

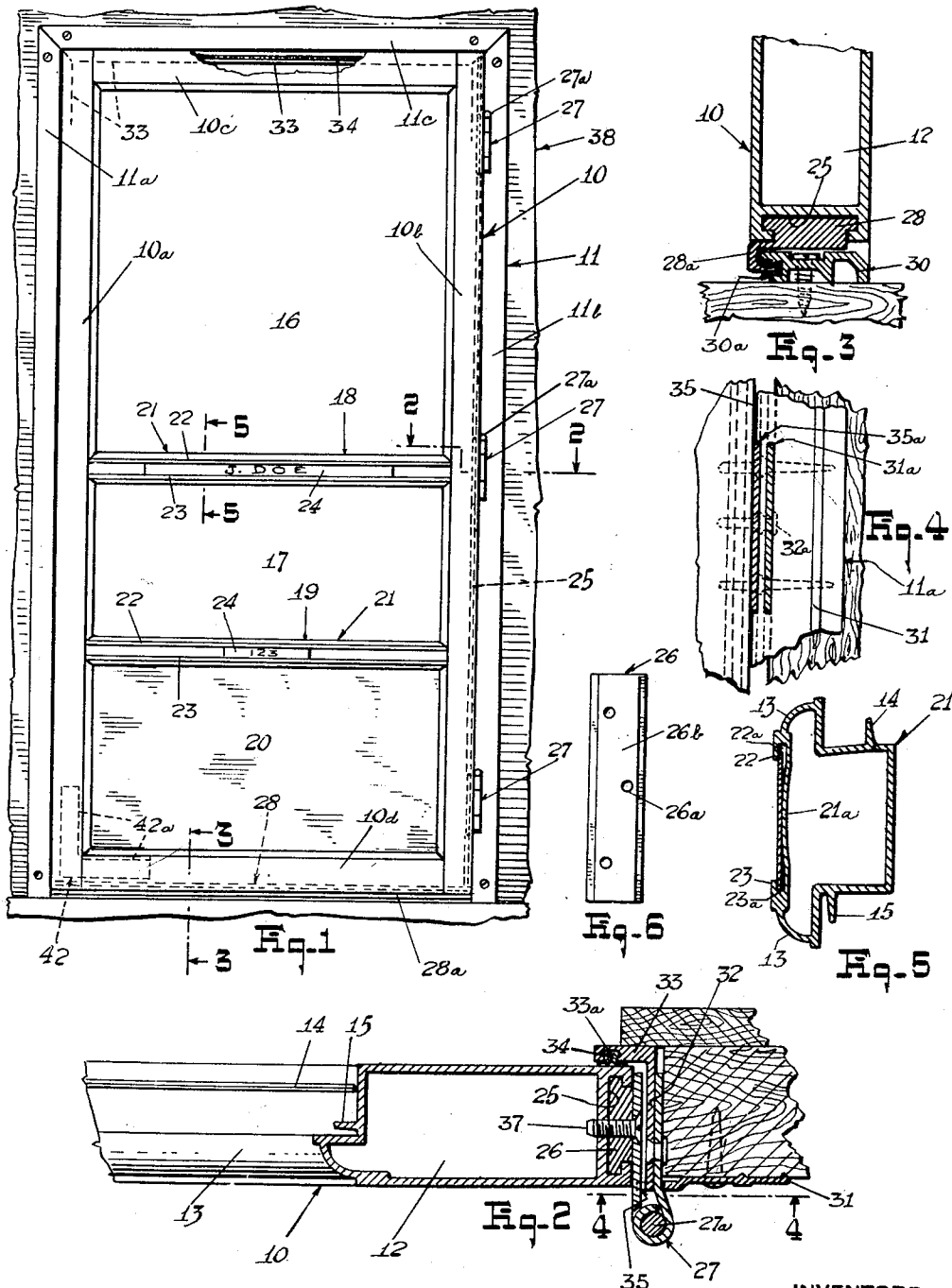
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CONSTRUCTION AND INSTALLATION OF DOORS

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CONSTRUCTION AND INSTALLATION OF DOORS

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1 Claim. (Cl. 189-46)

The present invention relates generally to closures, and more particularly to novel improvements in the construction and installation of the so-called combination storm and screen doors.

Combination doors of the character mentioned above are very well known and in ever increasing popularity. In the very great majority, these doors are fabricated from bars which are extruded from aluminum stock; that is, the framework of the said doors is formed by assembling proper lengths of this extruded metal. The shape or the cross-section pattern of these aluminum extrusions have, up to the present time, followed a somewhat conventional form, that is an accepted pattern which the fabricators have used to make their combination doors. We have found, however, that doors made from these old forms of extruded sections are deficient in many respects. In particular, they lack the proper means for quickly and sturdily hinging said doors. Also, lack in the means effective neatly to fit the doorways into which the said doors are to be installed.

Actually, it might well be said here that the material—that is the aluminum—is primarily chosen for long service or durability of the door itself. It should follow, therefore, that the way of constructing the door be such as to provide the means for durable installation, commensurate with the durability of the material of the door.

It is a prime object of our invention to provide a generally improved construction for a combination storm and screen door.

Another object of our invention is to provide novel and improved means for associating a storm and screen door with the buck-frame common to the installation of a door of this character.

A further object of the invention is to provide a novel method of dependably installing a door into an existing framework of a doorway.

A still further object of our invention is to provide a novel arrangement for attaching hinges to a door.

A still further object is to provide a novel arrangement for sealing the bottom side of a door with the saddle piece of a doorway.

Other objects and features of the invention will more fully appear from the following description and the appended claim.

In the said description, reference is had to the accompanying drawing, in which:

Figure 1 is an illustration of a combination screen and storm door made in accordance with our invention.

Figure 2 is a view, on an enlarged scale, of a section of the above illustrated door, the view being taken along the line 2-2 of Figure 1.

Figure 3 is another large-scale section, as taken along the line 3-3 of Figure 1.

Figure 4 is a view, partly in elevation and partly in section, showing our door hinging arrangement, the view is from a direction indicated as 4-4 in Figure 2.

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Figure 5 is a view in section of the extruded stock utilized to form the mullion pieces of our door, the view is in accordance with line 5-5 of Figure 1.

Figure 6 is a view, in elevation, of one of the inserts utilized in connection with our novel arrangement of securing hinges to a door.

In its general aspect, our invention encompasses not only the door, per se, but also the so-called buck-frame which is in the case of a door of the present character, always a necessary adjunct thereof in order properly to install and fit the door into an existing conventional doorway. The intermediate buck-frame mentioned above is one that is formed by way of an extruded strip or bar, whose cross sectional pattern resembles the letter Z. Hence, strips of this character are commonly known in the art as Z-bars; the term appearing hereinafter. It is also to be understood, that in the retail business of doors of the character at issue, the vendor most always sells the installation service with the product, so that the price is normally set so as to include the item or the cost of the time required for a man to perform the service of installation. In many instances, this service cost is a cause for unhappy business transactions, due principally to the lack of good standard designs for doors of this sort. Our door is thus designed to minimize past troubles of installation. Moreover, our door includes new provisions for improving the quality of the installation. An important feature of our door resides in the fact that the said door may be sent out for its installation without previous determination of whether it is to be hinged so as to open to the right or to the left.

In Figure 1 of the drawing, our door is indicated generally by the numeral 10, and the associating buck-frame as 11. The door frame proper includes the two vertical side members 10a and 10b, and the top and bottom members 10c and 10d. All of these frame members are made from hollow aluminum extrusions or bars, the cross-section of which is clearly shown in Figure 2. There it is seen that the sectional pattern has a hollow core 12, and a conformity which includes an inner bead 13 together with suitable fins 14 and 15. The latter are utilized to hold the interchangeable panels used in doors of this character. The panels and the arrangement thereof form no part of the present invention and need not herein be disclosed in further details, except to point out that such panels are located by way of the abovementioned fins 14 and 15 and fitted into the spaces indicated in the drawing as 16 and 17. These two spaces, as is seen, are divided by means of the mullion piece 18. Just below the space 17, another mullion piece 19 is utilized so as to further divide the door and provide means for permanently securing to the lower portion of the door a kick-plate 20.

The mullion pieces 18 and 19 are interlocked at each their ends to the side members 10a and 10b, and further secured by means of screws in the usual manner. In turn the said side members are solidly secured to their associating top and bottom members 10c and 10d. For this purpose, we use corner inserts 42, such as the one shown in dotted lines in the lower left hand corner of the illustrated door. These corner pieces have right angularly extending arms 42a which tightly telescope into the openings 12 of two adjacent frame members; screws being used to retain the parts together. Both the mullions 18 and 19 are made from an extruded shape 21 the cross-section of which is illustrated in Figure 5. The front portion 21a of the extrusion 21 is not only designed for appearance but also for utility. As seen in Figure 5, the extrusion 21 has, at the junctions of its beaded portions 13 thereof and its curved face 21a, a pair of flanges 22 and 23. These extend in a sort of complementary fashion so as to form top and bottom recesses 22a and 23a; the

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top recess being deeper than the recess of the bottom, as may be observed. The purpose of this arrangement is to provide means for attaching on to the door any decorations or name plates desired. As an example, a plate such as 24, Figs. 1 and 5, may be inserted first into the upper recess, then slipped downwardly against the tension of the curved face to rest into the lower recess. The plate 24 may be extended from end to end of the mullion piece, be colored and carry the name of the owner of the house. A similark plate in the mullion 19 may be made to carry numerals designating the number of the house.

An important feature of our invention consists of forming the extruded shape, which is used to make the four side members of the door, with a deep recess or channel 25 in its outer edge, as is seen in Figure 2. The recess 25 is undercut as indicated, and, by way of this arrangement, all four side members of the present door are outwardly channeled in a manner to offer means for interlocking with said door certain elements of installation now to appear. In Figure 6, there is shown one of the hinge coupling elements 26, which are adapted to fit in the abovementioned channel and serve to clamp the hinges 27 to the door 10. Also, in Figure 3, there appears another type of such insertable elements. This element is designated as 28, and its purpose is to cooperate in forming a seal for the said door with the saddle piece 30 used in an installation of a door of the present type. Further description of the elements 26 and 28, together with their respective effectiveness in the construction at issue, will appear more fully in connection with the explanation of the manner of installing our door 10.

The buck-frame 11 is formed by way of the Z-shaped extruded stock aforementioned which form thereof the side sections 11a, 11b and 11c. The said stock has a facing flange 31, a web portion 32 and a backing flange 33. The latter has the customary longitudinally extending recess 33a which is utilized to hold a weather strip 34, effective to seal the door to the buck-frame. In accordance with the present structure, we form the extruded Z-bar stock with an additional small flange or lip 35, as is shown in Figures 2 and 4. In order fully to make our invention understood, a review of the parts will be had in connection with a complete description of the manner of installing our door, this now follows:

As a first step, one of the vertical lengths 11a or 11b is provided with the customary three hinges—11b being selected as an example in the drawing. This provision entails punching in its flange 31 a set of three slots 31a, and notching the lip 35 thereof with notches 35a, as is clearly shown in Figure 4. In respective order, one side (the left side) of each of the hinges is then inserted through its respective slot 31a and is riveted, by way of its central hole, to the web portion 32 of the Z-shaped length; it being understood that there are three holes in each side, as appear in Figure 4. With a length prepared in the manner above described, the installer will

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proceed to place the said length on to and along the outer edge of the portion 10b of the door, so as to spot the holes in the left sides of the hinges on to the stock of the door forming the bottom of channel 25. The door is then drilled in correspondence with the markings and, as a next step, the hinges are taken apart by removing the pins 27a so that their left side may be attached to the door in accordance with our invention. The attachment consists of inserting into the channel 25 a set of three of the inserts or slugs 26 and of locating these slugs so that their holes 26a thereof will match the drilled holes in the door. This is followed by freely inserting the screws 37 through the hinges and through the slugs so that they may be threaded only into the stock of the door. Such an arrangement, as will be understood, will cause the slugs to be drawn to the hinge parts and that both will be clamped solidly to the door. It is to be understood that before the screws 37 are tightened the respective faces 26b of the slugs are not quite in contact with the hinges. Now the length 11a may be permanently secured to the frame 38 of the doorway and the door mounted thereto by reassembling the hinges 27.

As previously stated, we provide a novel way of sealing the bottom member 10d of the door with the saddle piece 30. To this end, we slide into the channel 25 of this bottom member the aforementioned insert or bar 28. In order to extend the sealing bar 28 fully across the bottom of the door, the lower end of both the members 10a and 10b is slotted to correspond with the channel 25, as will be understood. The bar 28 is provided with the longitudinally extending flange 28a which is designed in a manner to clinch with the weather strip 30a of the saddle piece 30, as is shown in Figure 3.

Having thus described our invention, by way of the particular embodiment herein illustrated, what we claim is:

In a door of the character herein described, in combination: a hollow framework forming said door; an undercut channel formed along the edge of said framework; means for solidly securing hinges to said hollow framework, said means including individual pieces slidably insertable into said undercut channel and movable to any position for coupling with said hinges; said pieces having holes matching holes in the hinges; said pieces and said hinges being clamped to the edge of said door by screws that are passed freely through both the pieces and the hinges and then threaded into the stock of the door at the bottom of said channel.

References Cited in the file of this patent

UNITED STATES PATENTS

1,793,081	Goddard	Feb. 17, 1931
2,186,458	Lehman	Jan. 9, 1940
2,605,869	Backman	Aug. 5, 1952
2,611,158	Gregory	Sept. 23, 1952