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2,220,766

DOOR CONTROL DEVICE

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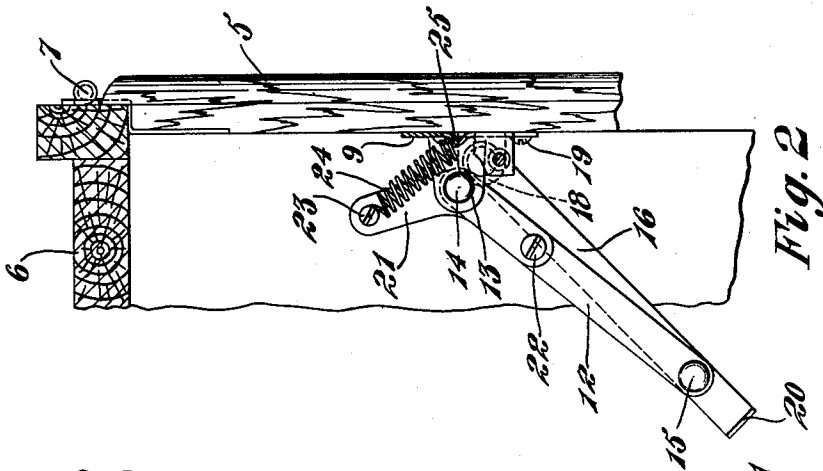


Fig. 2

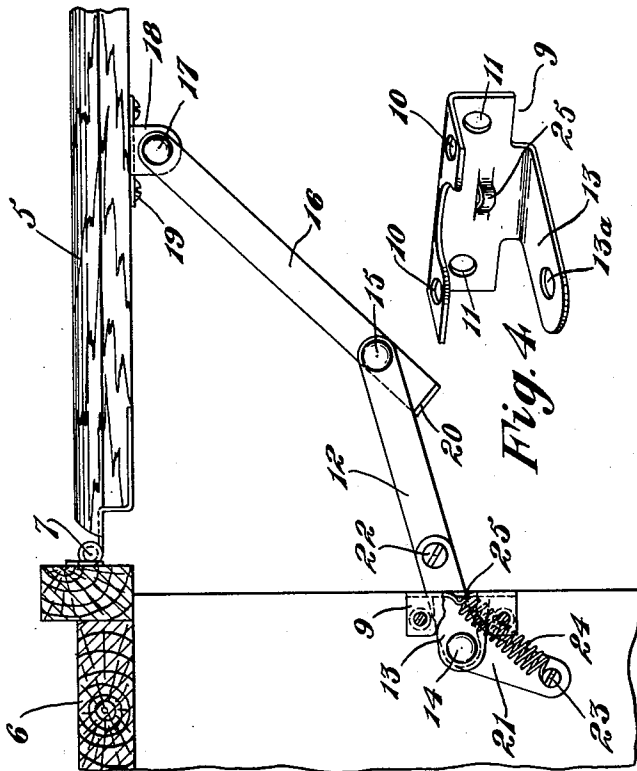


Fig. 1

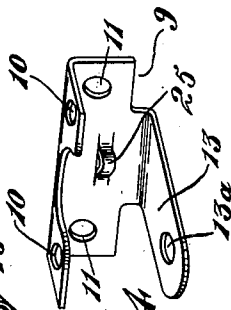


Fig. 4

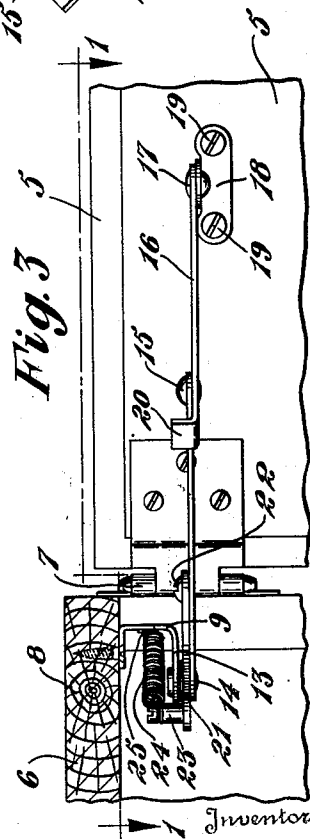


Fig. 3

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DOOR CONTROL DEVICE

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1 Claim. (Cl. 16—1)

The invention relates generally to means for controlling the opening and closing movement of doors, and more particularly to a door control for limiting the door opening movement and for maintaining the door in open or closed position.

The invention is especially adapted for light-weight interior doors which are in constant use, such as doors for cupboards, for bookcases, lockers, medicine cabinets, linen closets, etc.

Such doors are often opened in a hurry and accordingly are apt to bang against walls or other obstructions, and if allowed to remain open they tend to swing to an open or a partly open position so as to always be in the way for persons to bump against or become injured thereon.

The conventional latch for such doors functions very well to maintain the doors closed if they are pushed to fully closed position, but often the doors are merely pushed toward closed position due to carelessness or haste, and the doors stand ajar or swing open because the latches function only when the doors are fully closed.

It is an object of the present invention to provide an improved door control which will control the opening and closing movements of a door and at the same time maintain the door in fully open or fully closed position.

Another object is to provide an improved door control for limiting the opening movement of the door.

A further object is to provide an improved door control for maintaining the door in a partly open or intermediate position, and for automatically fully opening or fully closing the door when it is moved one way or the other from the intermediate position.

A still further object is to provide an improved door control which can be used equally well on either a right hand or a left hand door.

And finally, it is an object of the present invention to combine all of the foregoing objectives in a simple, and inexpensive construction which is easy to install and effective in operation.

These objects, and others which may appear from the following description, are accomplished by the improvements, combinations, and arrangements comprising the present invention, a preferred embodiment of which is shown in the accompanying drawing, and which is hereinafter described in detail and defined in the appended claim.

In general terms, the invention may be stated as including a pair of hinged links pivoted one to the door and the other to a bracket on the door frame, and a lever and spring arrangement

associated with the bracket on the door frame and adapted to swing over center with respect to the pivot between the bracket and said other link, as the door moves from an intermediate position toward open or closed position.

Referring to the drawing forming part hereof:

Figure 1 is a top plan sectional view, as on line 1—1, Fig. 3, of the improved control device applied to a door, with the door in open position;

Fig. 2 is a similar view showing the door in closed position;

Fig. 3 is a vertical sectional view through the door frame showing the door in open position and the door control device in elevation; and

Fig. 4 is a detached perspective view of the bracket for mounting the door control on a door frame.

Similar numerals refer to similar parts throughout the several views of the drawing.

In the drawing, the improved door control device is shown applied to an ordinary cupboard door indicated fragmentarily at 5, the door frame being indicated generally at 6 and the door 5 being hinged thereto at 7 in a usual manner.

As shown in Fig. 3 the door control is applied to the upper portion of the door 5 and connected with the top frame member 8, but it will be understood that the door control may be mounted on the under side of a shelf intermediate the top and bottom of the door, or at the bottom portion of the door, as desired.

As shown in Fig. 4, the mounting bracket 9 for mounting the door control on the door frame is provided with screw holes 10 in its upper flange and screw holes 11 in its web portion, so that it can be attached to different kinds of frame members to suit different cupboard constructions.

Preferably the inner link 12 is pivotally mounted at one end on the lower flange 13 of the bracket 9 by means of a pivot pin 14 extending through the hole 13a of the flange. The other end of the link 12 is pivoted at 15 to the inner end portion of an outer link 16, and the outer end of link 16 is pivoted at 17 to a bracket 18 secured on the inside of the door 5 as by screws 19.

Preferably the extreme inner end of the outer link 16 is provided with an angular flange 20 which engages the edge of link 12 when the door is in fully open position, as shown in Figs. 1 and 3, and acts as a stop to limit the opening movement of the door.

Preferably, the means for automatically opening or closing the door when it is moved past an intermediate position includes a bell crank lever

21 journaled intermediate its ends on the pivot pin 14 and having one arm secured to the link 12 as by a screw 22, and the other arm extending angularly from said link 12 and having a screw stud 23 projecting upwardly therefrom.

A tension spring is provided for urging the door 5 toward fully opened or fully closed position, and preferably comprises the spring 24 connected at one end to the screw stud 23 and at the other end to an eye 25 which may be formed in the web of the bracket 9 as shown.

In the operation of the improved door control device, assuming the door to be in the closed position shown in Fig. 2, the tension of the spring 24 acts to firmly hold the door 5 in fully closed position. When the door is pulled open manually to swing the link 12 about the pivot 14 the spring 24 will swing to a position over center, that is, over the pivot 14. In this position the door 20 is intermediate fully opened and fully closed position and will remain in that position because the spring is over center.

As the door is pulled manually past the intermediate position toward fully opened position the spring 24 swings over the pivot 14 and automatically urges the door to the fully opened position shown in Fig. 1. In closing the door, after the door is pushed past the intermediate position where the spring 24 swings back over the pivot 14, the spring action will automatically return the door to fully closed position.

Accordingly, the simple and inexpensive door control device comprising the present invention provides means for maintaining the door in fully 35 opened, fully closed or intermediate position, and at the same time automatically urges the door toward the extreme fully opened or fully closed

positions when it is moved past the intermediate position in one direction or the other.

Moreover, the improved door control device eliminates the need for a latch to maintain the door in closed position and serves to limit the 5 opening movement of the door.

A distinctly novel and advantageous feature of the improved construction is that it is easily reversible to accommodate either a right hand or a left hand door, so that only one form of the 10 device need be carried in stock. In order to reverse the device to accommodate either right or left hand doors, it is only necessary to disconnect the spring 24 from the screw stud 23, interchange the screw stud 23 and the screw 22, re- 15 verse the position of the arms of the bell crank, and connect the spring 24 with the end of the opposite arm of the bell crank.

I claim:

Door control construction for a door hinged to 20 a frame including, an outer link pivoted to the door, a bracket secured to the frame, an inner link pivoted at one end to said outer link and having a pivotal connection at its other end with said bracket, a bell crank lever journaled be- 25 tween its ends on said pivotal connection and having one end secured to said inner link and the other end projecting angularly therefrom, and a tension spring connecting said projecting bell crank end with said bracket and arranged for 30 swinging over said pivotal connection when the door is between fully closed and fully opened position, said bell crank lever being reversible end for end to connect its said one end with the spring and its said other end to the inner link 35 for operating a door of the opposite hand.

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