Sept. 14, 1965 A. CHIMIENTI 3,205,982

PACKAGED DOOR CASING AND PRE-HUNG DOOR

Filed Feb. 8, 1963 2 Sheets-Sheet 1

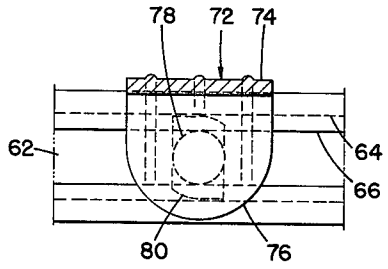


FIG. 4

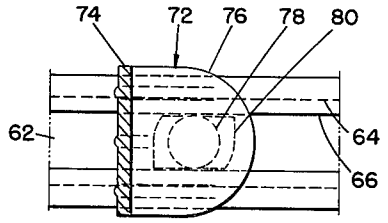


FIG. 5

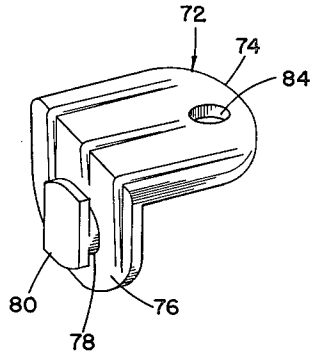


FIG. 3

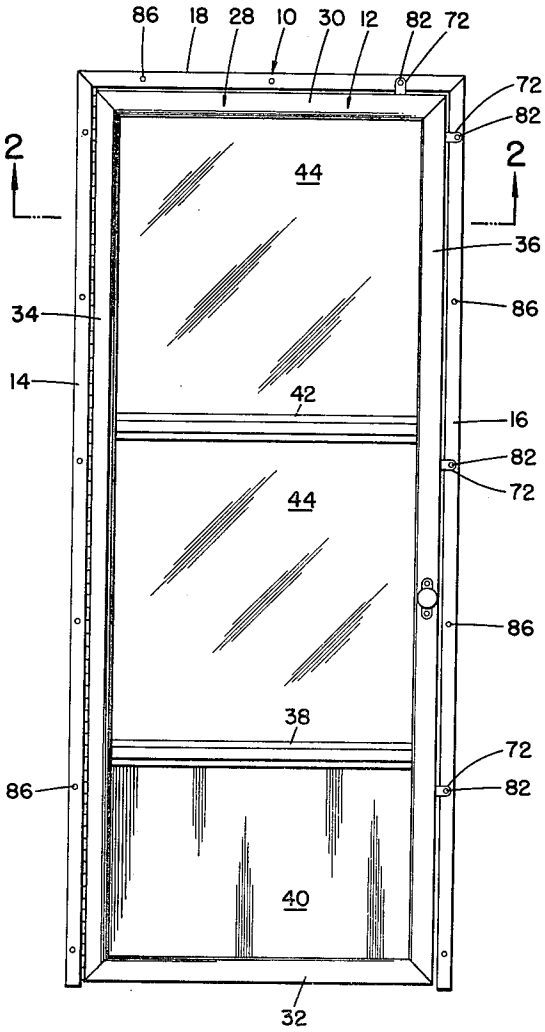


FIG. 1

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PACKAGED DOOR CASING AND PRE-HUNG DOOR

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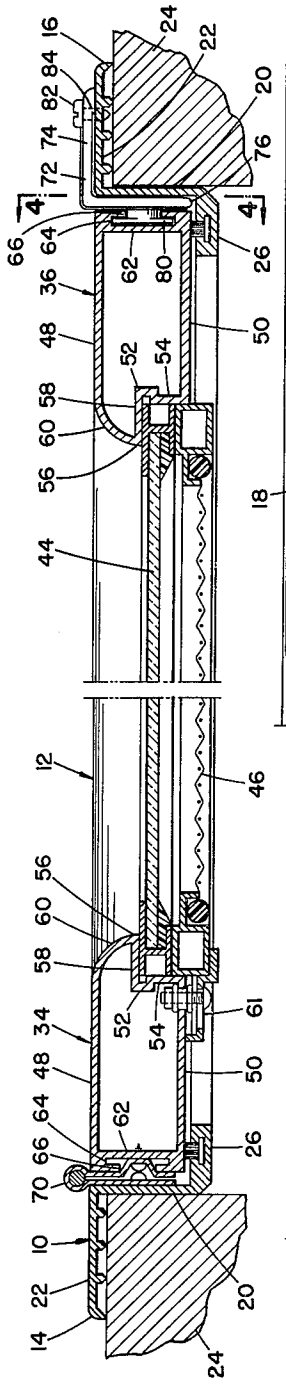


FIG. 2

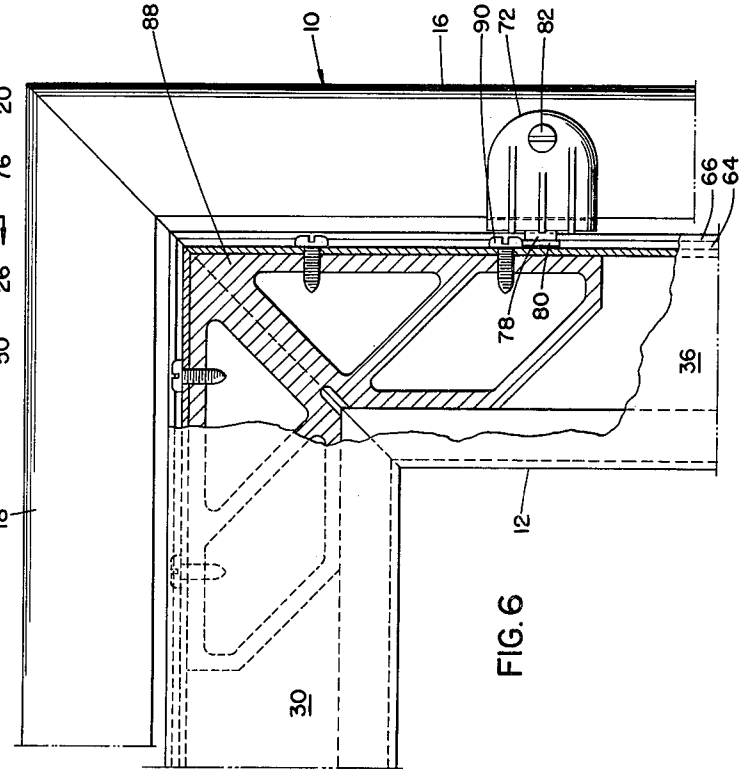


FIG. 6

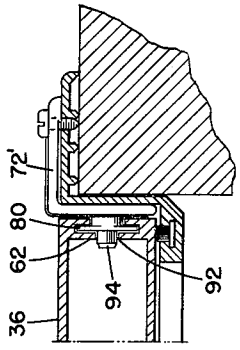


FIG. 7

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PACKAGED DOOR CASING AND PRE-HUNG DOOR

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3 Claims. (Cl. 189—46)

This invention relates to prehung metal doors, particularly to aluminum combination storm and screen doors, wherein the door and door casing are preassembled for shipment and emplacement in a doorway opening as a unit.

An object of the invention is to provide an improved transportable preassembled door and door casing incorporating improved clip means for preventing relative movement between the door and door casing during shipment; wherein the pre-hung door and door casing may be installed as a unit in a doorway opening so that the door will hang true and square in the casing without relative shimming and adjusting of one with respect to the other; and wherein the clip means is inexpensive to manufacture and is adapted to be applied and removed from the door and door casing with a minimum of labor.

More specifically it is an object to provide an assembly of the above described type wherein holes in the door frame members for application of the clip means are eliminated, thereby preventing unsightly perforations in the door frame after installation and rendering it unnecessary to close by one means or another such unsightly perforations, and eliminating also the labor involved in punching such holes and applying and removing screws prior to and after shipment of the unit.

These and other objects and advantages inherent in the invention and the manner in which they are realized will appear in the following description, which considered in connection with the accompanying drawings, set forth the preferred embodiment of the invention.

In the drawings:

FIGURE 1 is a view in front elevation of the improved pre-assembled door and door casing in readiness for shipment and emplacement as a unit;

FIGURE 2 is an enlarged sectional view taken on line 2—2 of FIGURE 1, with elements defining the doorway opening, in which the door and door casing are emplaced, shown fragmentarily;

FIGURE 3 is a view in perspective of the novel clip means;

FIGURE 4 is a view taken on line 4—4 of FIGURE 2 showing the clip applied in working position to the outer end wall of the side frame members of the door;

FIGURE 5 is a view similar to the view shown in FIGURE 4 with the clip applied in inserting position to the outer end wall of the side frame member of the door, from which position it may be turned 90° into its working position;

FIGURE 6 is an enlarged view of the upper right hand corner portion of the door and door casing of FIGURE 1, with parts broken away showing the relation of one of the clips with respect to the corner gusset of the door frame; and

FIGURE 7 is a fragmentary sectional view similar to the right hand portion of FIGURE 2, showing a slightly modified form of the door frame and clip.

Referring to the drawings, a door casing is indicated as a whole by the reference numeral **10** and a combination storm and screen door arranged to be mounted in the door casing **10** is indicated as a whole by the reference numeral **12**.

The door casing **10** includes upright side frame members **14** and **16**, and a header member **18**, all cut to suitable length from an aluminum or aluminum alloy extrusion so that their cross sectional configurations are identical in shape and size. The upper ends of side members **14** and **16** are joined to the opposite ends of header member **18** in any suitable conventional manner.

FIGURE 2 best shows the detailed construction of the casing upright side members **14** and **16**, it being understood that the header member **18** is similar in construction. The casing side members **14** and **16** are provided with a flat web or jamb portion **20** which with the similar portion of header member **18** define an opening for receiving the door **12**. One longitudinal edge of the flat web or jamb portion **20** is provided with a flange **22** projecting outwardly at right angles with respect to the plane of the flat web portion **20**. The flanges **22** of the casing side members **14** and **16** and header **18** are adapted to overlie the studs **24** or other structure of the building defining an opening for receiving the door and door casing. The longitudinal edge of the flat web or jamb portion **20** remote from the flange **22** is provided with a weather seal retaining flange **26** projecting inwardly at right angles with respect to the plane of the flat web portion **20** and against which the door **12** closes.

The door **12** includes a rectangular frame **28** comprising a horizontal top frame member **30**, a horizontal bottom frame member **32**, and a pair of oppositely disposed vertical side frame members **34** and **36**, cut to suitable lengths from hollow aluminum of aluminum alloy extrusions. The frame members are preferably cut from similar extrusions so that their cross sectional configurations are identical in shape and size.

As shown in FIGURE 1, the lower portion of the door **12** is provided with a horizontal cross rail **38** spaced above the bottom frame member **32** and suitably joined at its ends to the side frame members **34** and **36**. The space defined by cross rail **38**, bottom frame members **32** and the lower portions of side frame members **34** and **36** is adapted to receive a kick plate **40**. The portion of the door frame **28** above the cross rail **38** is preferably divided by a horizontal cross rail **42** suitably joined at its ends to the side frame members **34** and **36**, and each of the openings so formed is adapted to alternatively receive a glazed sash insert **44** or a screen sash insert **46**. However, for purpose of shipping the pre-hung door to the site of installation, both a glazed sash and a screen sash are disposed and retained in each of the openings, as hereinafter described and as shown in FIGURE 2.

As shown in FIGURE 2, the hollow side frame members **34** and **36** each includes an outside wall **48** and a parallel inside wall **50** integrally joined at their inner edges by an irregularly shaped inner end wall **52**. In cross section, the inner end walls **52** include a planar wall section **54** disposed at right angles with respect to the plane of inside wall **50** and extending from the inner edge thereof toward but terminating short of outside wall **48**. An inwardly projecting insert retaining abutment or shoulder **56** of the inner end wall **52** extends from the extended edge of the wall section **54** to the inner edge of the outside wall **48** and includes a planar wall section **58** disposed at right angles with respect to the plane of the wall section **54**, and a contoured wall section **60** joining the inner edge of wall section **58** with the inner edge of outside wall **48**. It will be understood that the top and bottom frame members **30** and **32** are similarly designed whereby the recess at the inside inner marginal edge of the door frame **28** formed by the wall sections **54** and **58** is adapted to receive the glazed or screen inserts **44** and **46** and the kick plate **40**.

For purpose of shipment, both the glazed and screen inserts **44** and **46** may be retained in the recess defined

by the inner wall sections 54 and 58 of the door side frame members 34 and 36 by means of offset flanged type clips 61, as best shown in FIGURE 2. When installing the door casing 10 and prehung door 12, the glazed and screen inserts 44 and 46 are removed by detaching the clips 61, one leg of each of which is adjustably secured to the inside wall 50 of each of the door frame members 34 and 36. After installing the door casing 10 and prehung door 12, one or the other of the inserts 44 and 46 may be re-inserted and retained by turning the clips 61 over and adjusting them inwardly.

As best shown in FIGURES 2, 4 and 5, an outer end wall 62 integrally joins the outer edges of outside and inside walls 48 and 50 of the door side frame members 36. End wall 62 is provided with a longitudinally extending undercut slot that is T-shaped in cross section including an inner slot 64 and a communicating slot 66 which opens through the outer side of the end wall 62. As clearly shown, the inner slot 64 is of substantially greater width than the outer slot 66. The outer end wall of the door top frame member 30 is provided with similar slots, not shown, and the purpose of the T-shaped slotted outer end walls is hereinafter explained. The opposite side frame member 34 and the bottom frame member 32 are preferably provided with similarly configured outer end walls so that all of the frame members may be formed from the same extrusions, though in the case of the side frame member 34 and the bottom frame member 32, the T-shaped slots in their respective outer end walls are not functionally essential.

In pre-assembling the door 12 and door casing 10, one vertical side frame member of the door 12, in the present instance the side frame member 34, is hingedly connected to the adjacent upright side frame member 14 of the door casing 10. The hinge 70 may be a full length piano type hinge as shown, or any other suitable type of hinging means may be employed. As best shown in FIGURE 2, one leaf of the hinge 70 is secured to the jamb portion 20 of the casing side frame member 14, while the other leaf of the hinge 70 is secured to the outer end wall 62 of the door side frame member 34.

With the door side frame member 34 hingedly attached to the casing side frame member 14, as described above, relative movement therebetween except for swinging movement about the axis of the hinge is prevented. However, the opposite casing side frame member 16 is free to twist, rack or spread relative to the door side frame member 36 during handling, shipment and emplacement, so that the door will not hang true and square in the door casing.

To obviate these objections, I provide the novel temporary clips 72, preferably formed of "nylon" or other suitable plastic in order to prevent marring of portions of the door frame and casing engaged by the clips 72. It is apparent however, that functionally other materials such as aluminum may be employed. The clips 72 cooperate with the door casing 10 and the door 12 to maintain them in relatively rigid relation one with the other during handling, shipment, and emplacement in a doorway opening, whereby upon emplacement the door 12 will hang true and square in the door casing 10. The cooperative relation of the clips 72 with the door frame member is such as to eliminate the use of screws or other means for fastening the clips to the door frame member, which is an important feature of the invention.

One of the clips 72 will now be described in detail, it being understood that all the clips 72 are identical in construction. The temporary clip 72, applied to the assembled door and door casing at the factory site, includes the planar legs 74 and 76 integrally joined along a common edge and disposed at right angles wtih respect to each other. In working position applied to the assembled door and door casing, as best shown in FIGURE 2, the leg 74 overlies the flange 22 of the casing side frame member 16, and the leg 76 extends between the jamb portion 20 of

the casing side frame member 16 and the outer end wall 62 of the door side frame member 36. The face of the leg 76 confronting the outer end wall 62 of the side frame member 36 is provided with a boss 78 adapted to project through the outer slot 66 of the outer end wall 62. At its free end, the boss 78 is provided with a locking member in the form of a generally oblong shaped flange 80 disposed in spaced planar parallelism with respect to the leg 76 of the clip 72.

The shorter dimension of the generally oblong shaped flange 80 is slightly less than the width of the outer slot 66 of the door frame outer end wall 62 so that it will pass therethrough upon applying the clip to the door frame outer end wall in inserting position, as best shown in FIGURE 5. The overall longer dimension of the generally oblong shaped flange 80 is as closely equal as possible to the width of the inner slot 64 of the door frame outer end wall 62, and its thickness is closely equal to the depth of the inner slot 64, so that in working position, as shown in FIGURES 2 and 4, it will snugly fit the inner slot 64. In order to permit turning of the clip 72 from its inserted position, as in FIGURE 5, through 90° to its working position, as in FIGURE 4, one pair of diagonally opposite corners of the flange 80 are formed as arcs of a circle described from the axis of the boss 78 and having a diameter as nearly equal as possible to the width of the inner slot 64. The arcs extend from the midpoints of the shorter edges of the flange 80 to a point of intersection with a respective longer edge of the flange 80.

It will now be seen that with the door 12 swung partly open from the door casing 10 about hinged connection 70, the clip 72 may be applied to the door frame outer end wall 62, as shown in FIGURE 5 and as described above. The clip 72 may now be turned through 90°, so that the straight portions of the shorter edges of the flange 80 engage the opposite lateral edges of the door frame outer end wall 62 that define the inner slot 64, as shown in FIGURE 4. Now, upon closing the door so that the leg 74 of the clip 72 overlies the flange 22 of the casing side frame member 16, a self tapping screw 82, extending through a prepunched hole 84 in the leg 74 of the clip 72 and one of the pre-punched holes 86 in the casing flange 22, is employed to secure the clip 72 to the casing side frame member 16. As previously stated, several of such clip arrangements may be spaced along and applied in similar manner to the casing side frame member 16 and the door side frame member 36. One or more such clips may also be applied in similar manner to casing header member 18 and the door top frame member 30.

With the clips 72 applied as above described in their working position, it will be seen that the snug engagement of the generally oblong shaped flange 80 of the clips in the inner slot 64 of the door side frame member 36, prevents lateral spreading of the casing side frame member 16 with respect to the door side frame member 36, it further prevents swinging movement of the casing side frame member 16 fore and aft with respect to the plane of the door 12, as well as any substantial relative longitudinal movement between the casing side frame member 16 with respect to the door side frame member 36. The possibility of any such relative longitudinal movement is entirely eliminated by the clip 72 applied to the casing header member 18 and the door top frame member 30.

At the site of installation, the sash securing clips 61 are removed, whereupon the glazed and screen sashes 44 and 46 are lifted from the door frame 28. The pre-assembled door and casing is now installed in the doorway opening and installation screws (not shown) are inserted in the pre-punched holes 86, except of course those pre-punched holes in which the clips 72 are secured, and are screwed into the stud 24 or other structure defining the doorway opening. Similar installation screws are inserted in the pre-punched holes 86 in the casing side frame member 14 and header member 18 and screwed into the doorway opening framing structure. Clips 72 are then

removed by unscrewing the self tapping screws **82**, after which installation screws may be substituted and screwed into the doorway opening framing structure.

Referring particularly to FIGURE 6, wherein a corner gusset **88** is employed in conventional manner at the miter joined adjacent ends of the door frame members for purpose of reinforcing the door, a clip **72** may be applied so that in its working position, the flange **80** engages underneath the head of a screw **90** that secures the gusset **88** to the door frame member **36**, whereby to further insure against any possible sagging of the door in the door casing.

FIGURE 7 shows a slightly modified form of the invention, parts similar to the first form of the invention being identified by similar reference characters. In this form of the invention the end wall **62** of the door side frame member **36** is provided with an aperture **92** adapted to snugly receive a boss **94** formed with and extending outwardly of the locking flange **80** of the clip **72'**.

I claim:

1. In a pre-assembled door and casing, said casing having side and top frame members including jamb portions which in the assembled door and casing extend along the side end faces and top end face of said door and including flanges extending laterally outward of the plane of said jamb portions, means hingedly securing one side end face of said door to one casing side frame member, the end faces of said door confronting the jamb portions of the other casing side frame member and the top frame member having formed therein longitudinally extending outwardly opening undercut T-shaped slots, L-shaped clip means retaining the assembled door and casing in fixed relation with respect to each other, said clip means including planar legs joined along a common edge, a T-shaped locking member formed integrally with and extending outwardly of one of said planar legs, the stem portion of said T-shaped locking member being formed as a boss extending in an axially normal direction from the outer face of one of said planar legs, said boss being dimensioned to be insertable through and rotatable in the entrant portion of said undercut T-shaped slot, the cross portion of said T-shaped locking member being formed as a planar oblong shaped flange on the outer end

of said boss disposed in a plane parallel with respect to the plane of said one clip leg, the shorter dimension of said oblong shaped flange being less than the width of the entrant portion of said undercut T-shaped slot, for insertion of said flange therethrough, the overall longer dimension of said flange being equal to the width of said undercut T-shaped slot, the diagonally opposite corner portions of said flanges being formed on a radius such that said clip means is turnable through 90° to effect engagement of the lengthwise ends of said flange with the side walls defining the undercut portion of said T-shaped slot for orienting said clip means so that the other leg of said clip means in said turned position of said clip means is disposed in planar overlying engagement with said casing frame flange, and means cooperating with said other leg securing said clip means to said casing frame member flange.

2. A pre-assembled door and casing as set forth in claim **1**, wherein the diagonally opposite corners of said oblong locking flange are formed on radii substantially equal to one-half the width of the inner portion of said T-shaped slot, whereby said clip means is rotatable from its inserting position through 90° to its locking position.

3. A pre-assembled door and casing as set forth in claim **1**, wherein the thickness of said oblong locking flange is substantially equal to the depth of the inner portion of said T-shaped slot, whereby to inhibit relative spreading movement between said door and casing frame members.

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