Sept. 4, 1956 J. S. COLOMBINI 2,761,532

KNOCKDOWN DOOR

Filed Dec. 7, 1953 2 Sheets-Sheet 1

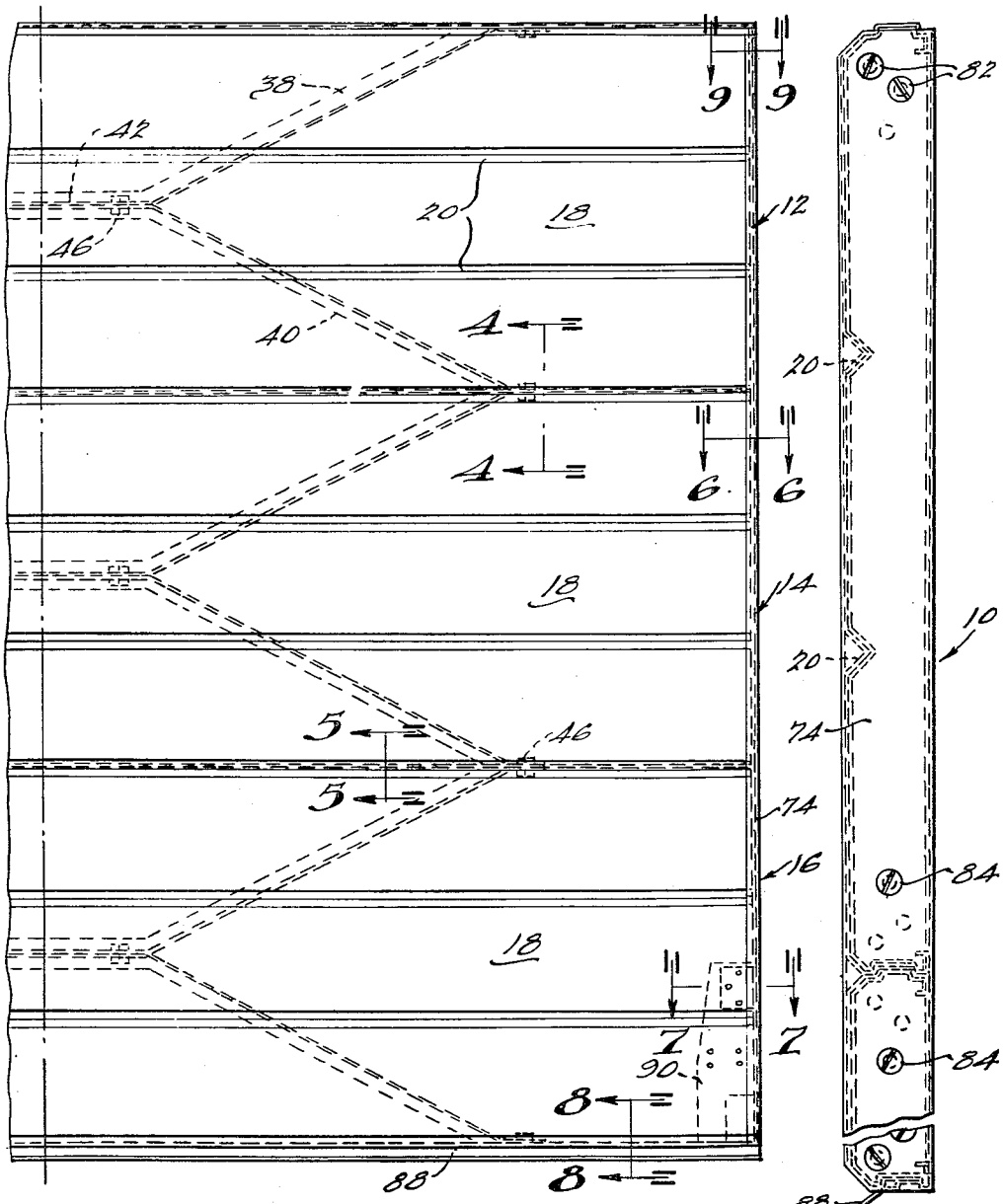


FIG. 1.

FIG. 2.

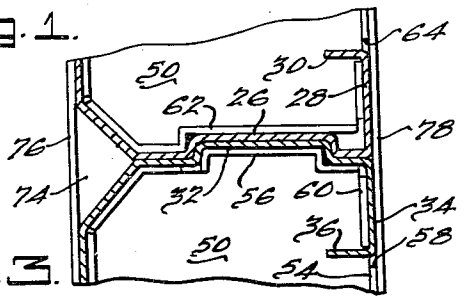


FIG. 3.

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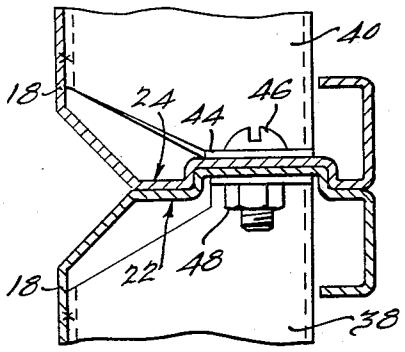


Fig. 4.

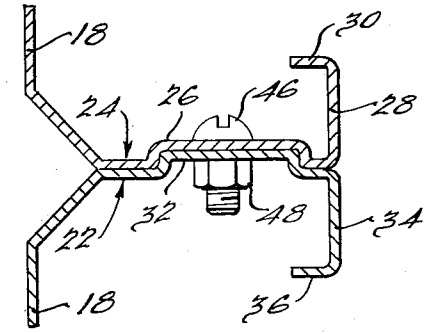


Fig. 5.

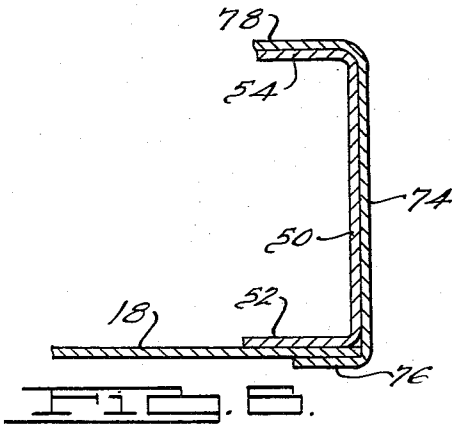


Fig. 6.

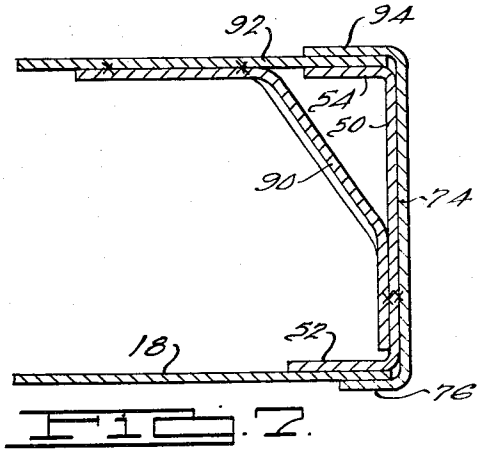


Fig. 7.

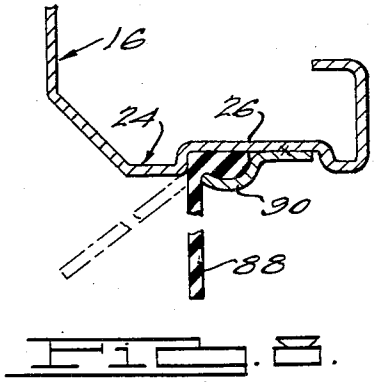


Fig. 8.

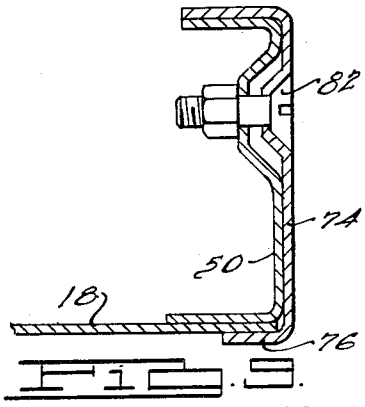


Fig. 9.

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KNOCKDOWN DOOR

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Application December 7, 1953, Serial No. 396,447

2 Claims. (Cl. 189—46)

This invention relates to sheet metal door constructions and has particular reference to a garage door or the like made of knockdown construction so as to facilitate manufacture, shipping, and assembly of the door.

A principal object of the invention is to provide a new and improved garage door.

A further object of the invention is to provide a door of knockdown construction which may be shipped in its knockdown condition and assembled and installed at the location at which it is to be used.

Another object of the invention is to provide a lightweight sheet metal garage door of knockdown construction which is sufficiently rigid or sturdy to be satisfactory for its intended usage.

Other and further objects of the invention will be apparent from the following description and claims and may be understood by reference to the accompanying drawings, of which there are two sheets, which by way of illustration show a preferred embodiment of the invention and what I now consider to be the best mode in which I have contemplated applying the principles of my invention. Other embodiments of the invention may be used without departing from the scope of the present invention as set forth in the appended claims.

In the drawings:

Fig. 1 is a fragmentary front elevational view of a door constructed according to the principles of my invention;

Fig. 2 is an enlarged fragmentary end view of the door;

Fig. 3 is an enlarged fragmentary vertical sectional view of two adjacent sections of the door;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1;

Fig. 5 is a sectional view taken on line 5—5 of Fig. 1;

Fig. 6 is a sectional view taken on line 6—6 of Fig. 1;

Fig. 7 is a sectional view taken on line 7—7 of Fig. 1;

Fig. 8 is a sectional view taken on line 8—8 of Fig. 1;

Fig. 9 is a sectional view taken on line 9—9 of Fig. 1.

In Fig. 1 there is disclosed a portion of a door 10, the door being symmetrical so that the other half of the door would have substantially the same appearance as the right-hand half of the door which is shown. The door 10 comprises three door sections 12, 14 and 16 adapted to be secured together in the manner hereinafter described to complete the door. While the door is shown as comprising three separate sections, it will be apparent that the door could be made of two or more sections, depending on the desired size of the completed door. The door illustrated in the drawings is designed particularly for use as a garage door or the like, and as shown is adapted to fit the usual 2-car garage.

Each door section comprises a sheet metal door panel 18 having a width substantially equal to the width of the completed door and provided with horizontally extending V-shaped ribs or grooves 20 as desired. The door panel is provided with rearwardly extending flanges 22 and 24 at its top and bottom edges respectively, the shape of the flanges 22 and 24 being best shown in Fig. 5. The flanges

are complementary in shape, as shown, so that the bottom flange of one door section will nest with the top flange of the next lower door section in the assembly. As shown the bottom flange 24 of each of the door sections is provided with a generally rearwardly extending portion 26, a portion 28 disposed generally parallel to the main portion of the panel, and an inwardly projecting portion 30 disposed normal to the portion 28. The top flanges 22 of the door sections are similarly provided with generally rearwardly extending portions 32 complementary in shape to the portions 26 of the flanges 24, downwardly extending portions 34 and inwardly bent portions 36.

Each of the separate door sections may be suitably braced in order to provide rigidity to the door, and such bracing means may comprise channel-shaped braces 38 and 40 having longitudinally disposed central portions 42 and diverging from the central portions to the top and bottom flanges of their respective panels 18. The engaged central portions 42 of the braces may be secured together by nuts and bolts as shown if desired, and the braces may be secured to the panels 18 throughout their length by spot welding in order to provide a rigid construction. At their outer ends the braces are provided with flange portions 44 engaging the opposing surfaces of the top and bottom flanges of the door section and secured thereto on final assembly of the door by bolts 46 and nuts 48.

An end member 50 is disposed along the side edges of each of the separate door sections. The end members 50 are channel shaped and have one leg 52 thereof seated against the inner side of the panel 18 and the central web of the channel disposed substantially normal to the plane of the panel 18, the other leg 54 of the end member being bent inwardly and disposed substantially parallel to the leg 52. Each end member 50 at its upper end is provided with a flange indicated at 56 and complemental in shape to the top flanges 22 of the panels 18 as is thus shown in Fig. 3. The innermost leg 54 of the end member 50 has a slot 58 therein through which the reversely bent portion 36 of a top flange 22 is adapted to project when the end member is assembled to a door panel. The upper end portion 60 of the leg 54 of the end member is offset as shown in Fig. 3 so that the remainder of the leg 54 and the downwardly bent portion 34 of the top flange 22 lie in substantially the same vertical plane.

The end members 50 at their lower ends are provided with flanges 62 complemental to the bottom flanges 24 of the door sections, and the reversely bent portion 30 of a bottom flange 24 projects through a slot 64 in the lower end of the wall 54 of the end member, and the engagement of the lower ends of the end members with the bottom flanges of the door sections is similar to the engagement of the upper ends of the end members with the top flanges previously described. All of the end members are similar in construction.

From the foregoing it will be seen that each of the door sections comprises the door panel 18, the braces 38 and 40, and the end members 50, and that the completed door sections may be handled and shipped as separate units to provide a knockdown construction. The end members 50 may be secured to the panels 18 or the flanges on the panels in any suitable manner prior to final assembly of the door as desired.

In assembling the door, the separate sections 12, 14, and 16 are stacked together with the top and bottom flanges of adjacent sections nested together in the manner shown, and the assembled sections are rigidly secured together by bolts 46 which pass through aligned apertures formed in the ends 44 of the braces and the top and bottom flanges of the door sections. The top and

bottom flanges of adjacent door sections also have aligned apertures at spaced intervals throughout their lengths to receive additional bolts **46** as shown in Fig. 5.

To complete the assembly, an end cap **74** substantially coextensive in height with the assembled door sections is telescoped over the side edges and end members of the assembled sections. The end caps **74** are channel shaped, and one of the parallel sides **76** is seated against the outer side edges of the door sections while the other side **78** thereof engages the sides **54** of the end members **50**, the central web of the end caps engaging the central webs of the end members **50**. The end caps are provided with a pair of apertures adapted to receive bolts **82** at their upper and lower ends, and similar apertures adapted to receive bolts **84** are spaced along the length of the end caps. The end members **50** are each provided with three apertures at their upper and lower ends arranged in the manner shown in Fig. 2 and adapted to receive the bolts **82** or **84** as shown, the arrangement being such that the end members **50** may be used interchangeably in any one of the three door sections shown and still obtain alignment between the apertures in the end members and the apertures in the end caps through which the bolts **82** and **84** extend, the apertures being suitably countersunk as shown in Fig. 9 to provide a smooth side edge to the door.

The lower door section **16** is provided with a weather strip **88** which may comprise a strip of resilient material, such as rubber, and the weather strip **88** is secured to the bottom edge of the door section **16** by means a strip **90** welded or otherwise secured to the under side of the flange **24** of the section **16** as shown in Fig. 8.

The manner in which the door is mounted for movement within the door opening forms no part of the present invention, and any suitable or conventional mounting arrangement may be employed. One form of such mounting means is indicated in Figs. 1 and 7 and may comprise a bracket **90** welded or otherwise secured to the lower end of the lower end member **50**. The bracket **90** also includes a plate **92** welded thereto and having its outer edge disposed between the wall **54** of the end member and an offset portion **94** of the end cap **74**. The

mounting bracket **90** may have suitable provisions for securing the conventional hardware thereto for mounting the door, and additional mounting means may be secured to the door as desired.

While I have illustrated and described a preferred embodiment of my invention, it is understood that this is capable of modification, and I therefore do not wise to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. Door construction comprising a plurality of separate and similarly formed door sections adapted to be secured together, each section comprising a sheet metal door panel having laterally extending flanges at the top and bottom edges thereof, said flanges being complementary in shape so that the bottom flange of one section may be nested with the top flange of the next lower section in the assembly, end members disposed along the side edges of each section, and end members being channel shaped and having the central wall thereof disposed normal to the door panel and extending between and abutting the flanges of said section, fastening means for securing a plurality of said sections together with the flanges of adjacent sections in nested relation, an end cap at each side of and substantially coextensive in height with the assembled door sections, said end caps overlapping the side edges and end members of the assembled door sections, and means for securing each end cap to the central wall of the adjacent end member of each section.

2. Door construction according to claim 1, including a separate framework for each door section extending between and seated against the top and bottom flanges of the door section between said end members.

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