March 11, 1930. B. B. HOOVER 1,750,042

GARAGE DOOR

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Fig. 1.

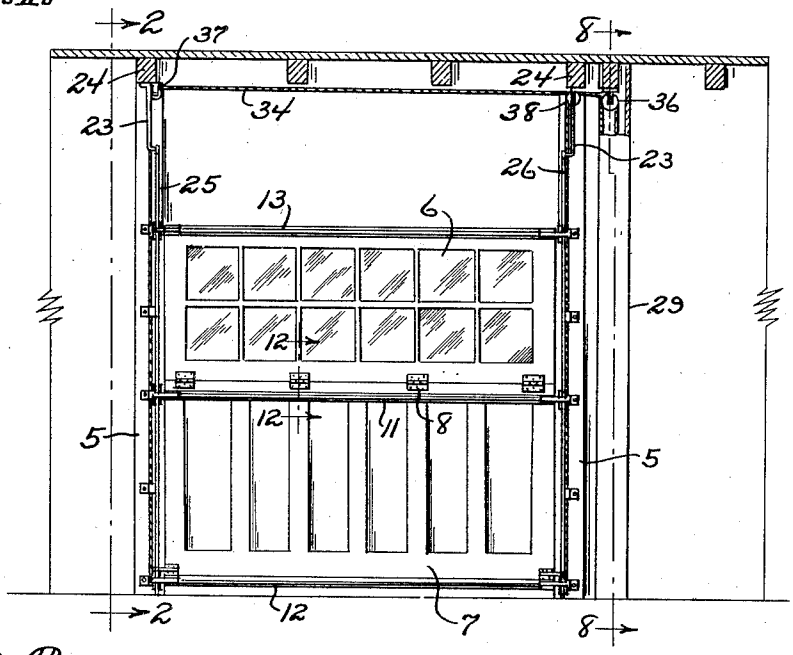
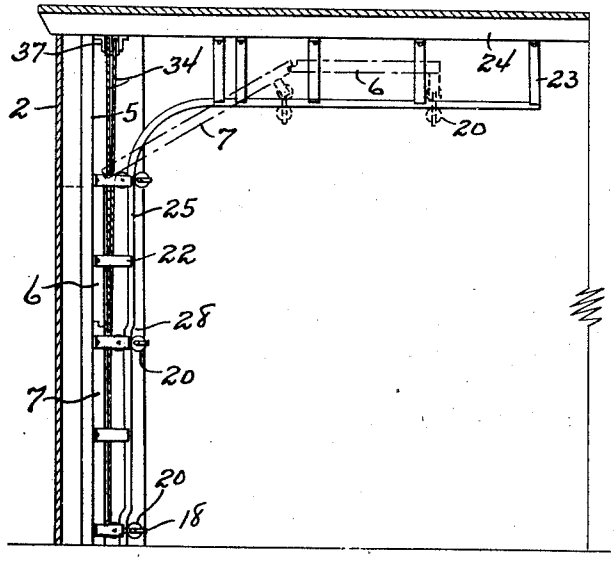


Fig. 2.



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GARAGE DOOR

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Fig. 3.

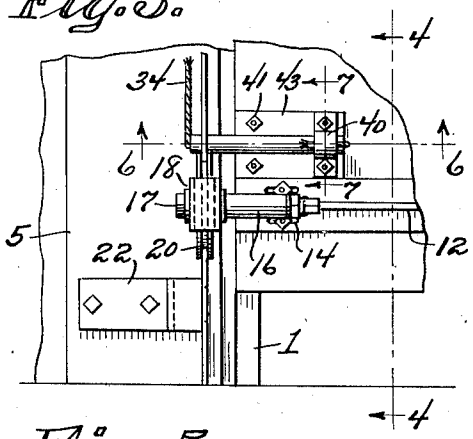


Fig. 4.

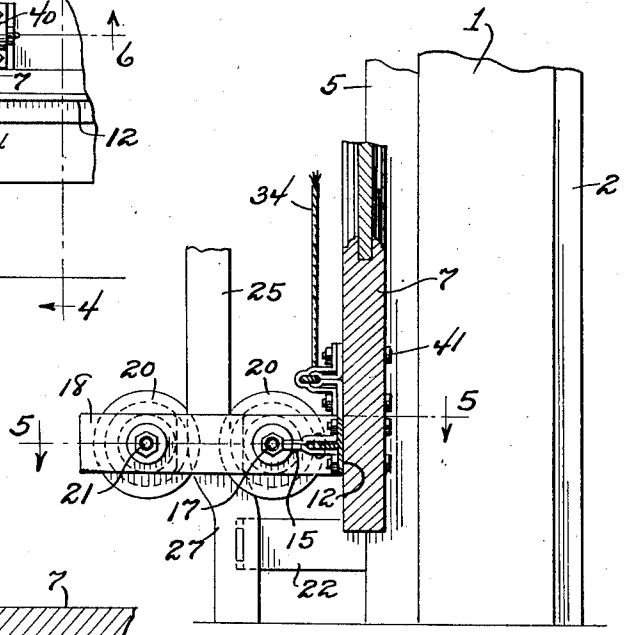


Fig. 5.

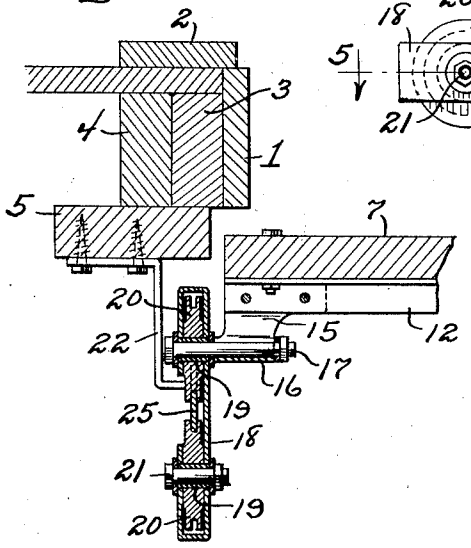


Fig. 6.

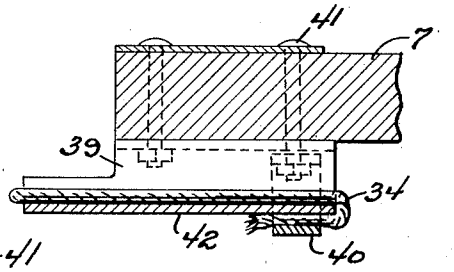
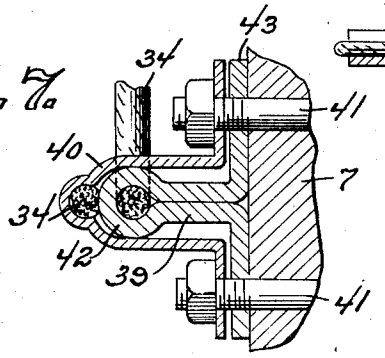


Fig. 7.



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GARAGE DOOR

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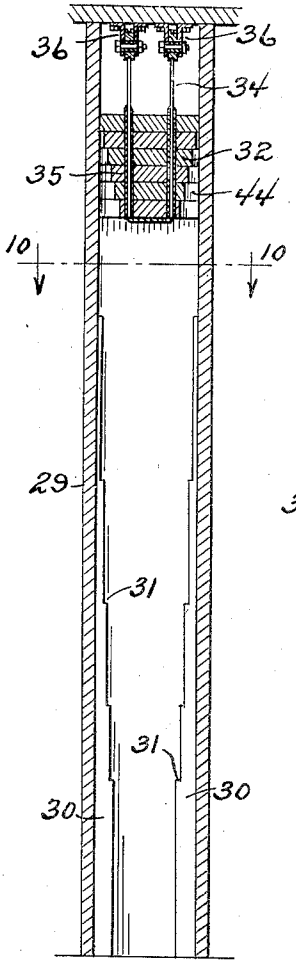


Fig. 8.

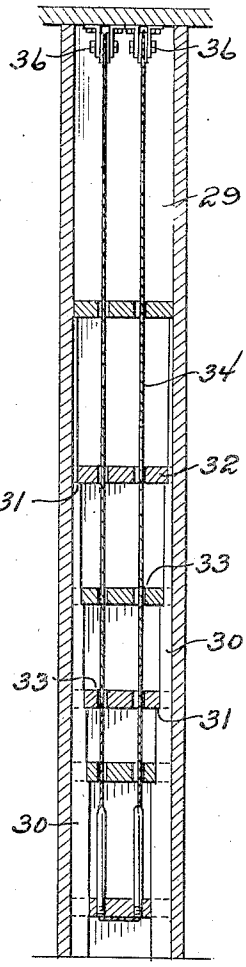


Fig. 9.

Fig. 10.

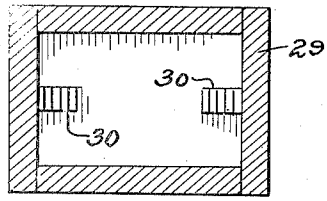


Fig. 11.

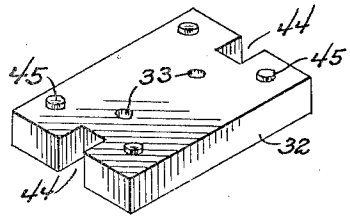


Fig. 13.

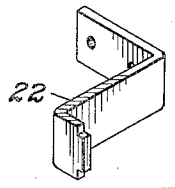
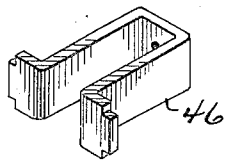


Fig. 14.



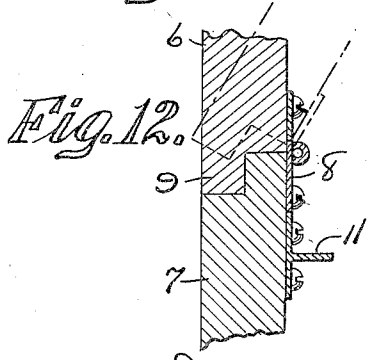


Fig. 12.

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Patented Mar. 11, 1930 1,750,042

UNITED STATES PATENT OFFICE

BROOKS B. HOOVER, OF AURORA, ILLINOIS

GARAGE DOOR

Application filed April 23, 1928. Serial No. 272,244.

This invention relates to doors, and its general object is to provide a door primarily designed for garages and the like, that is retained against casual movement when in either its opened or closed position, with the result it cannot under any circumstances be blown or accidentally moved to closed position when opened to obstruct the passage of vehicles and the like through the doorway.

A further object of the invention is to provide a door that is movable to its respective positions by being raised and lowered, and is so movable in an easy and expeditious manner with very little effort.

Another object of the invention is to provide a slidable door movable in vertical, inclined and horizontal planes and includes counter-balancing means that decrease and increase in weight in accordance with the direction of movement of the door.

Another object of the invention is to provide a door that is movable on tracks shaped to cause the door to move toward and away from its frame to provide a tight connection when closed and to space the door to avoid friction and premature wear when being opened and closed.

A still further object of the invention is to provide a door of the character set forth, that is simple in construction, inexpensive to manufacture, easy to install and efficient in operation and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a rear elevation of a door structure constructed in accordance with my invention and showing parts in section and broken away.

Figure 2 is a sectional view taken approximately on line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a fragmentary rear elevation illustrating the lower end of one of the tracks and also means for securing the cable to one side of the door.

Figure 4 is a sectional view taken approximately on line 4—4 of Figure 3 looking in the direction of the arrows.

Figure 5 is a sectional view taken on line 5—5 of Figure 4 looking in the direction of the arrows.

Figure 6 is a sectional view taken approximately on line 6—6 of Figure 3, looking in the direction of the arrows.

Figure 7 is a sectional view taken approximately on line 7—7 of Figure 3, looking in the direction of the arrows.

Figure 8 is a sectional view taken on line 8—8 of Figure 1 looking in the direction of the arrows.

Figure 9 is a similar view showing the arrangement of the weights when the door is in raised position.

Figure 10 is a sectional view taken approximately on line 10—10 of Figure 8, looking in the direction of the arrows.

Figure 11 is a perspective view of one of the weights.

Figure 12 is a sectional view taken approximately on line 12—12 of Figure 1, looking in the direction of the arrows and showing parts in full and dotted lines.

Figure 13 is a perspective view of one of the hanger brackets for the tracks.

Figure 14 is a similar view of a modified form of bracket to be used when double doors are employed.

Referring to the drawings in detail, the reference numeral 1 indicates the face trim of a door frame constructed in accordance with the present invention, 2 the outer trim, 3 and 4 the side posts of one set, and 5 the inner trim which as shown in Figure 5 is secured to the side posts and is disposed in spaced relation with respect to the face trim to provide a recess to accommodate the door when the latter is in closed position. This construction is duplicated upon opposite sides of the frame as will be apparent as the recesses accommodate the side edges of the door.

The door includes an upper and lower sec-

tion indicated respectively by the reference numerals 6 and 7. These sections may be constructed in any well known manner but it is preferred to have the lower section formed with panels and the upper section with windows, as clearly shown in Figure 1 of the drawings.

The sections are secured together through the instrumentality of hinges 8, and at the point of juncture, the sections are recessed to provide tongues 9 to be received in the recesses as shown in Figure 12, so that a tight connection will be provided between the sections when the door is in closed position.

The section 7 has arranged adjacent its top and bottom and disposed across the same bracing strips 11 and 12, while secured across the section 6 at its upper edge is a bracing strip 13. These bracing strips are provided with slots to accommodate bolt and nut connections for securing the same to the sections and by this construction the door cannot buckle or be damaged due to expansion or contraction.

The bracing strips are substantially T-shape in cross section as best shown in Figure 4, and the slots which are indicated by the reference numeral 14 are formed in the parallel flange portions thereof as best shown in Figure 3. Secured to each of the bracing strips and to the outwardly extending flange thereof are inwardly extending brackets 15 which have their free portions terminating in clamps 16 to accommodate bolts 17. These brackets 15 are disposed at the ends of each of the bracing strips and secured to the bolts 17 thereof are roller straps 18 which have their end portions formed in substantially U-shaped formation as best shown in Figure 5. The U-shaped end portions are each formed with registering openings which accommodate bushings 19 having mounted for rotation thereon substantially grooved rollers 20.

The openings of one of the U-shaped ends also has secured therein and passing through the bushing thereof the bolts 17, while the companion U-shaped ends has secured therein for accommodating the bushings thereof bolts 21. By this construction, the rollers 20 are mounted in companion pairs with the rollers of each pair being disposed in spaced relation.

Secured to each of the inner trim pieces 5 is a plurality of hanger brackets 22, and similar hanger brackets 23 are secured to the ceiling beams 24 and depend therefrom as best shown in Figure 2. The hanger brackets are substantially L-shape and have their free ends reduced and fixedly secured in tracks 25 and 26 which are arranged to be received in the grooves of the rollers 20 as best shown in Figures 2 and 4.

The tracks are curved intermediate their ends to provide a vertical portion and a horizontal portion as shown in Figure 2 and the vertical portion is bent outwardly at its lower ends as at 27 and is further bent intermediate its ends as at 28. By bending the tracks as just referred to, it will be apparent that the door will be moved toward and away from its frame to provide a substantially air tight connection between the frame and door when the latter is in its closed position and also to prevent friction and premature wear of the frame and door when the door is being moved to its respective positions.

Arranged on one side of the door frame is a weight chamber 29 having secured to the inner surface of its side walls vertically disposed strips 30 which are notched in step formation as best shown in Figure 8. These notches which are indicated by the reference numeral 31 provide stops for the weights 32, and the weights are formed with openings 35 through which pass the looped portions of a cable 34. The lowermost weight has threadedly secured in its openings sleeves 35 to accommodate the cable as best shown in Figure 8.

Secured to the top of the weight chamber is a pair of grooved pulleys 36 through which the cable is trained, and this cable is also trained through pulleys 37 and 38. The pulley 37 is secured to one of the ceiling beams arranged at one side of the door frame, while the pulley 38 is secured to a ceiling beam arranged at the other side as shown in Figure 1.

The ends of the cable are fixed to the sides of the bottom of the lower section 7 through the medium of clamping members each of which include a cross sectional T-plate 39 and a cross sectional U-bracket 40, secured to the lower section through the medium of bolt and nut connections 41 as best shown in Figures 3 and 4. The T-plates have their outer portions rounded as at 42 and these rounded portions are hollow and extend outwardly beyond the flanges 43 of the plates.

The rounded portions receive the ends of the cable and these ends are passed therethrough and are also disposed through the U-brackets 40 which clamp the same in contacting engagement with the rounded portions as shown in Figures 6 and 7. Each of the U-brackets 40 is provided with a rounded depression to accommodate the ends of the cable.

The weights with the exception of the uppermost weight, are each provided with recesses 44 in their ends for the purpose of receiving the strips 30 for slidable movement, and of course these recesses vary in size, the lowermost weight being formed with recesses of a size whereby it can gravitate to the bottom of the weight chamber while the other weights are received by the shoulders formed by the respective notches as best shown in Figure 11. The upper weight is supported

upon the tops of the uprights when the door is in its raised position, but when the door is in its lowered position each of the weights are disposed in contacting engagement with the sleeves 35 passing through the openings 33 thereof as shown in Figure 8. The weights are also each provided with resilient pads 45 so as to absorb the shock when the weights come together as well as to prevent excess noise with the result the door is practically noiseless in its operation.

In Figure 14 I have illustrated a modified form of a hanger bracket which is indicated by the reference numeral 46 and this form of bracket is employed where it is necessary to use double doors, as in this instance, four tracks will be utilized and the bracket as shown in Figure 14 will be used in numbers to support a double track which will be arranged in the center of the doorway as will be apparent.

From the above description and disclosure of the drawings it will be obvious that I have provided a door that is adapted to be raised and lowered when moved to its respective closed and opened positions, and the weights assist in moving the door whereby it can be operated in an easy and expeditious manner with very little effort.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. A door comprising a pair of hingedly secured sections, bracing strips secured across said sections in a manner to allow contraction and expansion thereof, brackets secured to the ends of said bracing strips, roller straps carried by said brackets, grooved rollers arranged in pairs and mounted in said roller straps, tracks receiving said rollers for movement thereon and being curved intermediate their ends to provide vertical and horizontal portions, hanger brackets for supporting said tracks, said vertical portions being bent to move the door toward and away from its frame when the door is being disposed to its opened and closed positions, a cable secured to one of said sections and a counterbalancing means carried by said cable.

2. A door comprising a pair of hingedly secured sections, bracing strips formed with slots and being substantially T-shape in cross section, means for securing said bracing strips transversely of said sections and being arranged in said slots, brackets secured to the ends of said bracing strips and including U-shape portions, grooved rollers journaled in the U-shaped portions and disposed in cooperation pairs, tracks received between the rollers of each pair and being disposed in the grooves thereof, a cable having its ends secured to the lowermost section and adjacent the lower edge thereof, and a counter-balancing means carried by said cable.

3. A door comprising an upper and lower section hingedly secured together, bracing strips secured across each section in a manner to allow contraction and expansion thereof, brackets secured to the ends of said bracing strips, roller straps carried by said brackets and including substantially U-shaped portions, grooved rollers arranged in pairs and journaled in the U-shaped portions, tracks for said rollers including curved portions and being disposed between the pairs thereof, clamping members secured to the sides of the bottom of the lower section, a cross sectional T-plate included in each clamping member and having hollow rounded portions, U-shaped brackets secured about the T-plates, a cable having its ends passed through the hollow rounded portions and clamped between the U-shaped brackets and said rounded portions respectively, and a counter-balancing means carried by said cable.

In testimony whereof I affix my signature.

BROOKS B. HOOVER.