Feb. 2, 1932. O. L. DAUTRICK 1,843,480

GARAGE DOOR

Filed Nov. 23, 1927 2 Sheets-Sheet 1

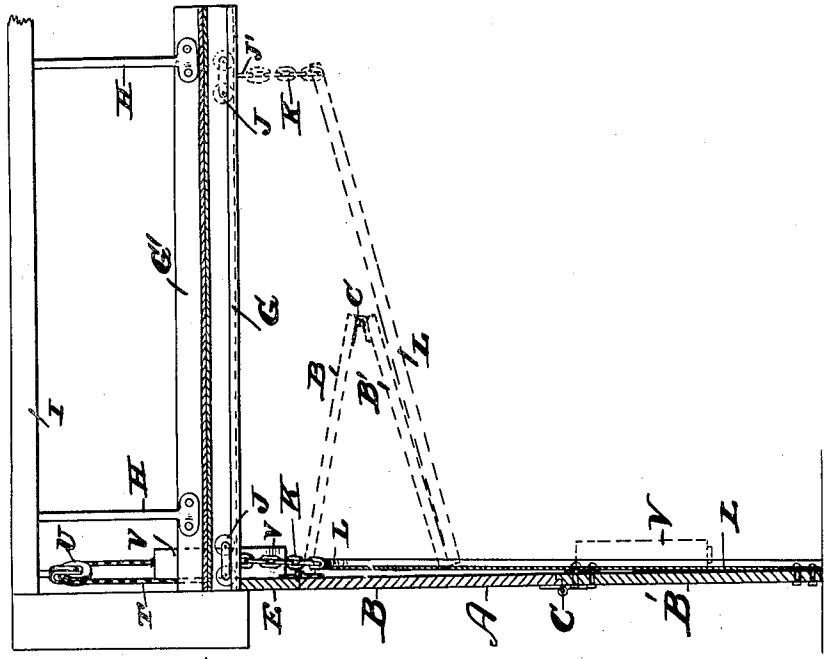


Fig. 2.

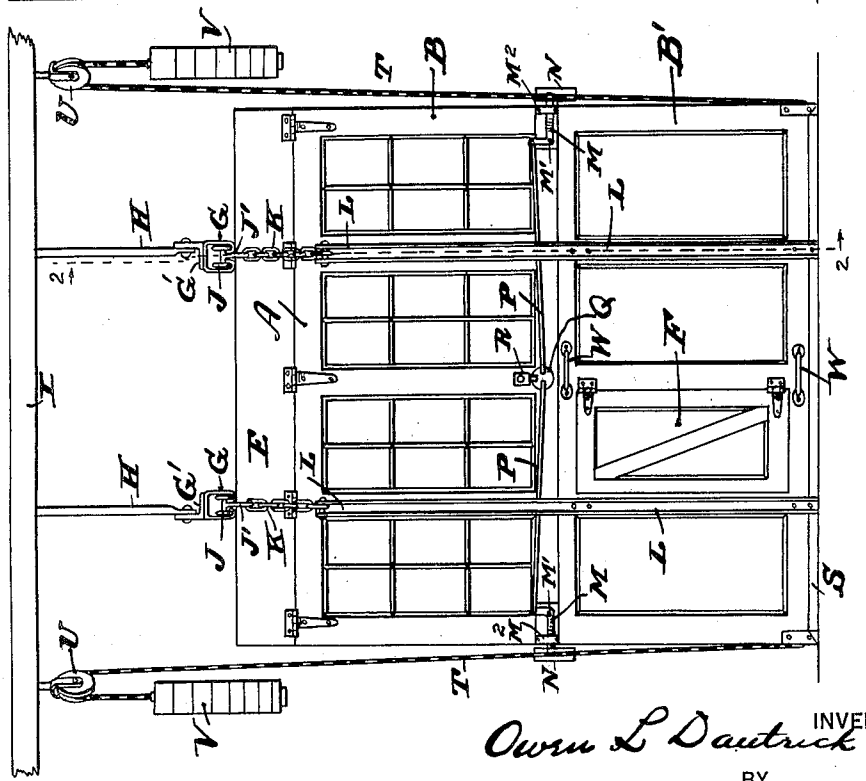


Fig. 1.

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Fig. 4.

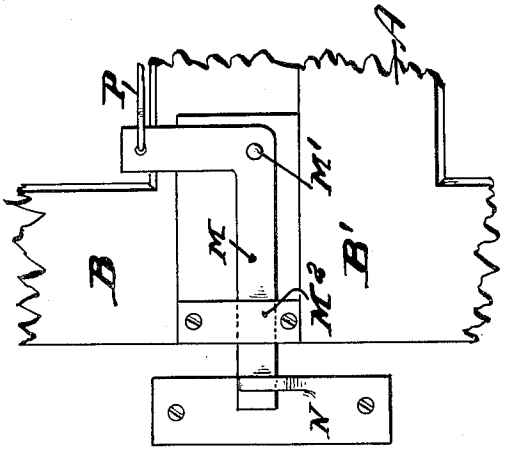


Fig. 5.

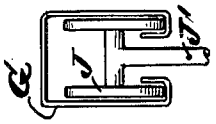
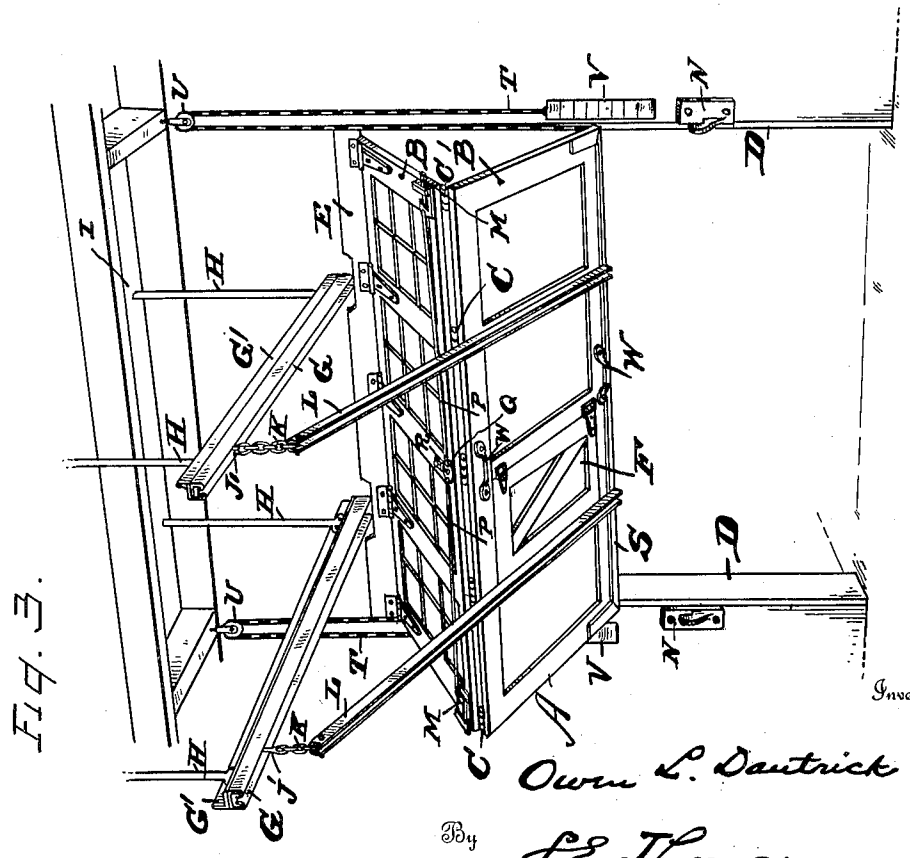


Fig. 3.



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Patented Feb. 2, 1932 1,843,480

UNITED STATES PATENT OFFICE

OWEN L. DAUTRICK, OF DETROIT, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO OVERHEAD DOOR CORPORATION, OF HARTFORD CITY, INDIANA, A CORPORATION OF INDIANA

GARAGE DOOR

Application filed November 23, 1927. Serial No. 235,184.

My invention relates to garage and other doors of like character shown in the accompanying drawings and more particularly described in the following specification and claims.

The primary object of this invention is to provide a horizontally folding, vertically movable door of the type known in the trade as "jack-knife" construction, in which a pair of panels are hinged together adapted to close the door opening, the construction being such that when raised the panels are folded and lie one upon the other in a substantially horizontal position, in line with the upper frame of the door opening.

A further object of the invention is to provide means for counter-balancing the door whereby it may be readily raised or lowered, or supported at any altitude.

A further object of the invention is to provide means whereby the door may be withdrawn from frictional contact with the casing immediately upon being lifted, thereby assisting in the raising or lowering of the door by relieving it of the frictional drag that would otherwise obtain,—the construction being such however that when the door is closed it will be brought into abutting contact with the door casing to insure a tight and satisfactory closure.

A further object of the invention is to eliminate entirely the use of springs, frequently employed to counter-balance the weight of doors of this character, thereby avoiding any danger from fracture of the spring, or of the latter losing its resiliency through use.

A further object of the invention is to provide simple and effective means for securing the door when closed which may be easily released when necessary to raise the door with a minimum expenditure of effort.

With the foregoing and other objects in view which will appear as the description proceeds, the invention further resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise embodiment of the invention herein disclosed without departing from the spirit of the same.

In the drawings accompanying this specification:

Figure 1 is an elevation of the door from the inside of the building as it would appear when closed.

Figure 2 is a vertical cross-sectional view taken on or about line 2—2 of Figure 1.

Figure 3 is a perspective view of the door as it would appear from the inside of the building when partially raised.

Figure 4 is a fragmentary detail showing the latching mechanism.

Figure 5 is an end elevation of one of the horizontal track members and the trolley supported therein.

Referring now to the letters of reference placed upon the drawings:

A denotes a door comprising upper and lower panels B and B^1 hinged together.

C indicates a plurality of hinges connecting the panels together.

D denotes the door frame, against the edge of which the door bears when closed.

E designates a horizontal member above the top of the door opening to which the upper panel is hinged.

G, G, are track members which may be bolted to angle irons G^1, G^1, in turn suspended by rods H from the ceiling I of the building.

J, J, denote trolley members, housed within and adapted to traverse the track members G, provided with arms J^1 extending downwardly from the axle of the trolleys to which are fastened relatively short chains K secured at their lower ends to channel members L, L, respectively bolted to the lower horizontal panel B^1 of the door.

F is a small door hinged to the frame of the lower panel through which an attendant

may enter or leave the building without raising the large door.

M, M, are latching members of L-shaped construction pivoted at M^1 to the door frame. M^2 is a keeper overlapping the latch member M to insure it against lateral thrust.

N, N, are catch plates secured to the wall adjacent each side of the door opening to receive the ends of the swinging latches M when the door is closed.

P, P, are a pair of rods respectively connecting the swinging latches M with a manually rotatable disc Q, having a stub shaft and an operating handle—not shown—extending through the door to release the latches from the outside.

R is a locking device diagrammatically shown in Figure 1, adapted to enter a notch formed in the disc Q, to lock the latches when the door is closed.

S is an angle iron secured to the bottom of the door, and T are chains or cables secured at one end to the lower panel and extending upwardly around pulleys U suspended from the ceiling, the chains being connected to a plurality of nested super-posed weights V suspended therefrom to counter-balance the weight of the door.

W, W, are handles secured to the door panels to assist in manually raising and lowering the door.

Having now indicated the several parts by reference letters, the construction and operation of the door will be readily understood.

Assuming that the door is in closed position and it is desired to effect the release of the same and to raise it sufficiently to permit the entry or removal of a car from the garage, the latching members are first released by a manual rotation of the disc Q,—the operation of which will be obvious,—thereby raising the L-shaped swinging latches out of engagement with the catch plates M^2 which receive them when the door is closed.

The door is manually raised,—assisted by the counterpoise weights V,—by the handles W attached to the panels. The channel members L, L, are bolted to the lowermost panel of the door and are connected at their outer ends through chains with the trolleys J, J, housed within the track members G,—the trolleys are thus forced by the upward thrust of the door panels toward the outer end of the tracks G, thereby supporting the door in open position,—the panels being then folded together in a substantially horizontal plane above the door opening.

Upon lifting the door—the panels being hinged together—will begin to fold out of vertical alignment with each other, and as the lower panel of the door is bolted to the channel members L, L,—in turn connected at their outer ends with the trolleys J, J, by the chains K—the edge of the lower panel will simultaneously withdraw—upon raising the door—from contact with the door casing, thus relieving the door of the frictional drag that would otherwise occur upon opening the latter.

It will also be noted that the door is automatically supported at any degree of altitude,—remaining without additional support in the position to which it is raised.

When the door is closed and securely latched the channel members L secured to the lower panel bear against the upper panel of the door and force the panels into vertical alignment with each other, thus insuring a tight closure against the door casing.

Having thus described my invention what I claim is:

1. In combination with a building structure including a door opening, a sectional door comprising a pair of upper and lower horizontal panels hinged to each other against relative sliding movement and hinged to the building structure above the door opening, a plurality of track members extending inwardly at right angles to the wall of the building above the door opening and located between a spaced support within the building structure above the door opening, a plurality of straight channel bars extending from the lower edge of the lower door section and bolted thereto at the upper and lower edges of said lower section and being free of and overlapping the upper door section and extending substantially to the top edge of the latter, a plurality of trolley wheels adapted to traverse the respective aforesaid tracks and each having a downwardly directed projecting element, relatively short chains permanently connecting said downwardly projecting elements of the trolley wheels and the upper ends of the aforesaid bars, whereby the chains assist in maintaining and supporting the door at all times irrespective of the position of the trolley wheels on the tracks and whether the door is open or closed and whereby the said channel bars will force the respective door sections into vertical alignment to effect a closure of the door opening.

2. In combination with a building structure including a door opening, a sectional door comprising a pair of upper and lower horizontal panels hinged to each other against relative sliding movement and hinged to the building structure above the door opening, a plurality of track members extending inwardly at right angles to the wall of the building above the door opening and located between a spaced support within the building structure above the door opening, a plurality of straight channel bars extending from the lower edge of the lower door section and bolted thereto at the upper and lower edges of said lower section and being free of and overlapping the upper door section and extending substantially to the top edge of the

latter, a plurality of trolley wheels adapted to traverse the respective aforesaid tracks and each having a downwardly directed projecting element, relatively short chains permanently connecting said downwardly projecting elements of the trolley wheels and the upper ends of the aforesaid bars, whereby the chains assist in maintaining and supporting the door at all times irrespective of the position of the trolley wheels on the tracks and whether the door is open or closed and whereby the said channel bars will force the respective door sections into vertical alignment to effect a closure of the door opening fully suspended from the frame of the building, weights adapted to counterbalance the weight of the door sections, flexible elements secured to the lower door section at the lower edge of the latter and extending around said pulleys and connected with the weights, and means for latching the door when closed.

3. In combination with a building structure including a door opening, a sectional door comprising a pair of horizontal panels hinged to each other along their abutting edges against relative sliding movement and with the upper panel section hingedly connected to the building structure above the door opening, a plurality of bars bolted rigidly to the lower panel section of the door at the upper and lower edges of said section and extending into overlapping relation with the upper panel section of the door so as to extend substantially parallel with the upper panel section when the door is closed, said bars terminating at their inner ends adjacent the upper edge of the upper panel section, track members arranged within the building structure above the door opening, trolley wheels adapted to traverse the respective track members, short chains flexibly connecting the trolley wheels with the upper ends of the respective aforesaid bars, pulleys suspended from the frame of the building structure, weights adapted to counterbalance the weight of the door, flexible elements secured to the lower panel of the door and extending around the pulleys, and means for latching the door when closed, whereby the chains assist in maintaining and supporting the door at all times irrespective of the position of the trolley wheels on the tracks and whether the door is open or closed and whereby the portions of the aforesaid bars which overlap the upper panel section will force the panels into vertical alignment to effect a closure of the door opening.

In testimony whereof, I sign this specification.

OWEN L. DAUTRICK.