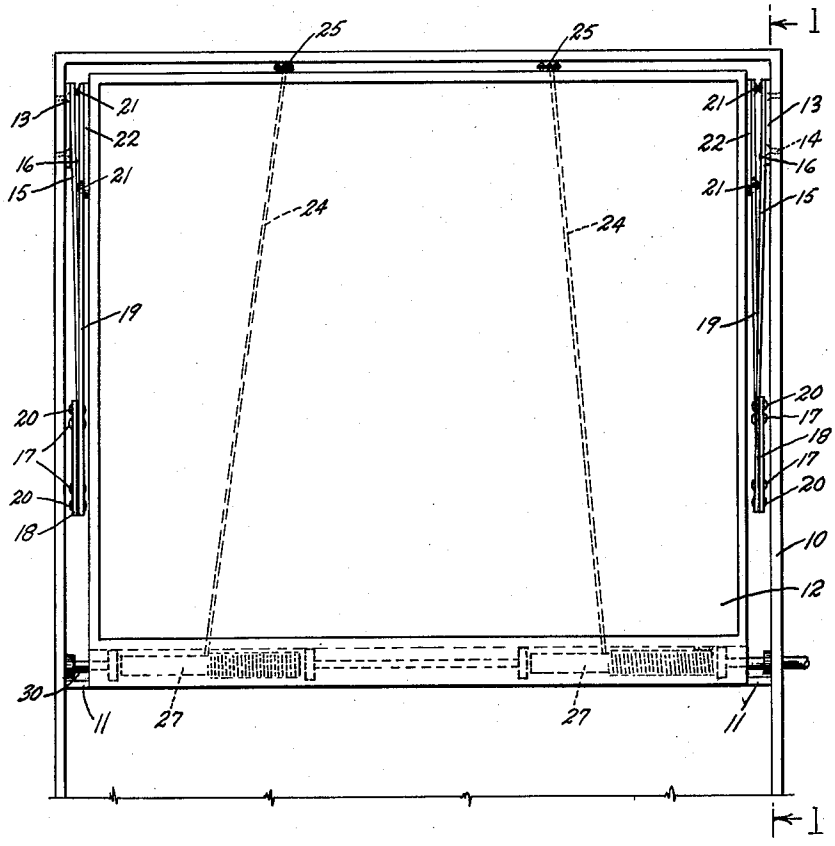


FIG. 4

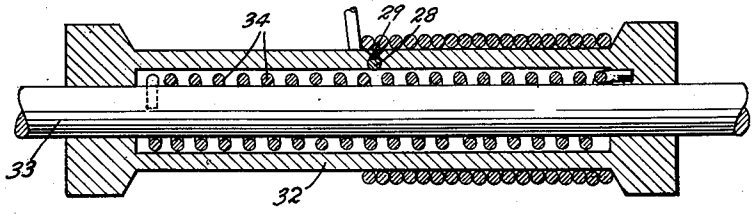


FIG. 5

INVENTORS
LEO A. STEBBINS
SERGE P. KHATUNZEFF
BY
ATTORNEY

Patented Apr. 14, 1953 2,635,030

UNITED STATES PATENT OFFICE

2,635,030

LETDOWN CABINET

Leo A. Stebbins and Serge P. Khatunzeff, Denver, Colo.; said Khatunzeff assignor to said Stebbins

Application September 9, 1950, Serial No. 184,084

4 Claims. (Cl. 312—319)

1

This invention relates to a self-lowering cabinet. Many cabinets in kitchens, stores, and other places are so exceedingly high that it is impossible to reach the upper shelves or the upper boxes therein without the use of a ladder.

The principal object of this invention is to provide a simple and highly efficient device whereby the upper shelf portions or boxes of high cabinets can be quickly and easily lowered to a conveniently accessible height.

Another object of the invention is to provide a self-lowering cabinet in which the upper portion or box thereof will maintain itself perfectly level at all elevations without the use of guide tracks, gear racks and the other mechanisms usually deemed necessary and to so construct the device that it will not interfere in any way with the normal uses of the cabinet.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a vertical cross-section through the upper portion of the improved cabinet, taken on the line 1—1, Fig. 4, illustrating, in solid line, an upper cabinet box in place in the cabinet, and in broken line the upper cabinet box is moved forwardly from its normal in-place position;

Fig. 2 is a similar sectional view, illustrating, in solid line, the upper box partially lowered and, in broken line, the upper box fully lowered;

Fig. 3 is a fragmentary, detail, top view of the upper box in the lowered position;

Fig. 4 is a front view of the upper portion of the cabinet in which the invention is incorporated; and

Fig. 5 is an enlarged longitudinal section through an alternate form of roller for the improved cabinet.

In the drawing, a cabinet or case of shelves of any desired height is indicated at 10. For convenience only, the upper portion of the cabinet 10 is illustrated in the drawing. A shelf 11 divides

2

the upper, difficultly accessible portion of the cabinet from the lower accessible portion thereof. A movable shelf box 12 is positioned in the cabinet above the shelf 11.

A stationary upper link plate 13 is secured, by means of bolts 14, to the inner face of each side wall of the cabinet 10 at each side of the box 12. A first set of parallel links 15 hingedly depends from hinge rivets 16 in each of the upper link plates 13. The links 15 are of uniform length and terminate at their lower extremities at pivot rivets 17 mounted in swinging plates 18 at each side of the box.

A second set of parallel links 19 extends normally upward, at each side of the box 12, from pivot rivets 20 in the plate 18, to similar rivets 21 in a second link plate 22. The two links 19 are similar in length and correspond to the lengths of the links 15. The two second link plates 22 are secured against the opposite sides of the box 12 by means of suitable attachment screws 23.

The result is that the box 12 is swingingly suspended from the stationary plates 13 and is free to be moved forward and downward to any desired position, always maintaining its original vertical position due to the parallel relative action of the links 15 and 19.

It is desired to call attention to the positioning of the rivets 16, 17, 20 and 21. The forward rivets 16 and 17 are positioned at a higher elevation than the rearward rivets 16 and 17. This allows the rearward link 15 to swing forwardly to an aligned position with the forward link when the box is swung forwardly to obtain a maximum bracing effect on the box. The two rivets 21 and the two rivets 20 are placed in vertical alignment with each other to allow a maximum vertical movement of the box.

The movements of the box 12 are controlled and actuated by two flexible cables or cords 24. Each cord extends from attachment bars 25 adjacent the rear edge of the top of the box to second attachment bars 26 adjacent the front edge of the bottom of the box.

Each cord, intermediate its extremities, is wound about a spool 27, the mid-portions of the cords passing through openings 28 in the spools and being locked therein by means of set screws 29. The spools 27 are fixedly mounted on a spool

shaft 30, by means of set screws 31, which extends completely across the cabinet 10 above the forward extremity of the shelf 11. The spool shaft 30 may be rotated, either normally or mechanically, in any desired manner.

Let us assume that the box 12 is suspended from the links 15 and 19 in the solid line position of Fig. 1, and that the shaft 30 is rotated in a counter-clockwise direction. This causes the spools 27 to reel in the upper portions of the cords 24 and to reel out the lower portions thereof. This action carries the box 12 directly forward, as shown in broken line in Fig. 1, due to the parallel holding action of the links 15 and 19. Further rotation of the shaft 30 in the same direction causes the box 12 to be pulled downwardly, thus swinging the plate 18 rearwardly, as shown in solid line in Fig. 2. Continued rotation of the shaft pulls the box 12 still further downward, as shown in broken line in Fig. 2, so as to bring the links 15 and 19 to their fully extended position. The box is returned to its normal position by reversing the direction of rotation of the shaft 30. During the upward and downward movements of the box, the back of the latter rides against the spools 27 which act to limit the rearward swing of the box.

In Fig. 5 an alternate form of spool is illustrated at 32 mounted on a fixed spool shaft 33 surrounded by a coil spring 34. One extremity of the coil spring 34 is secured to the fixed shaft 32 and the other extremity is secured to the spool 31. The direction of winding of the springs is such that when the box is pulled forwardly and downwardly toward the broken line position of Fig. 2, the springs 34 will be wound to act to counter-balance the weight of the box and its contents, then simply by giving the box a slight lift upwardly, it will return to its normal position due to the unreeling action of the coil springs.

The shaft 33 with two of the spools 32 is designed to receive the cords 24 and replace the shaft 30 and spools 27 of the first described form. The springs 34 could, of course, be replaced by an equivalent counterweight in installations where the latter would be preferable over the spring.

While a specific form of the improvement has been described and illustrated herein, it is to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

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

1. A cabinet comprising: a lower cabinet portion; an upper cabinet portion; a shelf box positioned in said upper cabinet portion and being withdrawable through the front of the latter; a first pair of parallel links mounted on and swingingly suspended from said upper cabinet portion at each side of said box; a second pair of parallel links mounted on and swingingly suspended from each side of said box; a floating member hingedly connected to all of the links at each side of said box so that as said box is drawn forward, it will be maintained upright by the parallel action of said links; a flexible cord secured at one extremity adjacent the front of the bottom of said box and at its other extremity adjacent the rear of the top of said box; a cord spool, said cord being wound around said spool intermediate the extremities of the former; and means for mounting said spool for rotation so as to wind said cord to withdraw said box from said upper cabinet portion.

2. A cabinet comprising: a lower cabinet portion; an upper cabinet portion; a shelf box positioned in said upper cabinet portion and being withdrawable through the front of the latter; a first pair of parallel links mounted on and swingingly suspended from said upper cabinet portion at each side of said box; a second pair of parallel links mounted on and swingingly suspended from each side of said box; a floating member hingedly connected to all of the links at each side of said box so that as said box is drawn forward, it will be maintained upright by the parallel action of said links; a flexible cord secured at one extremity adjacent the front of the bottom of said box and at its other extremity adjacent the rear of the top of said box; a cord spool, said cord being wound around said spool intermediate the extremities of the former; and means for mounting said spool for rotation so as to wind said cord to withdraw said box from said upper cabinet portion, said links being sufficiently long to allow said box to be lowered substantially below its position in said upper cabinet portion, said spool being so positioned that said box will rest thereagainst as it descends to its lowermost position.

3. A cabinet comprising: a lower cabinet portion; an upper cabinet portion; a shelf box positioned in said upper cabinet portion and being withdrawable through the front of the latter; a first link plate secured to said box at each side thereof adjacent the forward upper corner; a second link plate secured to the sides of said upper cabinet portion at each side of said box and adjacent the rear upper corner of the latter; a first pair of parallel links hingedly suspended from the first link plate; a second pair of parallel links hingedly suspended from the second plate; a floating link plate hingedly mounted on the lower extremities of the links at each side of said box, the links of each pair being of the same length so that they will act to maintain said box upright as it is moved forwardly and downwardly from its normal position; a spool shaft extending across said upper cabinet portion below said box; a spool mounted on said spool shaft; a first flexible member secured to and wound about said spool in one direction; and a second flexible member secured to and wound about said spool in the opposite direction, the extremity of the first flexible member being secured to the bottom of said box adjacent the forward edge of the latter, and said second flexible member being secured to the top of said box adjacent the rearward edge of the latter so that as said spool is rotated in one direction, it will draw said box forwardly and downwardly.

4. A cabinet comprising: a lower cabinet portion; an upper cabinet portion; a shelf box positioned in said upper cabinet portion and being withdrawable through the front of the latter; a first pair of parallel links mounted on and swingingly suspended from said upper cabinet portion at each side of said box; a second pair of parallel links mounted on and swingingly suspended from each side of said box; a floating member hingedly connected to all of the links at each side of said box so that as said box is drawn forward, it will be maintained upright by the parallel action of said links; a flexible cord secured at one extremity adjacent the front of the bottom of said box and at its other extremity adjacent the rear of the top of said box; a cord spool, said cord being wound around said spool intermediate the extremities of the for-

mer; and a counterbalance spring within said spool arranged to be wound by the forward and downward movement of said box.

LEO A. STEBBINS.
SERGE P. KHATUNZEFF.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
360,020	Iske	Mar. 29, 1887
396,665	Potter	Jan. 22, 1889
670,793	Lippincott	Mar. 26, 1901
753,865	Field	Mar. 8, 1904
1,070,525	Pieper	Aug. 19, 1913
1,100,329	Sellers	June 16, 1914
1,434,880	Drysdale	Nov. 7, 1922
1,517,935	Azamber	Dec. 2, 1924
2,547,597	Roggero	Apr. 3, 1951
2,555,254	Stebbins	May 29, 1951
2,579,876	Stebbins	Dec. 25, 1951

FOREIGN PATENTS

Number	Country	Date
408,136	Germany	Jan. 9, 1925