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HINGE FILLER PLATE CONSTRUCTION FOR METAL DOORS

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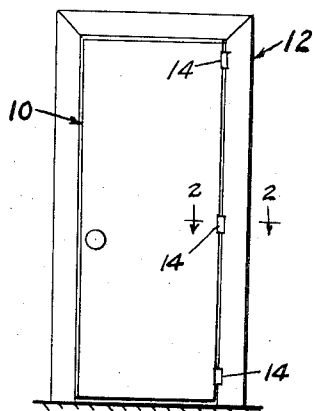


Fig. 1

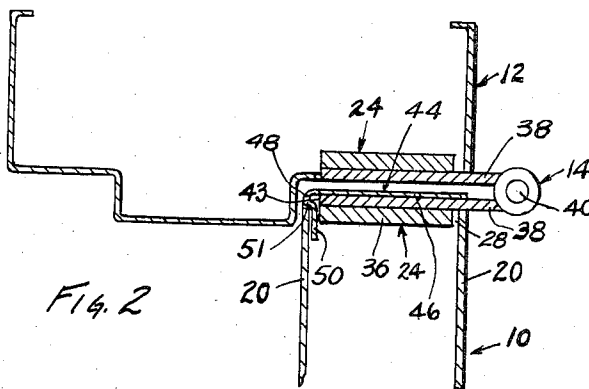


Fig. 2

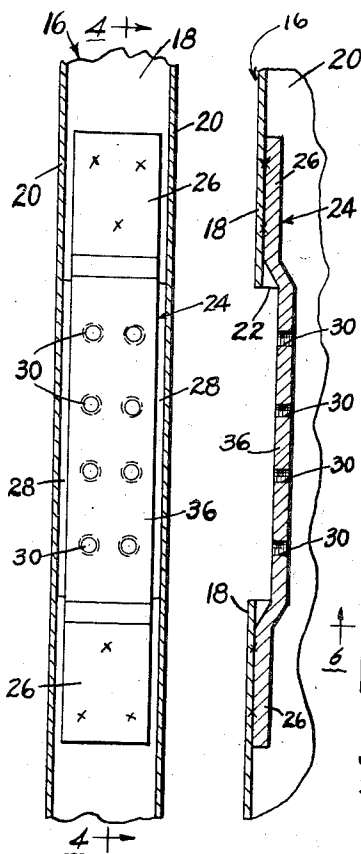


Fig. 3

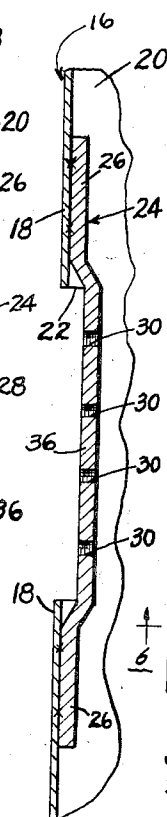


Fig. 4

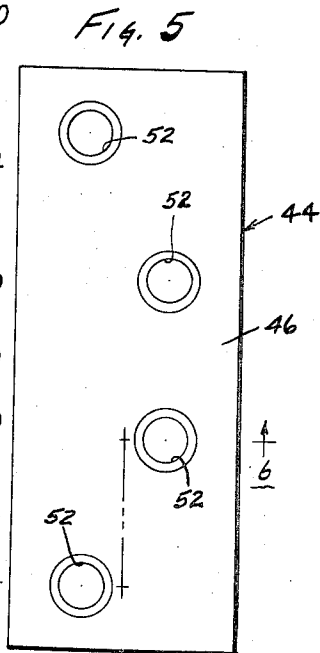


Fig. 5

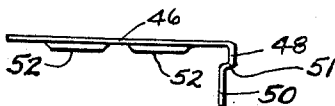


Fig. 6

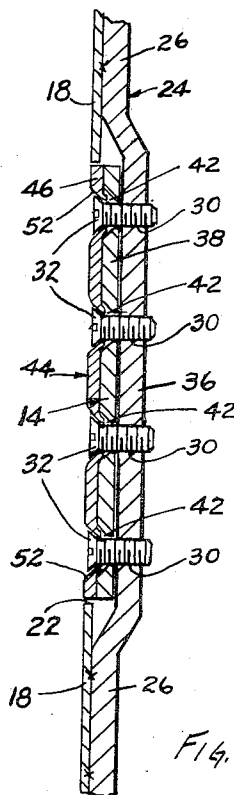


Fig. 7

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HINGE FILLER PLATE CONSTRUCTION FOR METAL DOORS

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3 Claims. (Cl. 189-46)

This invention relates to a hinge filler plate and more particularly to such a plate in combination with a metal door construction having a hinge reinforcement suitable for reverse mounting of hinges.

Metal door construction has problems which are not present in wood door construction in that the metal sections are most often thin and individually weaker than the comparable sections when made of wood. The hinge area of a metal door requires considerable strengthening and for this reason a hinge reinforcement member is welded in at the hinge opening coped in the edge of the door stile.

The hinge reinforcement member is provided with a series of threaded holes so that a hinge for the door may be mounted for either right-hand or left-hand swinging. This reversibility feature, which permits standardization of doors and frames, lower costs, more facile field installation and additional advantages, also embodies problems. One of these problems is closing the gap between the hinge butt and the side of the door at the coped hinge opening.

The instant invention involves a hinge filler plate that overlies a hinge butt which in turn overlies the hinge reinforcement member or support. The filler plate is provided with screw openings so that the three elements may be combined and held together by mounting screws. Because the hinge butt does not extend across the entire opening, the filler plate is provided with a flange at the plane of the door having an offset portion adapted to lie within the door shell and project between the hinge reinforcement member and the surface panel of the door or stile, whereby the hinge opening is closed and a finished flush appearance is presented in the hinge area.

It is therefore an object of the invention to provide a metal door construction in which hinge butts and filler plates may be reversibly mounted for right- or left-hand swinging. Another object of the invention is to provide a filler plate having a single bend at one side edge thereof, said bend having an offset portion to lie within the door panel or stile at the hinge opening so as to close the opening at the edge of the hinge butt.

These and additional objects of the invention and features of construction will become more apparent from the description given below, in which the terms are used for purposes of description and not of limitation.

Reference is had to the drawing annexed hereto and forming an integral part of this disclosure, in which

Fig. 1 is a front elevational view on a reduced scale of a metal door and frame construction embodying the invention.

Fig. 2 is a horizontal sectional view substantially on the line 2-2 of Fig. 1.

Fig. 3 is a vertical sectional view taken from inside the door and looking in the direction of the hinge reinforcement member at the hinge opening.

Fig. 4 is a vertical sectional view taken substantially on the line 4-4 of Fig. 3.

Fig. 5 is a front elevational view of the hinge filler plate, on a slightly enlarged scale.

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Fig. 6 is an end view of the hinge filler plate of Fig. 5.

Fig. 7 is a vertical sectional view, on a slightly enlarged scale, showing the combination arrangement of the hinge filler plate, hinge butt and hinge reinforcement member at the hinge opening in the edge of the metal door.

As shown in the several views of the drawing, the door 10 is hingedly mounted on its frame 12 by means of hinges 14.

The door 10 generally is provided with a hinge edge 16 formed of an end face 18 and conjoined side panel elements 20 substantially at right angles to the end face. At appropriate points the hinge edge 16 is coped out to provide hinge openings 22.

In the area of each of these openings, a hinge reinforcement member or support 24 is welded at its end portions 26 to the end face 18 adjacent the opening 22. The hinge support 24 is narrower than the inside width of the end face 18 to provide spaces 28 at either side edge of the hinge support between it and the side panel elements 20. The hinge support 24, of substantial gage, is provided with a number of threaded openings 30 to receive and engage screws 32 which will anchor a butt hinge 14 thereto. The threaded openings 30 are so arranged and in such number that the butt hinge 14 can be mounted for right-hand or left-hand swinging of the door. The hinge support 24 is further provided with its end portions 26 offset forwardly of the plane of the central support portion 36 so that the butt hinge 14 can be mounted thereon without projecting beyond the end face plane of the door edge 16.

The butt hinge 14 comprises generally a pair of butts 38 rotatably mounted about a pintle or pin 40. The butts are provided with openings 42 to receive and pass the mounting screws 32 for threading into the hinge support openings 30 therebehind. Generally, the butt screw openings 42 are spaced apart from each other and in two parallel columns. The width of the hinge butts 38 is less than the width of the edge 16 of the door, so that there is an open space between the butt edge 43 and the outer plane of the door at the edge 16.

The hinge filler plate 44, as shown more clearly in Figs 5 and 6, comprises a front panel 46, a side bend or flange portion 48, and an inwardly offset flange element 50 conjoining the flange 48 and substantially parallel thereto. The corner at the conjunction of the panel 46 and flange 48 is preferably arranged with the contour of the edge corner at the end face 18 and the side panel elements 20. A shoulder 51 at the conjunction of the flange 48 and the offset portion 50 is created by the offset. The panel 46 is provided with countersunk openings 52, arranged in the same order as in the hinge butts 38, to receive the mounting screws 32. The screw openings 52 are countersunk for a flat-head screw, to provide a gripping or holding-surface for the screw head to bring the plate 44 into direct bearing upon the hinge butt 38 and to hold it thereto.

The metal door components are preferably made of sheet steel, the hinge support 24 being made of heavy gage strip steel, the hinge of brass or bronze, and the hinge filler plate of sheet steel.

In operation, the hinge filler plate 44 is placed over one of the hinge butts 38 so that the screw openings in both parts overlie each other. The offset flange element 50 is then placed in the space 28 between the hinge support central portion 36 and one of the door side panel elements 20 at the coped out hinge opening 22. The offset flange element 50 is passed into this space 28 until the filler plate shoulder 51 abuts the edge of the door side panel element 20, as shown in Fig. 2.

The hinge filler plate 44, the hinge butt 38 and the hinge support 24 are then secured together, in that relationship, by screws 32. The hinge filler plate panel

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46 overlies the hinge butt 38, and covers and shields the outer edge 43 of the hinge butt at the corner of the door edge 16 in the area of the hinge opening 22 to provide a full closure for the opening.

By virtue of the inventive construction the door 10 may be mounted for right- or left-hand swinging on frame 12. The hinge filler plate offset element 50 can pass into space 28 on either side of the hinge support 24, between it and the door side elements 20, to provide a full closure for the hinge butt edge 43, making the entire construction reversible in character.

Having described the invention in its simplest terms so as to enable persons skilled in the art to which the invention pertains to practice the invention, the features of construction may be changed and varied in greater or lesser degree without departing from the essence of the invention.

We claim:

1. A hinge filler plate for a metal door construction including a reversible hinge support and a hinge, wherein said door has an edge thereof provided with a hinge opening in the form of a coped out slot extending across said edge, said hinge support having a central hinge mounting portion adjacent to and spaced from the plane of said edge inwardly thereof in the area of said slot and having a width less than the inside width of said metal door at said edge so as to provide longitudinally extending spaces between said hinge support central portion and said door at said slot, said hinge having a portion mountable directly upon said hinge support central mounting portion in said slot, said hinge portion having its side edge terminating short of the other side of said door edge, said hinge filler plate having a front panel of an area substantially equal to the area of said slot and adapted to overlie said hinge portion, said plate having at one side edge a flange portion directed rearwardly of said door edge at an angle to said front panel and terminating in an offset element substantially parallel to the plane of said flange portion, said offset element being disposed between said door and said hinge support central mounting portion in the area of said slot, said hinge filler plate flange portion abutting said door at said slot to provide a closure for said slot.

2. A hinge filler plate for a metal door construction including a reversible hinge support and a hinge, said door having an edge thereof provided with a hinge opening extending from one side to the other of said edge, said hinge support being secured to said door edge across said opening and having a central hinge mounting portion adjacent to and spaced from the plane of said edge inwardly thereof, said hinge mounting portion having a width less than the inside width of said door at said edge whereby longitudinally extending spaces

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between said hinge mounting portion and said door are provided substantially the length of said opening, said hinge having a butt portion directly mountable upon said hinge support in the area of said opening and terminating short of the other side of said opening at said door edge, said hinge filler plate having a front panel substantially the full width and length of said opening and adapted to overlie said butt portion, said plate having a flange at one side edge directed rearwardly of said door edge at an angle to said front panel and terminating in an inwardly offset element, said offset element being disposed in the space between said door and one side of said hinge support central mounting portion in the area of said slot, said plate flange having a shoulder abutting said door at said slot to provide a closure at one side therefor, and means to secure said hinge filler plate, hinge butt portion and hinge support central mounting portion together in that relationship.

3. In combination, a metal door construction including a reversible hinge support, a butt hinge and a hinge filler plate, said metal door having an edge thereof provided with coped out spaced apart hinge openings, said hinge support being secured to said door edge inwardly thereof and longitudinally overlying substantially the entire area of said opening and having a central hinge mounting portion spaced from and parallel to said door edge, said hinge mounting portion having a width less than the inside width of said metal door at said opening whereby to provide spaces at either side thereof between said door and said hinge mounting portion extending the length of said opening, said hinge having a butt portion overlying said hinge mounting portion in said opening and terminating short of the other side of said opening, said hinge filler plate having a front panel overlying said butt portion and having at one side edge thereof a flange rearwardly directly at an angle to said front panel and terminating in an inwardly offset element, said offset element being disposed in the space between said metal door and one side of said hinge mounting portion in said opening, said flange being located substantially in the plane of the side of said door so as to close said opening at the side edge of said butt portion, and means to secure said hinge filler plate front panel, hinge butt portion and hinge support central mounting portion together in that order.

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