

Sept. 2, 1958

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2,850,126

DOOR FRAME CONSTRUCTION

Filed July 20, 1954

4 Sheets-Sheet 1

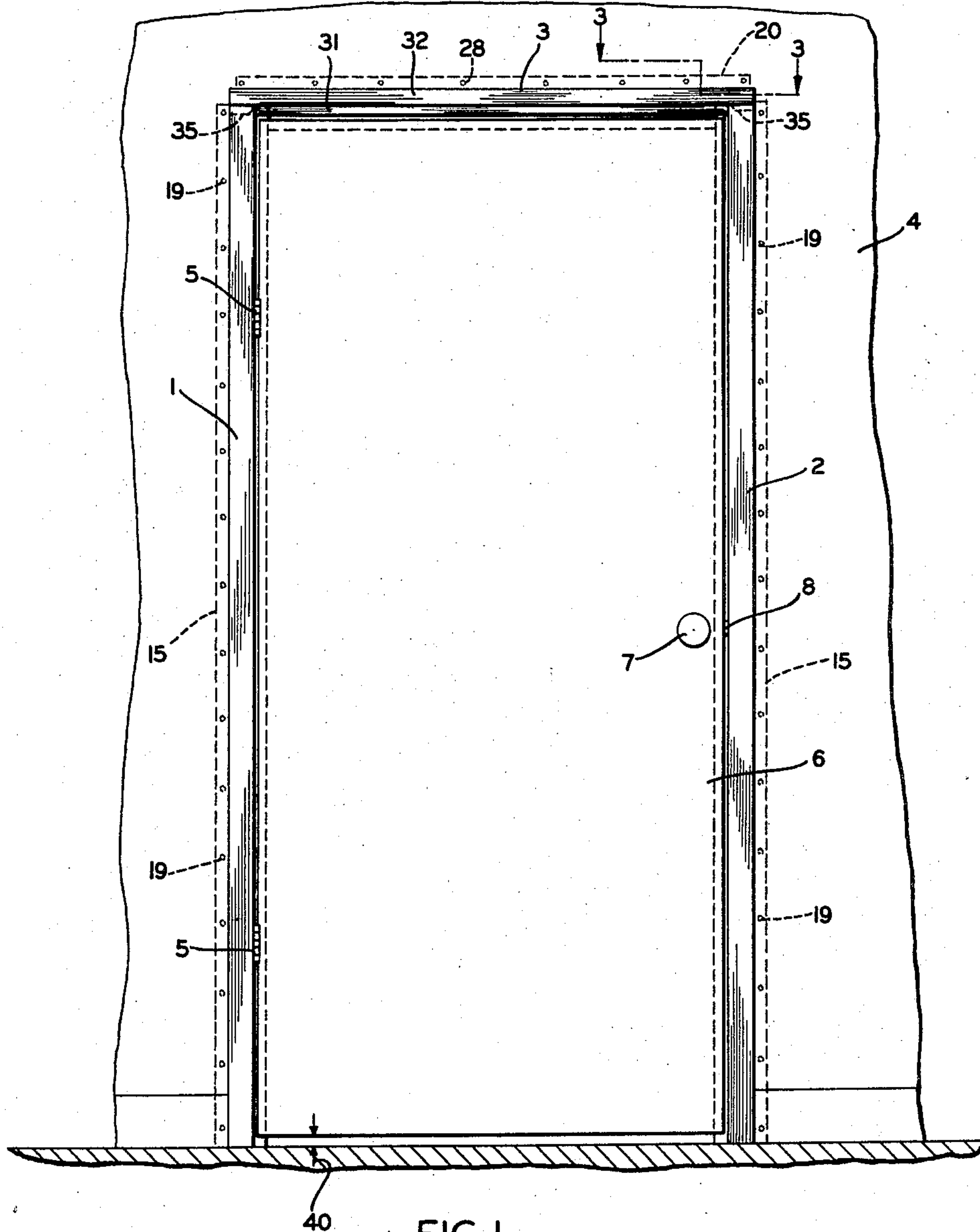


FIG. 1

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FIG. 2

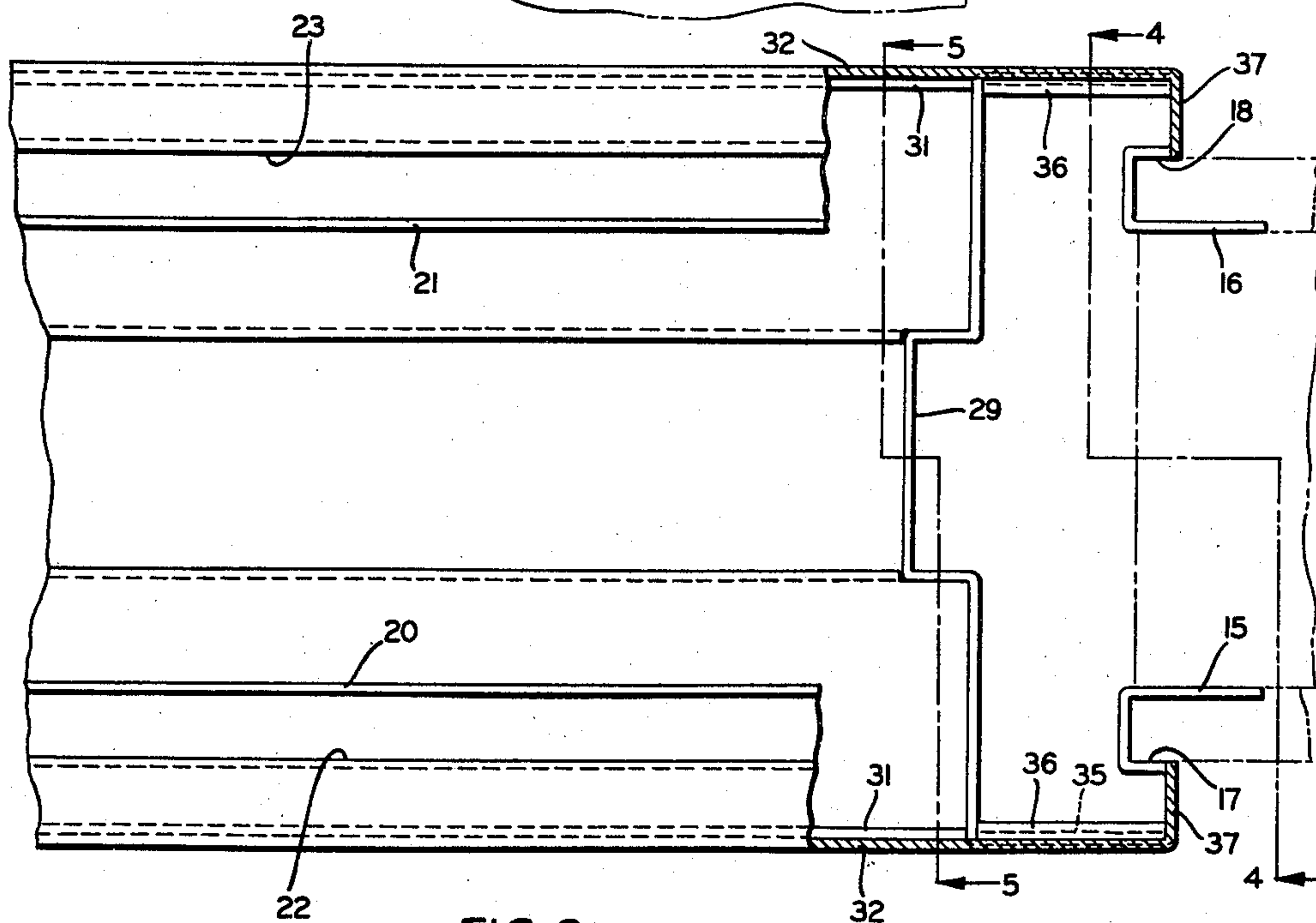
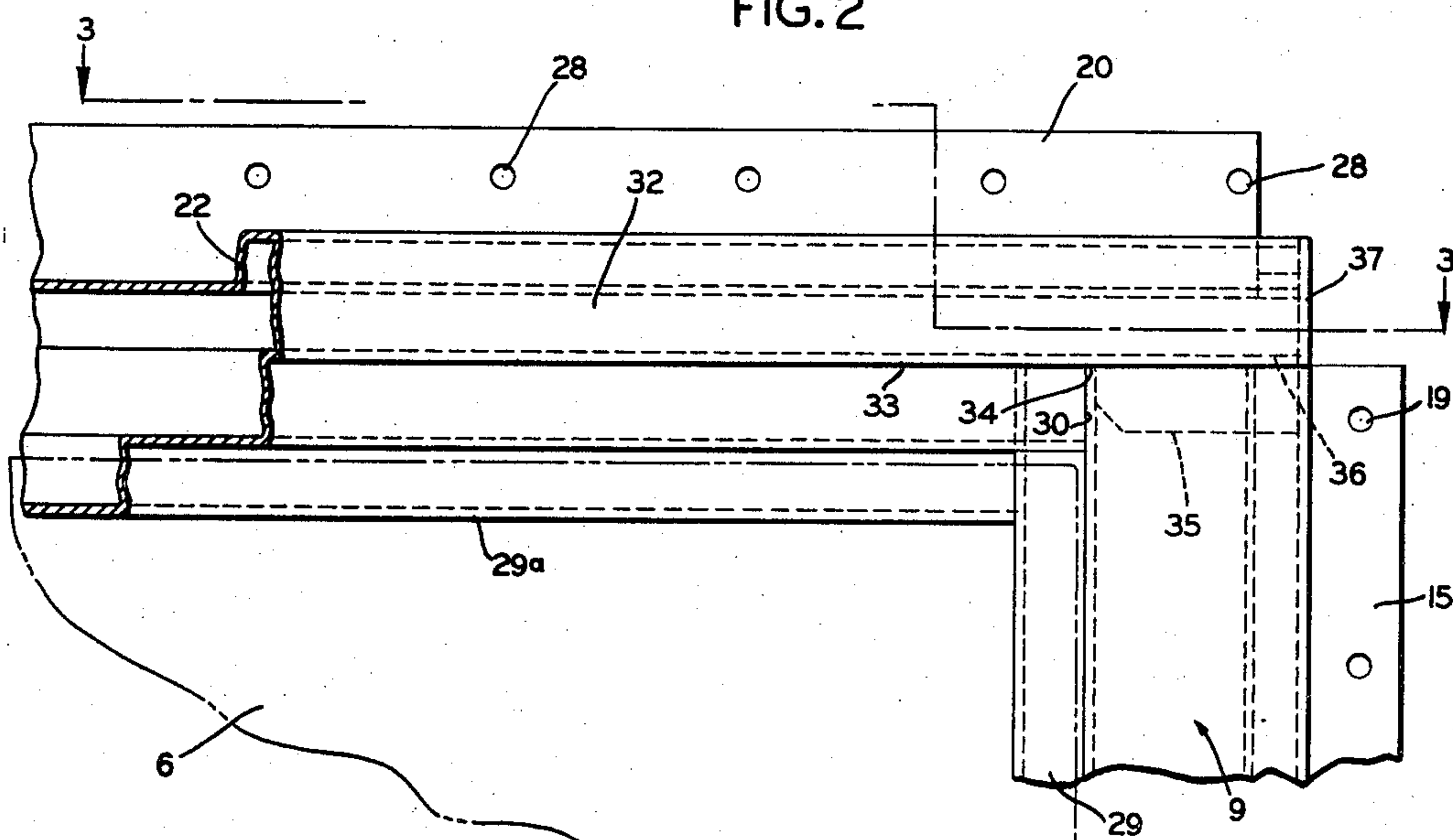


FIG.3

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Filed July 20, 1954

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## DOOR FRAME CONSTRUCTION

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Application July 20, 1954, Serial No. 444,431

4 Claims. (Cl. 189—46)

This invention relates to door frames and it pertains in particular to metal door frames adapted for assembly at the location of installation according to the desired direction of swing of the door.

In the past it has been the practice to manufacture and assemble most door frames before shipping. This was true whether the frames were made for stock or for immediate use. Each frame was made to satisfy the particular installation.

Likewise, most door frames were made to meet the specific requirements of the door swing either to the right or to the left. Moreover, door frames were limited to opening inwardly or outwardly with respect to the wall in which they were installed.

This invention provides a door frame that is reversible with respect to the right or left-hand swing of the door as well as with respect to inward and outward opening. The frame is made to be shipped in knock-down form to the construction site where it may then be assembled in the proper place within the wall opening. Since the door jamb and head members are designed with improved interfitting formations, they may be assembled by an unskilled workman, resulting in lower cost of building construction. Moreover, because of the novel interfitting configuration of the ends of the jamb and head members, a finished appearance is obtained upon assembly.

Accordingly, it is one object of this invention to provide a door frame construction which may be assembled to satisfy the direction of swing of the door.

It is another object of this invention to provide a reversible door frame construction adapted to meet the requirements of inward or outward opening of the door with respect to the wall in which it is installed.

It is another object of this invention to provide a knock-down door frame construction which may be shipped in compact form.

Finally, it is an object of this invention to provide a door frame construction incorporating the foregoing features that is simple and inexpensive to manufacture.

These and other objects and advantages apparent to those skilled in the art from the following description and claims may be attained, the stated results achieved, and the described difficulties overcome, by the discoveries, principles, apparatus, parts, combination, subcombinations and elements which comprise the present invention, the nature of which is set forth in the following statement, a preferred embodiment of which—illustrative of the best mode in which applicant has contemplated applying the principles—is set forth in the following description, and which is particularly and distinctly pointed out and set forth in the appended claims forming part hereof.

In general terms the door frame construction of the present invention may be stated as including a hinge jamb member, a latch jamb member, and a head member; said members being composed of sheet metal and having substantially channel cross-sections including a web and flanges, the head member having a jamb-receiving slot spaced from each end, the web of each member having a

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door stop, the door stops having equal depth and width dimensions, the door stop of the head member extending between the slots and having extremities spaced from their corresponding slots by a distance equal to the depth of the door stops on the jamb members, and the ends of each jamb member terminating in planes perpendicular to the axis thereof.

Referring to the accompanying drawings which are illustrative of the present embodiment of the invention, by way of example, and in which similar numerals refer to similar parts throughout:

Fig. 1 is an elevation view of a metal door frame embodying the structure of the invention;

Fig. 2 is an enlarged, fragmentary view showing interfitting portions of the head member and one jamb member;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Figs. 1 and 2;

Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a vertical sectional view taken on the line 5—5 of the Fig. 3; and

Fig. 6 is an exploded perspective view showing the manner in which the ends of the head and jamb members are placed together.

A door frame construction is shown in Fig. 1 having a hinge jamb member 1, a latch jamb member 2, and a head member 3, which are in a wall 4. The hinge jamb member 1 is provided with a pair of hinges 5 on which is hung a door 6. A door knob 7 is attached to the door 6 substantially midway between the upper and lower ends thereof. The latch jamb member 2 includes a door strike 8 which is likewise substantially centrally located with respect to the ends thereof.

As shown in Fig. 6 the jamb members 1 and 2 as well as the head member 3 are composed of sheet material, preferably sheet steel, which is formed into shapes of substantially channel cross-section. Either jamb or latch member 1 or 2 includes opposite side flanges generally indicated at 9 and 10, as well as a web generally indicated at 11 therebetween. Likewise, the head member 3 includes opposite side flanges generally indicated at 12 and 13, as well as a web generally indicated at 14, therebetween.

For the purpose of installation of the jamb members 1 and 2, the side flanges 9 and 10 are provided with facing longitudinal flanges 15 and 16 respectively, which are adjacent to longitudinal grooves 17 and 18, respectively, in the side flanges. The flanges 15 and 16 are provided with similar nail holes 19 by which they are secured to wall studs forming a door opening in the wall 4.

Moreover, the head member 3 includes a pair of similar longitudinal flanges 20 and 21 which are integral with the side flanges 12 and 13, respectively, and which are adjacent to longitudinal grooves 22 and 23 that are similar to and equally spaced with respect to grooves 17 and 18 in the jamb members 1 and 2. Upon assembly of the jamb members 1 and 2 with the head member 3 across the top thereof, corresponding grooves 17 and 18 in the jamb members and the web grooves 22 and 23 are aligned (Figs. 3 and 4) for receipt of edges of wall boards 24 and 25 (Figs. 4 and 5). A wood stud 26 is disposed between the flanges 20 and 21 on either side thereof by means of nails 27 in a manner similar to that of the jamb members 1 and 2 (Fig. 1), the flanges being provided with similar nail holes 28.

In addition, the jamb members 1 and 2 and head members 3 are provided with longitudinal door stops 29 and 29a, respectively, integral with their webs. The stops 29 and 29a preferably have equal depth and width dimensions for which reason they interfit interchangeably upon assembly.

The reversible feature of this door frame construction



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lies in the fact that the upper and lower ends of both jamb members 1 and 2 terminate in planes perpendicular to the longitudinal axes of the jamb members. Thus, either end of either jamb 1 or 2 may be placed against the floor depending upon the direction in which the door 6 is to swing with respect to the wall 4. Moreover, either end of each jamb member 1 and 2 may also be assembled with either end of the head member 3. Finally, the opposite ends of the head member 3 are fabricated to provide receiving or abutting edges for the ends of the jamb members 1 and 2.

Each end of the head member 3 is cut away in a manner similar to that shown in Figs. 2, 3 and 6. A transverse slot 30 is provided across the web 14 of the head member 3 near each end thereof and through a portion of the side flanges 12 and 13. Each side flange 12 and 13 includes a first longitudinal portion 31 and a second longitudinal portion 32, the former of which extends from and between the slots 30 near each end of the head member 3. The second longitudinal portions 32 extend from and between the ends of the head member 3 which ends are spaced from corresponding slots 30. The first longitudinal portions 31 extend adjacent the web 14 at opposite edges thereof and for right angles therewith at 31a (Fig. 5). The second longitudinal portions 32 extend adjacent the first portions 31 and are spaced from the web 14 by the width of the first portions 31.

On each side of the head member 13 the first and second longitudinal portions 31 and 32 are divided by a longitudinal shoulder 33 (Fig. 5) which extends between the slots 30 and at which the slots 30 terminate at 34 (Fig. 2). Hence, the slots 30 extend through the first longitudinal portions 31 without extending into the second longitudinal portions 32.

Like the first longitudinal portions 31 the web 14 of the head member 3 extends longitudinally between the slots 30. But, the second longitudinal portions 32 as well as the grooves 22 and 23 and the flanges 20 and 21 extend beyond the slots 30 to the ends of the head member 3.

Between each slot 30 and the end of the head member 3 spaced from it a flange 35 extends below the second longitudinal portion 31 on each side of the head member 3 with which the flange is integral. Each flange 35 forms a shoulder 36 (Figs. 2, 3 and 4) with the second longitudinal portion 32. Each shoulder 36 is aligned with the corresponding shoulder 33 (Fig. 2). However, each shoulder 36 is wider than each shoulder 33 by a dimension substantially equal to the thickness of the metal composing the several members. Also, the shoulders 36 are disposed in the same horizontal plane in which the slots 30 terminate at 34. Accordingly, the perpendicular end of each jamb member 1 and 2 may be mounted into the slot, the web 11 extending in the slot 30 and the opposite side flanges 9 and 10 being in abutment with the shoulders 36.

The resulting assembly presents an appearance pleasing to the eye for the reason that the ends of the side flanges 9 and 10 of each jamb member 1 and 2 abuts the corresponding shoulder 36 in a snug-fitting manner. Moreover, a flange 37 is provided at each end of each second longitudinal portion 32, which flange may be bent or turned through an angle of 90° to conceal the exposed ends of the flange parts adjacent the wall board 25. In the intumed position, the flanges 37 are in alignment with flange portions 38 on the jamb members 1 and 2.

As shown in Fig. 1 at 40 the lower end of the door 6 is spaced above the lower end of the jamb members 1 and 2. The space 40 is usually provided to permit the door, when opened, to clear any rug on the floor. Since the jamb members 1 and 2 may be installed with either end on the floor, the upper end of the door 6 is spaced within the ends of the jamb members 1 and 2 by a distance equal to the space 40 at the lower end of the door. Inasmuch as the upper ends of the jamb members 1 and 2 extend to the shoulders 36 (Fig. 4) of the head member 3, the

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width of the first longitudinal portion 31 is equal to a dimension slightly less than the space 40 to permit clearance of the door. The preferred dimension of the space 40 is  $\frac{3}{4}$ " and that of the width of the first longitudinal portion of 31 is  $\frac{5}{8}$ ". Accordingly, the space 40 at the lower end of the door 6 may be standardized without providing a similar spacing between the top of the door and the head member 3, and at the same time providing a door frame construction which is adaptable for installation to whatever direction of opening is preferred.

The improved door frame construction set forth above has the desirable feature of reversibility including reversibility with respect to right and left-hand opening, as well as with respect to direction of opening on one side or the other of the wall in which the door is located.

At the same time the improved door frame construction includes a knock-down form of construction which permits the manufacture of only three standard parts including the hinge jamb member, the latch jamb member, and the head member, without regard to whether the door will open in one direction or another. Hence, upon installation the members may be assembled as desired in a relatively short time to provide a door frame having a pleasing appearance.

In the foregoing description certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such words are used for descriptive purposes herein and are intended to be broadly construed.

Moreover, the embodiment of the improved construction illustrated and described herein is by way of example, and the scope of the present invention is not limited to the exact details of construction shown.

Having now described the features, constructions and principles of invention, the characteristics of the new door frame construction, and the advantageous, new and useful results provided; the new and useful discoveries, principles, parts, elements, combinations, subcombinations, structures and arrangements, and mechanical equivalents obvious to those skilled in the art, are set forth in the appended claims.

I claim:

1. A metal door and door frame construction including a hinge jamb member, a latch jamb member, a head member, and a door; said jamb and head members having substantially channel cross-sections including a web and flanges, each flange of the head member having a jamb-receiving slot spaced from each end of the head member and extending upwardly from the web, the slots near corresponding ends of the head member being aligned in a plane perpendicular to the axis of the head member, the web of the head member having extremities at said planes, the ends of each jamb member terminating in planes perpendicular to the axis thereof, the opposite ends of the door being shorter than the corresponding ends of the jamb members by a distance substantially equal to the upward extent of the slots in the flanges of the head member, whereby either end of the door is adapted to provide a snug fit between the web of the head member and the one end of the door and to provide clearance between the floor and the other end of the door.

2. A metal door and door frame construction including a hinge jamb member, a latch jamb member, a head member, and a door; said jamb and head members having substantially channel cross-sections including a web and flanges, each flange of the head member having a jamb-receiving slot spaced from each end of the head member and extending upwardly from the web, the slots near corresponding ends of the head member being aligned in a plane perpendicular to the axis of the head member, the web of the head member having extremities at said planes, the jamb members having ends terminating in planes perpendicular to the axis thereof, each end por-



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tion of the head member having a pair of flanges spaced inwardly from the plane of the corresponding web by a distance equal to the thickness of the sheet metal flanges of the jamb members, said flanges forming jamb-receiving shoulders on the end portions of the flanges of the head member, the opposite ends of the door being shorter than the corresponding ends of the jamb members by a distance substantially equal to the upward extent of the slots in the flanges of the head member, whereby either end of the door is adapted to provide a snug fit between the web of the head member and the one end of the door and to provide clearance between the floor and the other end of the door.

3. A metal door and door frame construction including a hinge jamb member, a latch jamb member, a head member, and a door; said members being composed of sheet metal and having substantially channel cross-sections including a web and flanges, each flange of the head member having a first longitudinal portion adjacent the web and a second longitudinal portion adjacent to the first portion, a shoulder in each head flange between the first and second portions, the distance between the second portions being greater than that between the first portions, the distance between the first portions being equal to the distance between the flanges on the jamb members, the head member having a jamb-receiving slot spaced from each end and extending upwardly from the web to the shoulders on opposite flanges, the slots being perpendicular to the axis of the head member, the web of the head member having extremities at the slots, the ends of each jamb member terminating in planes perpendicular to the axis thereof, the opposite ends of the door being shorter than the corresponding ends of the jamb members by a distance substantially equal to the width of the first longitudinal portion, whereby either end of the door is adapted to provide a snug fit between the web of the head member and the one end of the door and to provide clearance between the floor and the other end of the door.

4. A metal door and door frame construction including a hinge jamb member, a latch jamb member, a head

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member, and a door; said members being composed of sheet metal and having substantially channel cross-sections including a web and flanges, each flange of the head member having a first longitudinal portion adjacent the web and a second longitudinal portion adjacent to the first portion, a shoulder in each head flange between the first and second portions, the distance between the second portions being greater than that between the first portions, the distance between the first portions being equal to the distance between the flanges on the jamb members, the head member having a jamb-receiving slot spaced from each end and extending upwardly from the web to the shoulders on opposite flanges, the slots being perpendicular to the axis of the head member, the web of the head member having extremities at the slots, the ends of each jamb member terminating in planes perpendicular to the axis thereof, each end portion of the head member having a pair of flanges extending downwardly from the second flange portion, the pairs of flanges and corresponding ends being spaced inwardly at least by a distance equal to the thickness of the sheet metal flanges of the door jamb members and forming shoulders which together with the corresponding slot provide a substantially U-shaped jamb-receiving surface adapted to prevent lateral and transverse movement of the joined members, the opposite ends of the door being shorter than the corresponding ends of the jamb members by a distance substantially equal to the upward extent of the slots in the flanges of the head member, whereby either end of the door is adapted to provide a snug fit between the web and the head member and the one end of the door and to provide clearance between the floor and the other end of the door.

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