Nov. 22, 1949 J. SYLVAN 2,488,944

DOOR STRUCTURE

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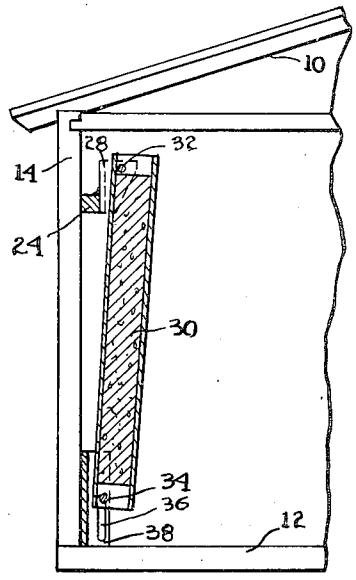


FIG. 2

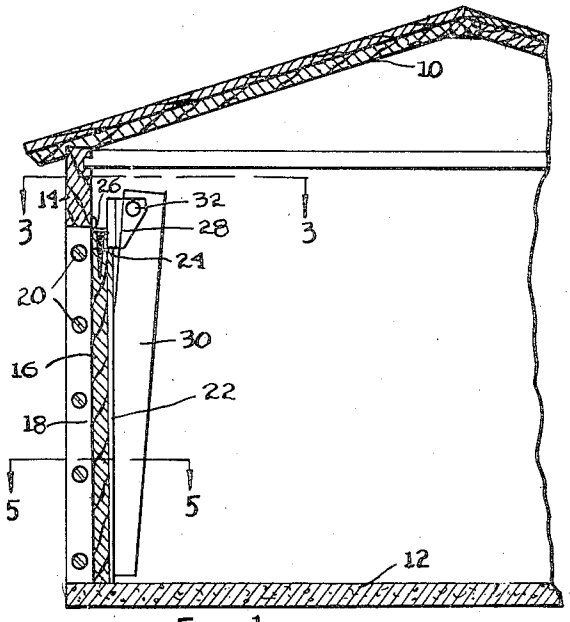


FIG. 1

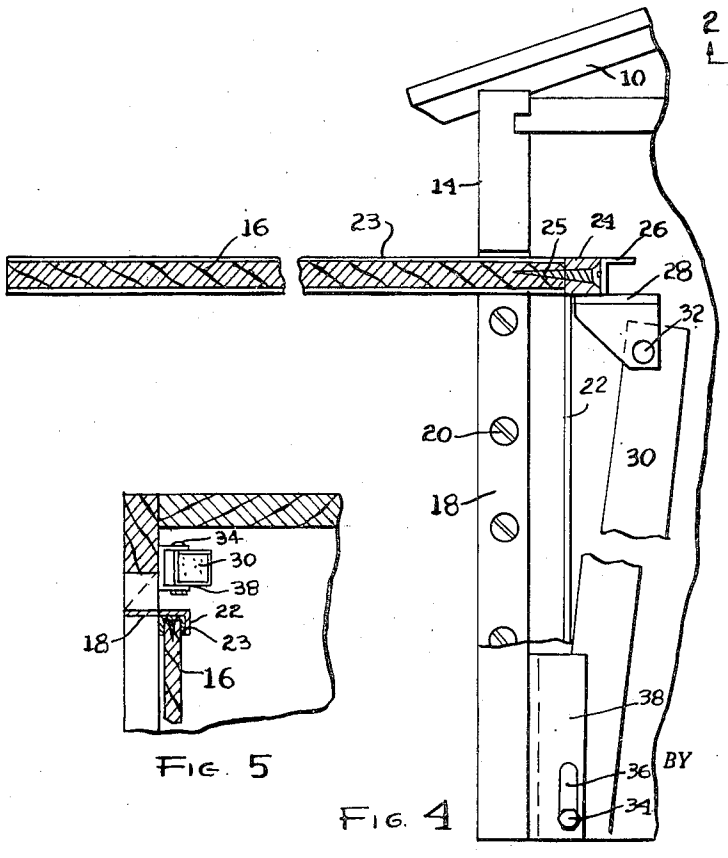


FIG. 4

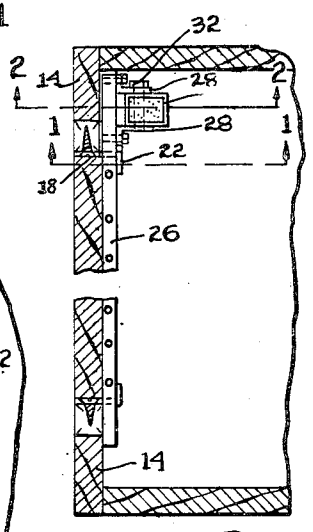


FIG. 3

FIG. 5

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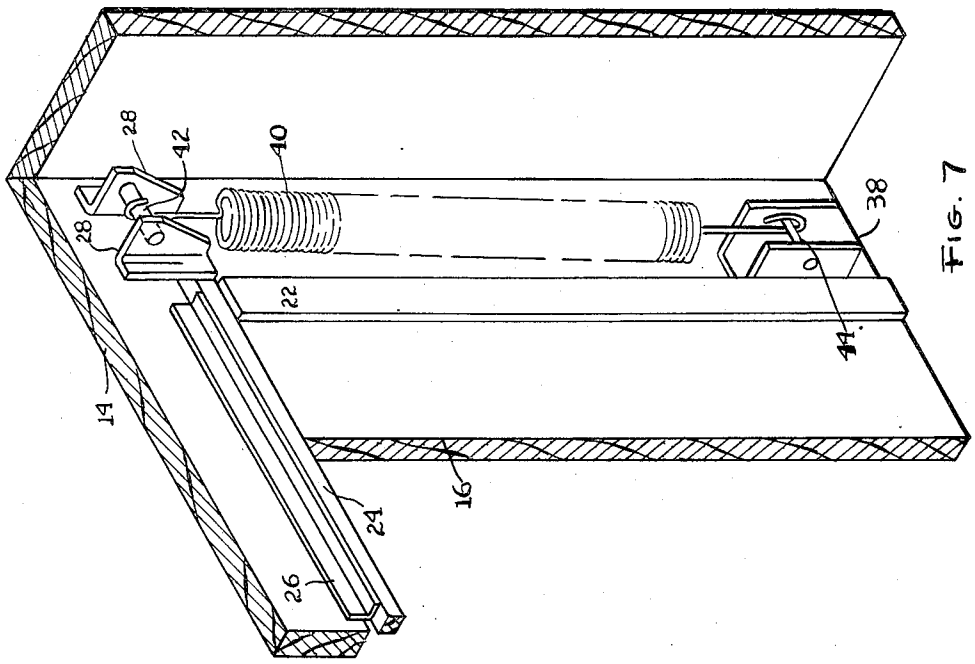


FIG. 7

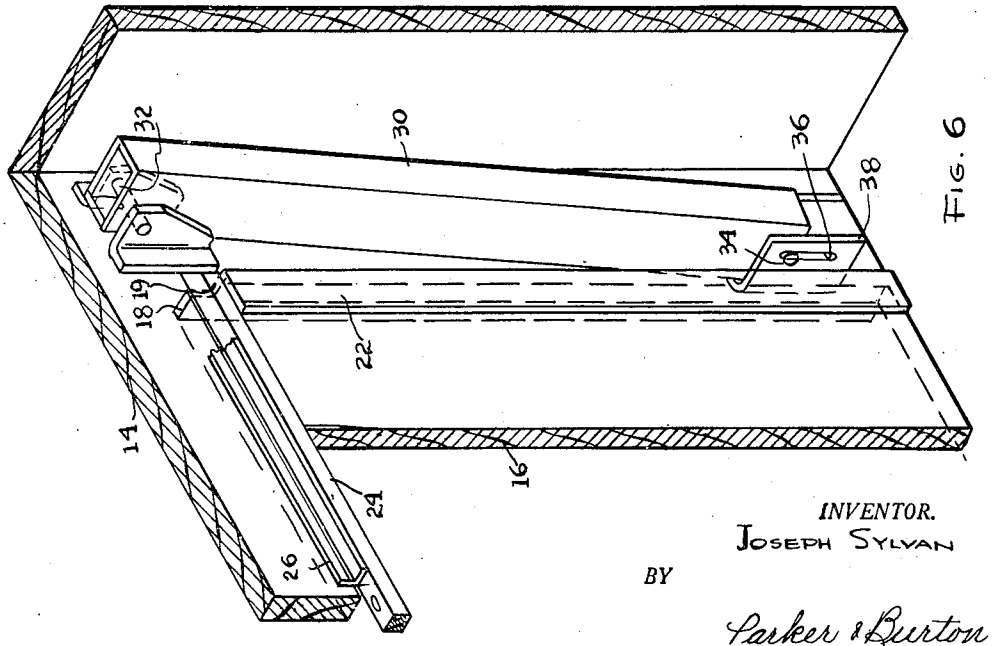


FIG. 6

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DOOR STRUCTURE

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2 Claims. (Cl. 20—16)

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This invention relates to improvements in doors.

Doors embodying the invention herein disclosed are particularly adapted for use as garage doors though obviously such a door might be employed in any location wherein a door of the character described was desired for use.

An object of the invention is to provide an improved door construction which is designed to facilitate easy opening of the door. More particularly, an object is to provide a door of the character set forth which is so constructed, arranged and counter-weighted as to be easily raised to an open position. It is also so constructed as to maintain such open position and is adapted to be readily lowered to the closed position.

Specifically my invention relates to a door which is adapted to be swung upwardly and outwardly from the bottom and from a vertical closed position to an elevated horizontal open position projecting outwardly above the door opening. More specifically the invention is concerned with an improved door construction wherein improved counter-weight mechanism is coupled with the door to so counter-weight the door as to facilitate its opening and maintenance in the open position.

A further object of the invention is to provide simple improved means of supporting the door for the described swinging movement.

Another object is to provide improved counter-weight mechanism coupled with a door mounted to swing as described.

Other objects, advantages and meritorious features will be more fully apparent from the following description, appended claims and accompanying drawings, wherein:

Figure 1 is a vertical sectional view through a portion of a building provided with my improved door construction taken on the line 1—1 of Figure 3.

Figure 2 is a vertical sectional view through a portion of a building provided with my improved door structure taken on the line 2—2 of Figure 3.

Figure 3 is a horizontal sectional view taken on line 3—3 of Figure 1.

Figure 4 is a vertical sectional view through a portion of a building provided with my improved door, partly broken away, and showing the door in the open elevated position.

Figure 5 is a fragmentary horizontal sectional view taken on the line 5—5 of Figure 1.

Figure 6 is a perspective of a corner fragment

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of a building provided with my improved door showing the door closed.

Figure 7 is a perspective of a corner fragment of a building provided with a modified form of my improved door structure showing the door closed.

In the drawings let 10 indicate the roof, 12 the floor and 14 a side wall of a building, such as a garage which side wall is provided with a door opening adapted to be closed by my improved door structure, which door proper is indicated at 16. The door opening in the side wall of the building is provided on each vertical side of such opening with a door supporting jamb plate 18 secured by screws 20 or the like to the door jamb proper of the opening. This door supporting jamb plate may be formed of a metal angle, one angular upright portion of which is secured to the door jamb as aforesaid and the other angular upright portion of which is indicated as 22 and is disposed interiorly of the door opening in the side wall of the building and is adapted to constitute a vertical abutment against which the door rests when it is closed as shown in the figures of the drawings.

The jamb plate 18 is notched at its upper end as at 19 as shown in Figure 6 defining an interiorly projecting shoulder or horizontal surface adapted to serve as a support or bearing for the door pintle. The portion 22 of the angular jamb plate against which the door lies flat when closed terminates at substantially the same height as the notched portion or shoulder 19 heretofore referred to.

A supporting bar 24 extends along the top of the door 16 and is secured thereto as by screws 25, as well as by side channels 23 which extend along and embrace the side margins of the door and which channels 23 are in turn welded at their ends to the bar 24. This bar is here shown in the form of a square bar which may be formed of wood, metal or the like. The bar extends at each end beyond the vertical margin of the door forming door pintles. The two ends of this bar 24 rest upon the shoulders 19 of the two jamb plates 18 as shown in Figure 6 to rockably support the door.

An angular header plate 26 extends along and is secured in any suitable manner to the top of the bar 24. This header plate 26 has an upright angular portion which is adapted to lie flat against the inner face of the header over the door opening when the door is closed as shown in Figure 1.

A pair of brackets 28 are secured to one end

of the bar 24 beyond the vertical margin of the door as shown in the drawings. These brackets extend inwardly and upwardly from the bar 24. An elongate counterweight 30 is pivoted at its upper end between the brackets 28 upon a pivot pin 32 which pin extends transversely between these brackets. This counterweight is pivotally supported offset rearwardly the plane of the door to exert by its weight and the leverage of its offset pivotal support between the brackets a counter-weight action upon the door 16 when the bottom of the door is lifted outwardly and upwardly in the opening of the door. This counter-weight may be formed of any suitable material. It may be a metal shell filled with concrete, gravel or any suitable material as shown.

At the lower end this counter-weight 30 may be provided with a transverse guide pin 34 the opposite ends of which are disposed within guide slots 36 formed in the two side walls of a channel member 38. This channel member within which the lower end of the counter-weight is vertically slidable may be secured to the wall 14 of the building.

A modified construction is shown in Figure 7 wherein instead of the counter-weight 30 there is provided a spring 40 the upper end of which is secured to a pin 42, which pin extends between the pair of brackets 28, and the lower end of which spring is secured to a pin 44, which pin extends between the side walls of the channel member 38 as shown in Figure 7, to exert a downward pull tending to assist the opening of the door.

Considering the structures shown in Figures 1 through 6, as the bottom of the door is lifted outwardly and upwardly the counter-weight 30 acts through the brackets 28 and bar 24 upon the door 16 to assist in the lifting of the door upwardly and outwardly from the closed vertical position to an open horizontal position. The counter-weight 30 swings inwardly at the top and moves downwardly as the door is opened. The lower end of the counter-weight is restrained within the channel 38 and the transverse pin slides through the slots 36. The lower end of the counter-weight may be of a width to travel frictionally through the channel 38. The counter-weight increases its pull on the door the further the door is lifted which would not be true of the spring 40 but such spring does serve the same general purpose as the counter-weight namely, it exerts a boosting force upon the opening of the door.

Employing a square bar such as is shown in the drawing, though such bar might be of any desired cross sectional configuration, causes the bar to pivot upon one corner and swing to rest upon a flat face when the door is open as well as when the door is closed. When the door is open it is supported through the bar upon the angular wall 22 of the jamb plate 18 as shown in Figure 4. When the door is closed it is supported upon the shoulder 19 of the jamb plate 18 as shown in Figure 6.

Such a construction facilitates rotation of the bar in the opening of the door and serves to maintain the door in the opened or closed position when it has been moved to either such positions. The counter-weight and spring of course exert insufficient force upon the door to open the same accidentally. The effect of these couter-weighting devices is to boost the manual force applied to the door in the opening thereof.

What I claim is:

1. In combination a door frame having a pair of upright jamb members each provided at its upper end with an internally projecting horizontal shoulder, a door adapted to close the frame opening, a bar secured to the top of the door and having projecting ends rockably mounted upon said shoulders supporting the door for swinging movement from a vertical closed position to a horizontal open position projecting outwardly from the shoulders of the jamb members, each end of said bar exhibiting a pair or relatively angularly disposed flat faces one of which is adapted to seat flat upon the shoulder when the door is closed and the other of which is adapted to seat flat upon said shoulder when the door is open.

2. In combination with a door frame having a pair of upright jamb members each provided at its upper end with an internally projecting horizontal shoulder, a door adapted to close the frame opening provided at its upper corners with a pair of pintles rockably mounted upon said shoulders supporting the door for swinging movement from a vertical closed position to a horizontal open position projecting outwardly from the top of said jamb members, each pintle exhibiting a pair of relatively angularly disposed flat faces one of which extends normal to the plane of the door and is adapted to seat flat upon the shoulder when the door is closed and the other of which extends parallel to the plane of the door and is adapted to seat flat upon said shoulder when the door is open and a counterweight coupled with the top of the door to assist in swinging the bottom of the door outwardly and upwardly from the closed position to the open position.

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