E. L. GILLESPIE.

COUNTERBALANCING DEVICE FOR WALL CABINET BOARDS.

APPLICATION FILED JAN. 17, 1917.

1,300,950. Patented Apr. 15, 1919.

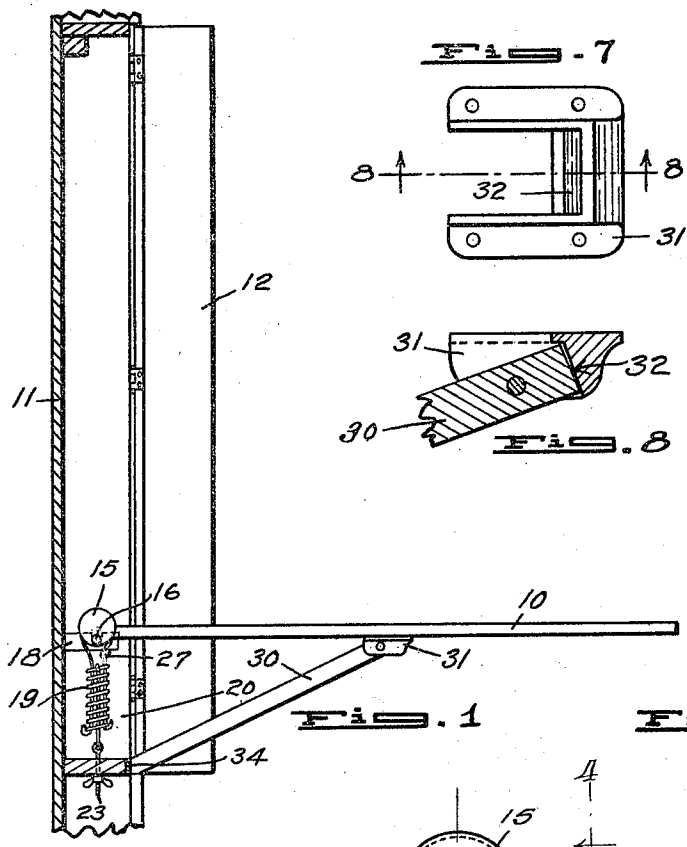


Fig. 1

Fig. 7

Fig. 8

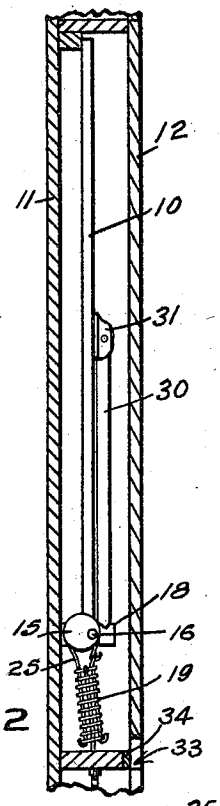


Fig. 2

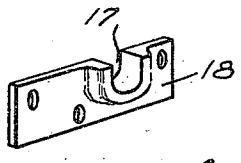


Fig. 6

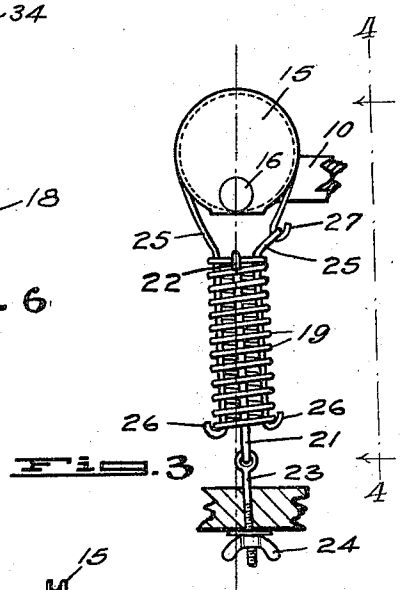


Fig. 3

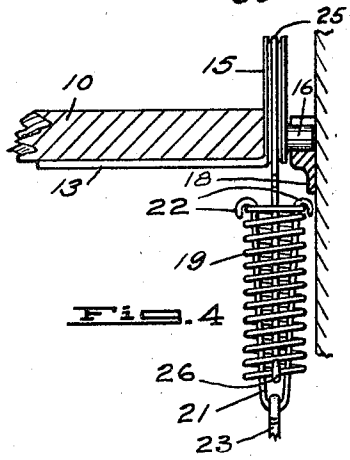


Fig. 4

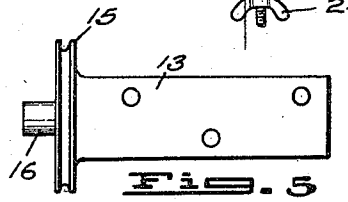


Fig. 5

WITNESSES:

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COUNTERBALANCING DEVICE FOR WALL-CABINET BOARDS.

1,300,950. Specification of Letters Patent. Patented Apr. 15, 1919.

Application filed January 17, 1917. Serial No. 143,193.

To all whom it may concern:

Be it known that I, EDWARD L. GILLESPIE, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a new and useful Improvement in Counterbalancing Devices for Wall-Cabinet Boards, of which the following is a specification.

This invention relates to improvements in counterbalancing mechanism for wall ironing boards, wall tables, and the like, and the object of this improvement is to provide counterbalancing mechanism of a cheap and simple form of construction that may be applied to any piece of furniture, as a table, ironing board, or the like, that is adapted to be hinged to the wall of a building so that it may be extended to a horizontal position when in use and folded into a vertical position within a receptacle in the wall when not in use.

The purpose of this invention is to provide counterbalancing devices and metallic parts of neat and compact form that are adapted to fit tables or boards of varying widths and sizes, and that may be boxed and sold to the trade so that a carpenter can construct his own cabinet and board or table of a convenient size and apply the counterbalancing devices and metallic parts thereto easily and quickly.

While the devices herein disclosed are described in combination with an ironing board or table, it will be understood that they may be applied to various other devices of like nature and still operate in the same manner, as, for instance, they may be applied to wall seats, wall beds, or to any form of board or member that is pivoted at one end and adapted to be moved from a horizontal to a vertical position.

The invention consists in the novel construction, adaptation, and combination of parts, as will be more clearly hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a view in sectional elevation of my counterbalancing apparatus as it may appear when applied to a wall ironing board or table, the latter being shown in an extended or horizontal position; Fig. 2 is a similar view showing the board in a vertical or closed position; Fig. 3 is an enlarged view in side elevation illustrating the counterbalancing mechanism; Fig. 4 is a view in front elevation on line 4, 4 of Fig. 3, showing the counterbalancing mechanism on one side of the board only and showing the board in section; Fig. 5 is a detached plan view of a detail of the invention; Fig. 6 is a view in perspective of a detail of the invention; Fig. 7 is a plan view of another detail of the invention; and Fig. 8 is a sectional view on broken line 8, 8 of Fig. 7.

Referring to the drawings throughout which like reference numerals indicate like parts, the numeral 10 indicates a board and 11 is a cabinet having a hinged door 12 and preferably constructed in the wall of a building so that it may contain the board when the latter is in a vertical position.

Fig. 5 illustrates a bracket, preferably a casting, which comprises a flat plate-like portion 13 that terminates at its outer end in an integrally formed grooved roller or wheel 15 having an eccentrically disposed, outwardly projecting pivot stud 16.

The castings 13 are bolted or screwed to the inner end of the board 10 on opposite sides thereof, and the studs 16 are adapted to fit within grooves 17 in bearing plates 18, Fig. 6, that may be secured to the side wall of the cabinet 11 (See Fig. 4) so that a horizontal pivot bearing is formed for the end of the board.

19 are helical compression springs that are secured within a lower compartment 20 of the cabinet by V-shaped members 21 that hook over the top edge of the spring as at 22, thence pass downwardly through the springs and are connected at their lower ends with eye bolts 23 that pass through the bottom wall of the cabinet and are provided therebelow with wing nuts 24 that may be adjusted to vary the tension of the springs.

25 are spring engaging members that hook over the bottom ends of the springs, as at 26, thence pass upwardly through such springs and around the grooved wheels 15, such spring engaging members 25 preferably being made in two parts and adapted to hook together as at 27 so that they may be more easily placed on the wheels 15 when the device is assembled.

30 is a brace or support that is pivoted at its outer end in a bracket 31 (see Figs. 7 and 8) which may be secured to the bottom of the board 10, the bracket 31 having an angular end wall 32 so positioned with respect to the pivot that when the board 10 is lowered the end of the brace will strike against the angular end wall 32 and the

brace will be held in substantially the angular position shown in Fig. 1, thereby causing the inner end of the brace to automatically be directed into a notch 33 and rest against a metal plate 34 on the edge of the bottom wall of the cabinet.

The angular end wall 32 of the bracket 31 sustains the end thrust on the brace 30, and thereby relieves the pivot of the brace 30 from wear.

The members 25 that pass around the wheels 15 are of relatively smooth material so that they will slide freely within the grooves of the wheels, and such members exercise a braking effect that is proportional to the compression of the springs 19 as the board is raised or lowered.

When the board is in a vertical position and the turning moment about the pivots 16 is zero, the springs 19 are exerting a minimum pull on the members 25 but are acting through a maximum lever arm about the pivots 16 formed by the eccentric wheel members 15. As the board moves from the vertical to the horizontal position and the turning moment of the board increases, the lever arm through which the springs act will gradually decrease, but the springs 19 will be compressed and a gradually increasing tension brought on the members 25, thereby increasing the braking effect and easing the board down to its horizontal position.

It will be noted from Fig. 3 that the eye bolt 23 is located slightly forward of the line that passes through the centers of the wheels 15 and pivots 16 so that as the board nears the horizontal position the lines of application of the force of the springs passes the center of the pivots 16 and the force of the springs tends to hold the board in a horizontal position, thus insuring that board will not automatically fly up and close itself.

This class of counterbalancing mechanism will ordinarily be applied to relatively light boards, but the bands 25 will slide with sufficient ease on the cams 15 so that a lifting force will be exerted on the board as it is raised from the horizontal to the vertical position, this lifting force gradually increasing as the lever arm through which it is applied to the pivots 16 increases.

The members 13 are symmetrically formed so that they do not need to be made left and right hand, and such members may quickly and easily be applied to a board of any width or thickness.

It is obvious that changes in the form of construction of the various parts of this device may be made within the scope of the following claims.

What I claim and desire to protect by Letters Patent is:

1. A device of the class described comprising a board, grooved wheels secured to opposite sides of said board adjacent one end thereof, bearing plates mounted on a fixed support, eccentric pivot, studs projecting outwardly from said grooved wheels and engaging within said bearing plates, springs, bands encircling said grooved wheels thence extending downwardly through said springs and secured to the bottom thereof said bands being formed of two detachable parts, and devices connected to a fixed support and extending upwardly and secured to the tops of the said springs whereby a tension will be exerted on said bands by the force of compression of said springs.

2. The combination with a cabinet formed in a wall of a board adapted to be moved from a horizontal position at right angles to said cabinet to a vertical position within said cabinet, brackets adapted to be secured to the inner end of said board, grooved wheels rigid with said brackets, pivot studs eccentric to said wheels, said pivot studs being below the centers of said wheels when said board is horizontal, bearing plates secured to the sides of said cabinet for the reception of said studs, compression springs, devices secured to the bottom of said cabinet, thence extending upwardly therethrough and engaging the top end of said springs and bands encircling said wheels, thence passing downwardly through said springs and engaging the bottom ends of said springs whereby a tension will be exerted on said bands.

Signed by me at Seattle, Washington, this 11th day of January, 1917.

EDWARD L. GILLESPIE.

Witness:

ERNEST B. HERALD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."