Oct. 3, 1961 B. A. QUINN 3,002,592

HINGE AND METALLIC FRAME CONSTRUCTION

Filed May 6, 1960

FIG. 1

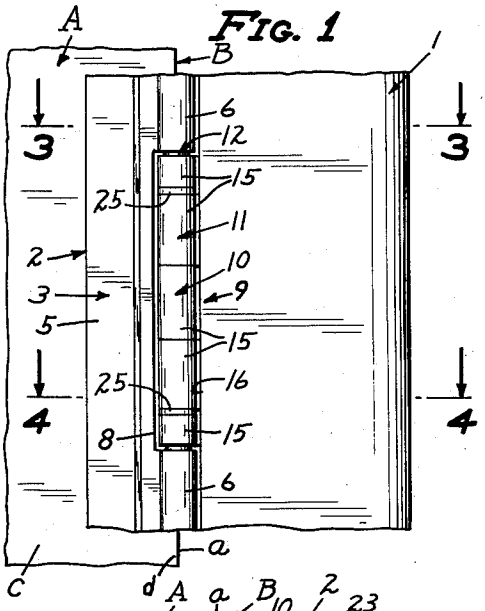


FIG. 2

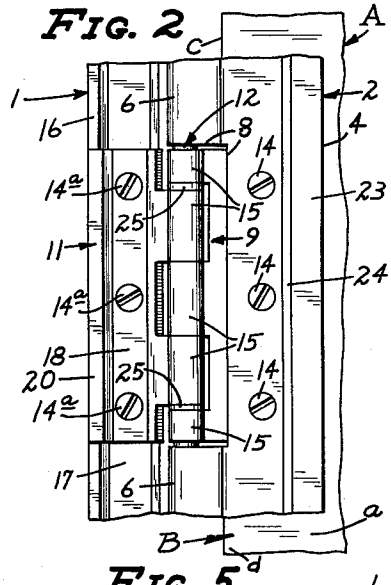


FIG. 3

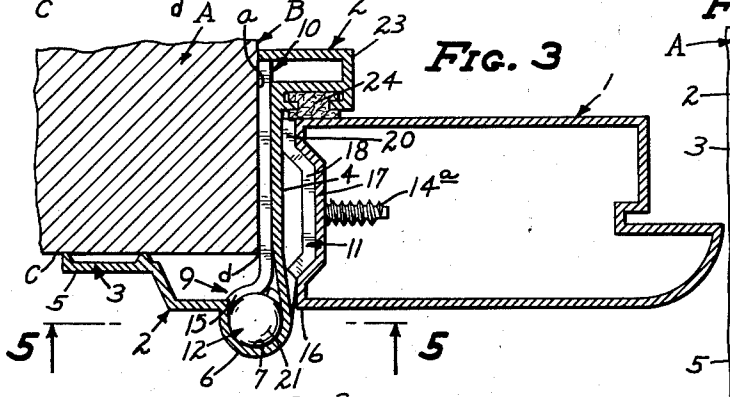


FIG. 5

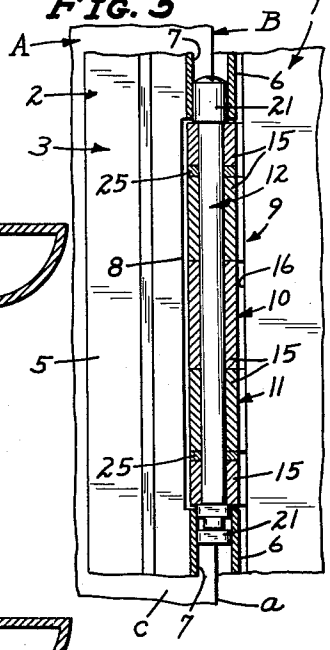
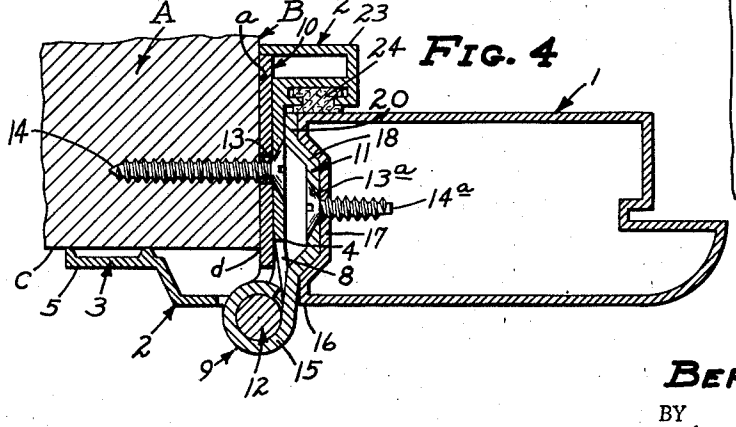


FIG. 4



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HINGE AND METALLIC FRAME CONSTRUCTION

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This invention relates generally to hinged closures and more particularly to a novel hinge and metallic frame construction used in framing an opening in a wall and for hanging a hinged closure thereto.

More specifically, my invention comprises novel means for hanging a door or window frame to a casing section particularly when the same is made from metal having relatively thin wall sections such as extruded steel or aluminum. When the door or window frames and casing sections are made from such an extruded material, the problem of satisfactorily anchoring the connecting hinges thereto is presented. Therefore, an important object of this invention is the provision of a hinge and metallic frame construction for use in hanging a hinged closure to a casing section which will not become loosened or malaligned under prolonged use.

Another object of this invention is the provision of a hinge and metallic frame construction in which the hinge pintle journals are axially aligned with the casing section so as to prevent protrusion exposure of the hinge pintles.

Another object of this invention is the provision of a hinge and metallic frame construction in which the ends of the hinge pintles are completely enclosed within the casing section so as to prevent removal of the same when the door is closed.

Still another object of my invention is the provision of a hinge and metallic frame construction which includes novel means for anchoring a hinge to a cooperating closure member.

Other objects of my invention reside in the provision of a hinge and metallic frame construction as set forth which can be manufactured at a relatively low cost, which is efficient in its operation, which is rugged in construction, and which is durable in use.

The above and still further important objects of my invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings, which illustrate the invention, and in which like characters indicate like parts or elements throughout the several views:

FIG. 1 is a fragmentary view in front elevation of a portion of a closure and casing section and showing the hinge of my invention;

FIG. 2 is a view in elevation of the elements shown in FIG. 1, the hinge being in its fully opened position;

FIG. 3 is a horizontal sectional view taken on the line 3—3 of FIG. 1;

FIG. 4 is a horizontal sectional view taken on the line 4—4 of FIG. 1; and

FIG. 5 is a view in vertical section taken on the line 5—5 of FIG. 3.

Referring to the drawings, and particularly to FIG. 1 thereof, the reference letter A represents a wall having an opening or doorway B therein. The reference numeral 1 represents generally a hinged closure, such as a door or window, which is hung within the generally rectangular metallic frame, a portion thereof being shown and represented generally by the reference numeral 2.

The frame 2 comprises casing sections, a portion of one thereof being shown and represented generally by the reference numeral 3, which have an elongated transverse flange 4 adapted to be secured to the transverse marginal wall surface *a* which defines the opening B in

the wall A. The casing section 3 further comprises a longitudinally extending trim flange 5 which is formed integrally with and generally normal to the transverse flange 4 and is adapted to overlie the portion *c* of the wall A adjacent the opening B so that the casing section 3 is superimposed over the wall corner *d* defined by the transverse wall surface *a*.

It will be noted that the junction of the transverse flange 4 and the trim flange 5 defines a corner bead 6. The axis of the corner bead 6 extends longitudinally with respect to the casing section 3. The corner bead 6 defines a recess 7 which opens inwardly toward the enclosed wall corner *d* when the casing section 3 is secured to the wall A. The corner bead 6 is preferably, and as shown, formed so as to be cross-sectionally generally semicylindrical, and is interrupted at longitudinally spaced intervals so as to define hinge receiving apertures, one of which is shown and represented by the reference numeral 8.

In accordance with my invention, and in the normal construction, a pair of hinges are provided for pivotally anchoring the closure 1 to the casing section 3, the hinges being associated with and at least partially received within a different one of the apertures 8, and one of the hinges being shown and represented generally by the reference numeral 9. The hinge 9 comprises a pair of leaves, represented generally by the reference numerals 10 and 11, and a pintle 12. One of the leaves 10 is adapted to be interposed between and rigidly secured to the transverse wall surface *a* and the casing section 3 so that the axis of the pintle 12 coincides substantially with the axis of the corner bead 6 as seen particularly in FIG. 3. The leaf 10 defines a plurality of longitudinally spaced apertures 13 which receive corresponding screws 14 for securing the leaf 10 in its above described position. Both of the hinge leaves 10, 11 define axially spaced cooperating pintle journals 15 which are disposed in axial alignment with the corner beads 6 when the hinge 9 is secured in its above described position to the casing section 3.

The hinge leaf 11 is adapted to be rigidly secured to the closure 1, as will hereinafter be described. The leaf 11 also defines a plurality of apertures 13*a* which receive corresponding screws 14*a* for securing the same to the closure 1, as seen particularly in FIGS. 2 and 4. For the purpose of adding rigidity to the connection of the hinge 9 to the closure 1, the edge portion 16 of the closure 1 is formed so as to define a longitudinally extending keyway 17, and the leaf 11 is likewise formed so as to define a longitudinally extending key 18 which conforms to the keyway 17. The radially outer edge 19 of the hinge leaf 11 is further formed so as to define a longitudinally extending abutment 20 which stops against the transverse flange 4 of the casing section 3 when the closure 1 is in its closed position.

As seen particularly in FIG. 5, the pintle 12 is of a greater axial length than the hinge 9 and the aperture 8, and defines upset and enlarged opposite end portions 21. In accordance with my invention, the corner bead 6 of the casing section 3 is formed to be generally cross-sectionally U-shaped and has an inner diameter approximating the diameter of the enlarged end portions 21 of the pintle 12. The enlarged end portions 21 of the pintle 12 are received from a generally laterally introduced direction within the recess 7 and so positioned therein when the leaf 10 is in its secured position so as to provide additional means for anchoring the closure 1 to the casing section 3. The upset end portions 21 are formed in a conventional manner so as to extend radially outward in engagement with the recess 7 of the corner bead 6 when the hinge 9 is disposed in its above described position. It will be noted that the transverse flange 4 of the casing section 3

defines an integrally formed longitudinally extending stop flange 23 which carries the weather stripping 24. It will also be noted that the hinge 9 is preferably, and as shown, constructed with a pair of bearing washers 25 interposed between adjacent pintle journals 15, as seen particularly in FIG. 4.

Having specifically described my invention, the useful advantages inherent therein will be noted. After assembling the hinge 9 in the conventional manner by inserting the pintle 12 within the cooperating pintle journals 15, the plain undeformed pintle ends, not shown, are upset so that they have a diameter which corresponds generally to the inner diameter of the corner bead 6. Then the hinge leaf 10 is received within the aperture 8 in the casing section 3, with the upset end portions 21 of the pintle 12 being snugly received within the recess 7. It is this latter engagement which is an extremely important feature of this invention because of the additional anchoring means provided thereby. After assembling the hinge 9 within the casing section 3, both thereof are secured to the transverse wall surface *a* by means of the screws 14 so that the casing section 3 is superimposed over the wall corner *d*, as seen particularly in FIG. 3. Then the other hinge leaf 11 is secured to the closure 1 by means of the screws 14*a*. It will be obvious from the above description, that a hinge and metallic frame construction is provided which has very desirable anchoring qualities with relation to the relatively weak material from which the same is constructed.

This invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects; and while I have shown a preferred embodiment thereof, I wish it to be specifically understood that the same may be modified without departure from the scope and spirit of the appended claim.

What I claim is:

A hinge and metallic door frame construction for use in framing a doorway and for hanging a door thereto and comprising, a casing section having an elongated transverse flange adapted to be secured to a transverse marginal surface of said doorway, said casing section also having a longitudinally extending trim flange formed integrally with and generally normal to said transverse flange and adapted to overlie an adjacent wall surface of said doorway so that said section is super-imposed over the wall corner defined by said transverse surface and said wall surface, the junction of said transverse flange and said trim flange of said casing section defining a corner bead the axis of which extends longitudinally of said section, the corner bead defining a recess which opens inwardly toward the enclosed wall corner when said casing section is secured to said wall, said bead being interrupted at longitudinally spaced intervals so as to define hinge receiving apertures, and a pair of hinges for pivotally anchoring said door to said casing section, said hinges each being associated with and at least partially received within a different one of said apertures, said hinges each comprising a pair of leaves and a pintle, said pintle being of a greater axial length than its associated aperture and also its associated leaves, said pintle also defining upset and enlarged opposite end portions, said corner bead of said casing section being generally cross-sectionally U-shaped and having an inner diameter approximating the diameter of said enlarged end portions of said pintle and said enlarged end portions of said pintle being received from a generally laterally introduced direction within said recess and so positioned therein as to anchor said hinge within said corner bead of said casing section, and with respect to each of said hinges, one of the leaves thereof being rigidly secured intermediate said casing section and said transverse wall surface and the other of said leaves being adapted for rigid securement to said door.

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