

[54] **PREFABRICATED OVERLAY DOOR AND FRAME ASSEMBLY**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 341,875, March 16, 1973, abandoned.

[52] U.S. Cl. **49/380; 49/402**

[51] Int. Cl. **E06b 3/32**

[58] Field of Search **49/380, 381, 382, 402, 49/501**

[56] **References Cited**

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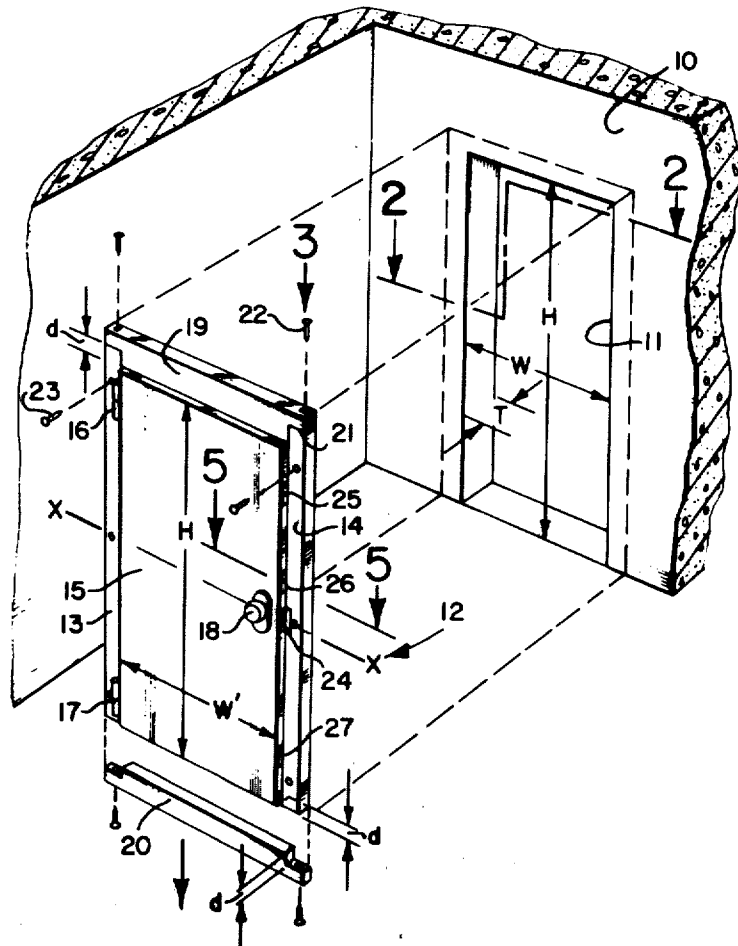
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Primary Examiner—Kenneth Downey
 Attorney, Agent, or Firm—Pastoriza & Kelly

[57] **ABSTRACT**

A completely prefabricated overlay door and frame assembly is provided to fit against the marginal exterior surfaces of a wall opening as opposed to a door and frame structure within the opening. The prefabricated assembly includes first and second vertical stiles with a door hinged to the first stile. The stiles are longer than the height of the door to provide upper and lower extending end portions. Upper and lower finished head rails in turn are secured to these extending end portions to complete the door frame. The assembly is entirely symmetrical about a horizontal axis passing midway through the assembly so that either a left or right hand door can be provided by inverting the assembly so that a right hand door is defined when the first stile is to the left of the opening and a left hand door is defined when the first stile is at the right of the opening. After a choice of left or right hand door is made, the lower finished head rail is simply removed thereby automatically providing the necessary clearance between the bottom of the door and the floor.

5 Claims, 6 Drawing Figures



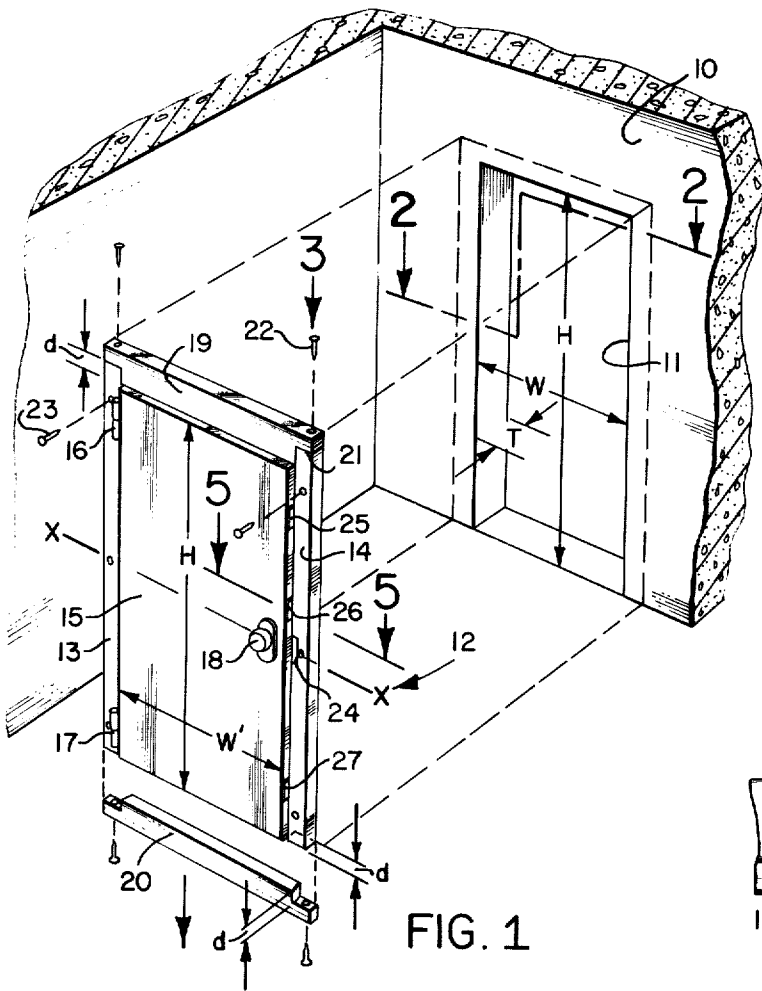


FIG. 1

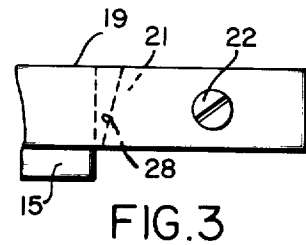


FIG. 3

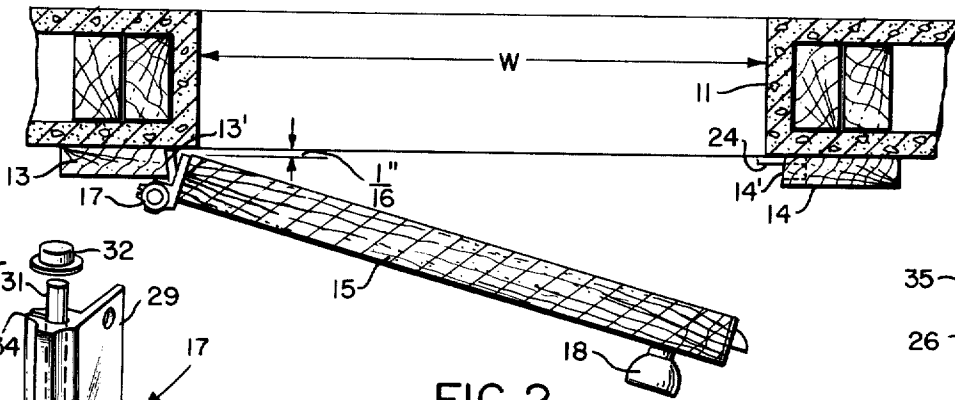


FIG. 2

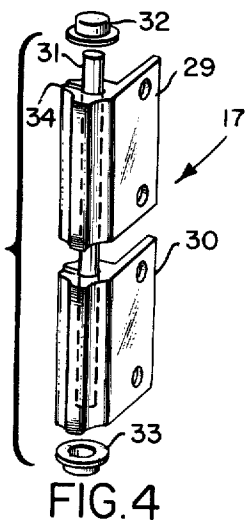


FIG. 4

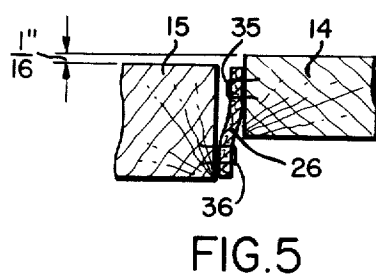


FIG. 5

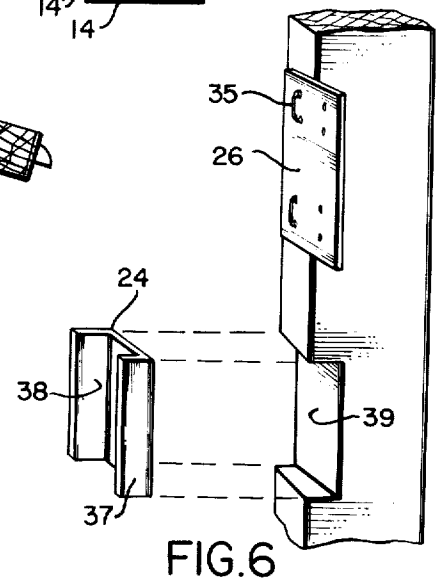


FIG. 6

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PREFABRICATED OVERLAY DOOR AND FRAME ASSEMBLY

This application is a continuation-in-part of my co-pending application, Ser. No. 341,875 filed Mar. 16, 1973, and entitled PREFABRICATED OVERLAY DOOR ASSEMBLY, now abandoned.

This invention relates generally to building construction and more particularly to door installations on wall openings in apartment house developments, homes, and commercial and industrial buildings.

BACKGROUND OF THE INVENTION

The hanging of doors in buildings is a time consuming and expensive operation. Conventional practice and most architectural designs call for doors being mounted within a frame structure in turn positioned within an interior wall opening. The thickness dimension of various walls may differ, thus requiring the door frames to be of different widths. In addition, the size of the wall opening itself may vary slightly even though such wall openings are fairly standard and designed to accommodate standard width doors. This latter problem is solved by providing suitable trim which will eclipse small variations in such dimensions so that the appearance of a proper fit along the vertical portions of the door frame results. However, there is still involved the time and labor of cutting the frame and door to proper size and the finishing strips and trim to proper size and then shimming the frame to the opening.

In addition to the foregoing, a carpenter hanging a door must also mortice the frame and usually the door itself to accommodate the hinges. Finally, it is usually necessary to effect final adjustments by trimming or shaving the lower end of the door itself to adjust its height above the floor to accommodate the floor finish.

To avoid some of the foregoing time and labor problems, many types of prefabricated doors have been proposed heretofore. Most such designs are all concerned with the hanging of a door within the frame of the opening, these proposed fabrications themselves being somewhat complicated and still expensive. The major problem in providing a prefabricated door which fits within a wall opening arises from the fact that the wall opening itself may vary in dimension; that is, it is not always standard plumb or square. Thus, regardless of the components provided there is always some adjustment necessary.

An overlay type door in the form of a simple door panel dimensioned to overlie the marginal edges of a wall opening with hinges secured directly between one side of the panel and a vertical edge of the opening has been proposed. However, these known arrangements are usually in the form of screen doors or cabinet doors in kitchens and are not concerned with a standard door for access from one room to another. Moreover, there is lacking any frame for the door and thus while the door or panel may be prefabricated, it is necessary to hang the door as by affixing the hinges to a portion of the wall surface.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

With the foregoing in mind, the present invention contemplates the provision of a completely prefabricated overlay door and frame assembly as opposed to a door and frame structure to be fitted within an inte-

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rior wall opening or a simple panel such as the heretofore mentioned screen door or kitchen cabinet door. Such an overlay door and frame assembly wholly eliminates the necessity of door frames, stops, trim members, back beveling, hinge morticing of the stile in the event normal butt hinges are not used, and the like, as well as the time and labor involved in adjustments with respect to fitting of the door itself, all to the end that doors may be properly hung in an architecturally acceptable manner for far less expense, time and labor costs than has been possible heretofore.

Briefly, the overlay door and frame assembly includes first and second vertical hanging stiles of heights greater than the height of the wall opening. A door is hinged to the first stile and has a width greater than the width of the opening and a height at least as great as the height of the opening and less than the height of the stiles to leave upper and lower end portions of the stiles extending beyond the upper and lower end portions of the door respectively. Upper and lower finished head rails extend between and are secured to the upper and lower end portions of the stiles respectively.

With the foregoing arrangement, the stiles may be secured against the wall surfaces adjacent to the vertical edges of the opening with the door overlying the vertical edges, the assembly defining a right hand door when the first stile is at the left of the opening and defining a left hand door by inverting the assembly, so that the first stile is at the right of the opening, the finished head rail between the lower extending end portions of the stiles being removed to leave a space between the lower ends of the lower extending end portions of the stiles and the bottom of the door to define a space between the bottom of the door and the floor for accommodating a floor finishing.

Thus, the only labor required to install the assembly is in simply removing the head rail assuming the lower position and securing the first and second stiles to the vertical marginal edges of the wall opening. Any variations in the interior wall opening dimensions will be completely eclipsed because of the overlapping of the marginal edges of the opening by the stiles, upper head rail and door itself. The entire assembly can be provided in standardized unit sizes for conventional doors without the necessity of any cutting or trimming operations whatsoever.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the invention will be had by now referring to the accompanying drawings in which:

FIG. 1 is a fragmentary, perspective view of a typical finished wall opening, preparatory to receiving the overlay door and frame assembly shown in exploded perspective;

FIG. 2 is a cross section taken in the direction of the arrows 2—2 of FIG. 1 after the door and frame assembly has been secured in place;

FIG. 3 is a fragmentary plan view of one end of an upper head rail looking in the direction of the arrow 3 of FIG. 1;

FIG. 4 is an exploded perspective view of one of the door hinges of FIG. 1;

FIG. 5 is a fragmentary cross section looking in the direction of the arrows 5—5 of FIG. 1; and,

FIG. 6 is a fragmentary exploded perspective view of a mid portion of one of the stiles in FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

Referring first to FIG. 1, there is shown by way of example, a typical interior wall 10 having an interior finished opening 11 of more or less standard width and height dimensions as indicated at W and H. The wall opening may have a given thickness T but such thickness may vary for different types of interior walls.

A problem with attempting to fit prefabricated types of doors within the opening 11 involves the aforesaid variation in thickness T. Thus, to accommodate an interior frame for the opening requires complicated structures unless actual cutting is to be accomplished on the job, or unless different jamb widths are ordered from the mill. This problem, as well as other problems mentioned heretofore are eliminated by the present invention by providing the complete overlay door and frame assembly as a unit.

In FIG. 1, the overlay door and frame assembly is designated generally by the numeral 12 and includes first and second vertical hanging stiles 13 and 14, a door 15 hinged as at 16 and 17 to the first stile 13 and provided with a door knob 18 midway between the top and bottom ends of the door. The assembly is completed by upper and lower finished head rails 19 and 20 extending between and secured to the upper and lower end portions of the stiles respectively.

The width dimension of the door itself is indicated by the letter W' and is made greater than the corresponding width dimension W of the interior wall opening 11. The door height is at least equal to H corresponding to the height of the opening but because the door will normally be raised above the floor slightly, its top edge will eclipse the top of the opening. The stiles 13 and 14, on the other hand, are of greater height than the height H of the door to leave upper and lower end portions extending beyond the upper and lower ends of the door respectively. The distance of the extending end portions of the stiles beyond the ends of the door is indicated at d and might, for example, be typically seven-eighths of an inch.

In the preferred embodiment of the invention, each head rail is notched at its opposite ends to engage the end surface and inside portion of the stile end portions, such as indicated at 21 in FIG. 1. The total width of each of the finished head rails might for example be 1-1/2 inches so that the overlapping opposite ends of the head rails would be five-eighths of an inch. The respective upper and lower end rails are secured in place during the prefabrication of the door and frame assembly as by screws one of which is shown at 22 passing through the overlapping portion into the end surface of the stiles.

Also during the prefabrication, there are provided a series of screw holes in each stile into which screws 23 may be partially threaded.

The assembly is completed by the provision of a strike plate and stop structure 24 fitted into a mid portion of the inner edge of the second stile 14 for cooperation with the usual door knob and latch.

With the foregoing prefabrication, it will be evident that the door and frame assembly is symmetrical with respect to a horizontal X-X axis passing midway through the assembly. As a consequence, the assembly will define a right hand door when the first stile 13 is at the left of the opening 11 and a left hand door by

simply inverting the entire assembly so that the first stile 13 is at the right of the opening.

Thus, still referring to FIG. 1, it will be evident that the entire prefabricated door including the upper and lower finished head rails 19 and 20 both secured in place can simply be removed from a carton as a unit. The installer will then determine whether a left or right hand door is to be provided on the opening 11 and in accord with his selection, the particular finished head rail which is at the bottom is simply unscrewed. In the case of a right hand door as illustrated in FIG. 1, the lower head rail 20 would be removed as shown in exploded view just prior to positioning the door over the opening. After removal of the lower head rail, the left and right stiles are simply screwed up against the left and right marginal surfaces of the opening 11 and the installation of the door is complete.

Because of the slight extending end portions of the stiles beyond the upper and lower ends of the door, when the bottom rail 20 is removed, there will be left a space corresponding to d between the bottom of the door and the floor which is seven-eighths of an inch in the example given. This is precisely the correct space to accommodate the finished floor and thus normally no trimming or other operations are necessary.

While not an essential portion of the invention, it is desirable that the door be held within the frame on its right hand portion as viewed in FIG. 1 in a proper position particularly when shipped. Towards this end, temporary clips as indicated at 25, 26 and 27 secure the door in its closed position within the frame, these clips simply being stapled to the right hand edge of the door and the inside surface of the second stile 14. The clip securement together with the securement by the hinges 16 and 17 to the first stile 13 assure that the door is properly positioned. After installation, the clips are simply removed all as will become clearer as the description proceeds.

Referring now to FIG. 2, the door is shown in cross sectional plan properly installed against the opening and in a partially open position. Corresponding components in FIG. 2 to those of FIG. 1 are designated by the same numerals.

In FIG. 2, it will be noted that the inside surfaces of the stiles 13 and 14 are beveled as at 13' and 14' so that the front widths of the stiles are greater than the rear widths. The opposing portions of the notches in the head rails are similarly beveled so that the remaining upper head rail is essentially keyed against the upper wall surface of the wall opening when the stiles are secured against the vertical edges of the wall opening.

In addition, the bevel 13' on the stile 13 permits a swinging of the door slightly past the plane of the rear surface of the stile in the event the marginal edge of the wall against which the rear surface of the stile is seated should be uneven, that is, out of alignment with the plane of the opening. In the absence of such bevel and should the plane of the marginal edge of the wall be out of alignment with the plane of the opening, the edge of the door would bind against the inside surface of the stile and could damage the hinges.

It should also be noted that the plane of the rear surface of the door is inset about one-sixteenth inch from the rear surfaces of the stiles, this distance corresponding to the thickness of the stop plate 24 on the stile 14. This inset prevents the rear corner of the door from in-

advertently catching the corner of the opening adjacent the stile 13 when the door is closed.

In FIG. 3, the bevel of the notch portion 21 of the head rail referred to heretofore is indicated at 28. While the fastening screws 22 remain in place, thorough tightening of the stile against the wall urges it tightly inwardly which due to the beveled arrangement described thoroughly keys or locks the head rail in place to provide securement in addition to that provided by the screws. The bevel feature thus provides a double advantage.

Since the entire door and frame assembly can be inverted end for end depending upon whether a left or right hand door is desired, the hinges 16 and 17 described in FIG. 1 are modified from the conventional type of hinge in that the hinge pin is locked in position so as not to fall out by gravity as would be the case if a conventional hinge arrangement were inverted.

The modified hinge is shown in detail in FIG. 4 wherein the structure includes first and second hinge leaves 29 and 30 having axially aligned bores for receiving a hinge pin 31. End caps 32 and 33 are frictionally retained on the opposite ends of the pin 31 when the hinge is completely assembled. A slot 34 communicating from the side of the hinge into the bore receiving the pin 31 is provided so that the caps 32 and 33 can be removed if necessary.

With the above described arrangement, and the caps 32 and 33 thoroughly secured to the opposite ends of the pin 31, when the assembly is hung as a right hand door and the hinge leaf 29 secured to the door with the hinge leaf 30 secured to the inside of the first stile 13 as indicated in FIG. 2, part of the load of the door will be borne by the hinge leaf 29 bearing down against the hinge leaf 30. By hinging the lower leaf of the upper hinge 16 to the door and the upper leaf to the stile so that the hinge leaves are reversed as compared to the lower hinge 17, the remaining load of the door is borne by the pin in the upper hinge which is placed in tension.

When the assembly is reversed so that the first stile 13 is on the right hand side of the opening as viewed in FIG. 2, then part of the weight of the door will bear against the end cap 32 on the then upper hinge to place the pin 31 in tension and the remaining load will be carried by the lower leaf of the then lower hinge. In either position, the door is properly supported by the hinges and there is no problem of having to remove a hinge pin and reverse the same or in any other manner modify the hinges.

FIGS. 5 and 6 show certain further details. In FIG. 5, the temporary clip means such as 26 described in FIG. 1 is shown provided with staples 35 and 36 securing the same to the right hand stile 14 and opposing edge of the door 15.

In the perspective fragmentary view of FIG. 6, this clip 26 is shown after the staples have been removed from the edge of the door wherein it will be noted it may simply comprise a rectangular shape card.

Also shown in FIG. 6 is the striker plate 24 which may comprise a generally U-shaped piece of metal having a striking surface 37 and a stop surface 38 of somewhat greater width than the striking surface 37. A notch 39 is formed in the stile as shown in FIG. 6 into which the striker 24 is fixed during prefabrication. The greater width of the stop surface 38 will be evident from FIG. 2.

From the foregoing description, it will be evident that the present invention has, for the first time, provided a completely prefabricated door and frame assembly which can be very simply installed against any standard finished wall opening to provide either a left or right hand door. As mentioned, the only requirement imposed on an installer is to remove the head rail which assumes a lower position by simply unscrewing the fastening screws therefor and then fixing the stiles to the side of the wall with the various screws already partially threaded. When the clips are provided, the staples are then simply removed from the edge of the door, the door opened and then the remaining portion of the clip removed from inside the stile.

The structure can be provided with completely finished surfaces so that no further operations whatsoever are required. As a consequence, substantial savings in time and labor in the installation of doors results.

What is claimed is:

1. A prefabricated overlay door and frame assembly for application to a finished wall opening of given width and height, said assembly including:

- a. first and second vertical hanging stiles of height greater than the height of said opening;
- b. a door between the stiles of overall width greater than the width of the opening and of height at least equal to the height of the opening and less than the height of the stiles to leave upper and lower end portions of the stiles extending beyond the upper and lower ends of the door respectively, said door having a door knob positioned halfway between the upper and lower ends of the door;
- c. upper and lower hinges hinging the door to the first stile, each hinge including first and second hinge leaves secured respectively to the door and first stile and having bores axially aligned; a pin passing through said aligned bores; and means on the opposite ends of the pin preventing longitudinal movement of the pin out of the hinge leaves; and
- d. finished upper and lower head rails extending between and secured to the upper and lower end portions of the stiles respectively, whereby the stiles may be secured against the wall surface adjacent to the vertical edges of the opening with the door overlying the vertical edges, the assembly defining a right hand door when the first stile is at the left of the opening and defining a left hand door by inverting the assembly so that the first stile is at the right of the opening, the finished head rail between the lower extending end portions of the stiles being removed to leave a space between the lower ends of the lower extending end portions of the stiles and the bottom of the door to define a space between the bottom of the door and the floor for accommodating a floor finishing, the inside longitudinal surface of each stile being beveled such that the front width of the stile is greater than its rear width, the opposing portions of the head rails between the stiles being similarly beveled so that the upper head rail is keyed against the upper wall surface of the wall opening when the stiles are secured against the vertical edges of said wall opening.

2. A prefabricated overlay door and frame assembly according to claim 1, in which each head rail is notched at its opposite ends to engage the top end surface and inside portion of the stile end portions, the head rail being secured to the stile end surfaces by screws pass-

ing vertically through the head rail portions overlying the end surfaces to pass into said end surfaces, removal of the head rail at the lower end of the stiles as determined by the choice of a right or left hand door assembly being accomplished by unscrewing the screws.

3. A prefabricated overlay door and frame assembly according to claim 1, including removable clip means provided between the second stile and door to hold it in its proper position while securing the stiles on either side of the opening, the clip means thereafter being removed.

4. A prefabricated overlay door and frame assembly according to claim 1, in which the rear plane of the door is inset approximately one-sixteenth inch from the plane of the rear surfaces of the stiles.

5. A prefabricated overlay door and frame assembly for application to a finished wall opening of given width and height, said assembly including:

- a. first and second vertical hanging stiles of height greater than the height of said opening;
- b. a door between the stiles of overall width greater than the width of the opening and of height at least equal to the height of the opening and less than the height of the stiles to leave upper and lower end portions of the stiles extending beyond the upper and lower ends of the door respectively, said door having a door knob positioned halfway between the upper and lower ends of the door;
- c. upper and lower hinges hinging the door to the first stile, each hinge including first and second hinge leaves secured respectively to the door and first stile and having bores axially aligned; a pin passing

through said aligned bores; and means on the opposite ends of the pin preventing longitudinal movement of the pin out of the hinge leaves; and

d. finished upper and lower head rails extending between and secured to the upper and lower end portions of the stiles respectively, whereby the stiles may be secured against the wall surface adjacent to the vertical edges of the opening with the door overlying the vertical edges, the assembly defining a right hand door when the first stile is at the left of the opening and defining a left hand door by inverting the assembly so that the first stile is at the right of the opening, the finished head rail between the lower extending end portions of the stiles being removed to leave a space between the lower ends of the lower extending end portions of the stiles and the bottom of the door to define a space between the bottom of the door and the floor for accommodating a floor finishing, the first hinge leaf of the upper hinge secured to the door being positioned below the second hinge leaf of the upper hinge secured to the stile, and the first hinge leaf of the lower hinge secured to the door being positioned above the second hinge leaf of the lower hinge secured to the stile so that regardless of whether the door is used as a right or left hand door, the upper hinge has the pin of its leaves carrying a part of the door load in tension and the lower hinge has its leaves carrying a part of the door load in compression.

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