Sept. 7, 1965 C. L. EADS 3,204,439

LOCK MOUNTING MEANS FOR NARROW STILE DOOR

Filed April 8, 1963

Fig. 1.

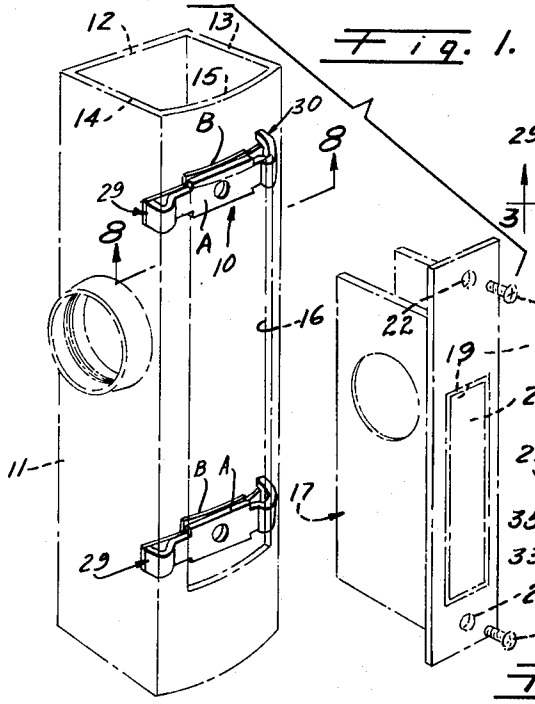


Fig. 2.

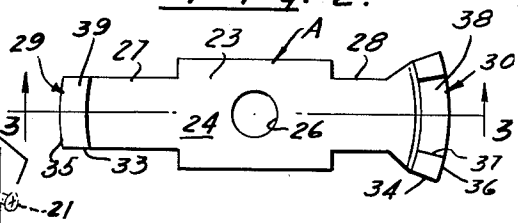


Fig. 3.

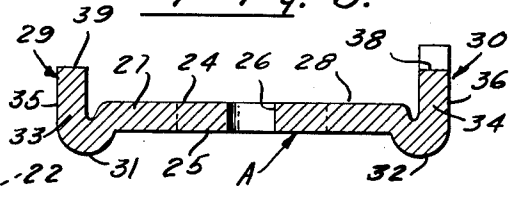


Fig. 4.

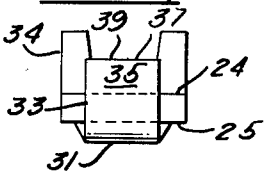


Fig. 5.

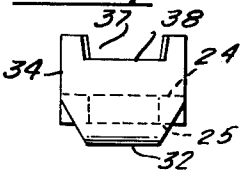


Fig. 6.

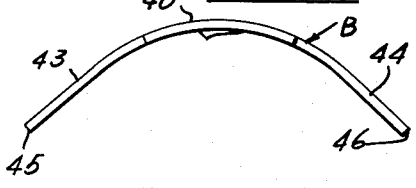


Fig. 7.

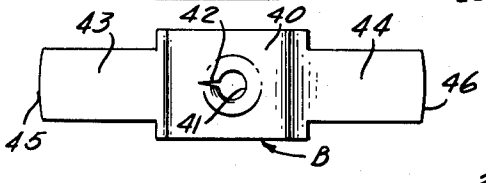


Fig. 8.

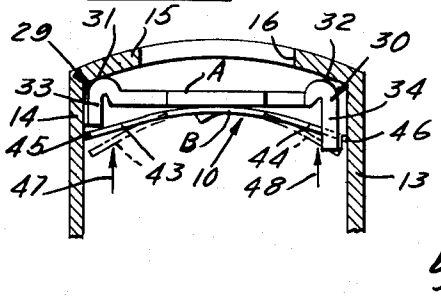


Fig. 9.

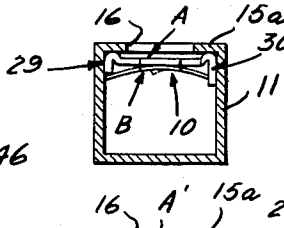
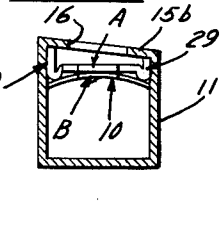


Fig. 10.



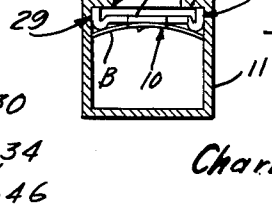


Fig. 11.

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LOCK MOUNTING MEANS FOR NARROW STILE DOOR

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10 Claims. (Cl. 70—451)

The present invention relates generally to means for mounting a lock on a door frame member, and is more particularly concerned with clip means for such purpose, which may be utilized for the edge mounting of a lock structure in an edge opening of a hollow narrow stile door frame.

Heretofore, it has been the practice to utilize a variety of securing means for the mounting of locks, particularly in narrow stile types of extrusions. In the main, the various securing devices have been inflexible, expensive, awkward to install, and time consuming. Examples of arrangements heretofore utilized may be mentioned as follows:

(a) One method was to drill and tap the back wall of the extrusion. This arrangement necessitated the use of long screws and suitable spacers. It lacked flexibility, and was time consuming. Further, the use of this arrangement sometimes resulted in cracking the glass mounted in the frame member.

(b) Another arrangement consisted in the use of end mounting clips on the lock. This arrangement entailed machine operations on the lock to accommodate the clips, and was necessarily expensive and quite inflexible.

(c) Another arrangement entailed the use of a special extrusion having a thick nose which could mortise into the lock structure. This was expensive and inflexible.

(d) Still other arrangements utilized a bracket or cradle with a spring to push the lock into position.

Having in mind the inherent disadvantages of the conventional means and methods of mounting locks in extruded hollow door frames, particularly of the narrow stile type, it is one object of the present invention to provide a foolproof clip structure which may be quickly positioned through the lock mounting opening in the nose wall of the frame, and easily manipulated to independently secure it in the desired mounted position to receive the mounting plate of the lock and the securing screws therefor.

A further object of the invention is to provide clip means of composite construction, which readily accommodates to door frame variations with respect to depth and width, and which is not affected by the usual differences in wall thickness of the extruded frame member.

Another object is to provide lock mounting clip means which may be utilized with door stile frame members having different nose wall shapes, such as rounded or radius, flat and bevelled.

It is also an object of the invention to provide a clip structure which will serve to strengthen and laterally hold the stile side walls at the lock opening in spaced relation, and in its mounted position will distribute forces adjacent the front and back faces of the stile frame.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

Referring to the accompanying drawings, which are for illustrative purposes only:

FIG. 1 is an exploded perspective view showing a stile extrusion and associated lock frame structure in phantom, and the manner in which the mounting means of the present invention, as shown in full lines, is assembled and utilized;

FIG. 2 is a plan view of the bracket member of the composite clip according to the present invention;

FIG. 3 is a longitudinal axial section of the same, taken substantially on line 3—3 of FIG. 2;

FIG. 4 is an end elevation looking towards the left end of the bracket member as it appears in FIG. 3;

FIG. 5 is an elevational view looking towards the opposite end;

FIG. 6 is a side elevational view of the spring retainer member of the mounting means of the present invention;

FIG. 7 is a top plan view of the same, oriented as shown in FIG. 6;

FIG. 8 is a sectional view schematically illustrating the manner of mounting the holding means within a stile frame extrusion having a rounded or radius nose wall, taken substantially on line 8—8 of FIG. 1;

FIG. 9 is a cross sectional view diagrammatically showing the manner in which the mounting means are utilized in a narrow stile extrusion having a flat nose wall;

FIG. 10 is a similar view for a stile extrusion having a bevelled or slanting nose wall; and

FIG. 11 is a similar view utilizing a slightly modified bracket member for a stile extrusion having a flat nose wall.

Referring now to the drawings, for illustrative purposes, the manner of utilizing the holding means of the present invention is shown in FIG. 1. The mounting means, as generally indicated at **10**, is arranged to be mounted within an extruded hollow narrow stile **11** which forms the frame structure of a door, and which normally includes a bottom wall **12**, side walls **13** and **14** and a top or nose wall **15**.

The nose wall in the conventional arrangement is provided with an elongate slot or opening as indicated by the numeral **16** which is adapted to receive the frame structure as generally indicated at **17** of a lock mechanism. This frame structure is provided with a lock mounting plate **18** adapted to fit within the opening **16**. The lock mounting plate is provided with opening **19** through which a bolt **20** of conventional construction is extended and retracted into locking and non-locking positions.

The mounting means **10** of the present invention is arranged to be secured within the stile **11** in positions bridging the opening **16** and being provided with means, as will hereinafter be described in detail for receiving securing screws **21** when in securing position in screw receiving openings **22—22** at the ends of the lock mounting plate. In the usual installation, a trim plate (not shown) is adapted to be secured to the lock mounting plate.

The mounting means **10** are of composite construction which embodies a bracket member A and spring retainer member B which are arranged to be cooperatively associated to provide a clip structure adapted to be secured within the narrow stile of the door frame in proper position to provide mounting means for the lock frame, and in which the bracket member and retainer member are so constructed as to permit utilization of the mounting means in stile structures which may vary as to width, and which may slightly vary as to the thickness of its walls. The parts of the mounting means will now be described in detail.

The bracket member A is constructed from a sheet material, such as steel or other appropriate material, of uniform thickness, and which will provide a rigid construction. As shown in FIGS. 2 and 3, the bracket member A is formed between its ends with a flat substantially rectangular central portion **23** having surface faces **24** and **25**, the central portion being centrally pro-

vided with an opening 26, the axis of which is at right angles to the faces 24 and 25. Integrally formed end extensions 27 and 28 project in opposite directions from the central portion, these extensions being shown as of slightly reduced width over that of the central portion 23. The extensions 27 and 28 respectively terminate in J-shaped end portions as generally indicated at 29 and 30.

The end portions are so arranged that the curved base parts 31 and 32 respectively project beyond the adjacent face 25, while the leg portions 33 and 34 extend generally at right angles to the central portion and respectively project beyond the face 24 thereof. Transversely, the leg portions are arcuate and present curved surfaces 35 and 36 respectively having centers of curvature coincident with the center of opening 26. These curved surfaces permit rotational adjustment about the center of curvature when locating the bracket member within the stile. As shown in FIG. 5, the leg portion 34 is provided with a notch 37, the bottom of the notch being defined by an edge 38 which is disposed the same distance from the face 24 as the end edge 39 of leg 33.

The spring retainer member B, as primarily shown in FIGS. 6 and 7 is constructed of appropriate spring material of uniform thickness and like the bracket member is similarly constructed with a central portion 40 of substantially rectangular projection, this portion being longitudinally curved or arcuate and provided with a central opening 41, the edge of which is radially slit, as indicated at 42, and then spiralled to form in effect a single thread for engagement with a mounting screw.

The central portion 40 is likewise in this case provided with integrally formed extensions 43 and 44 which are of less width than the width of the central portion 40 and terminate in arcuate end edges 45 and 46 respectively having centers of curvature which are coincident with the central axis of the opening 41. The extensions 43 and 44 form in effect angularly disposed resilient fingers.

The procedure in securing the mounting means in the narrow stile extrusion will now be explained, reference being made to FIG. 8. In this instance, the mounting means consisting of the bracket member A and the spring retainer member B are positioned in superimposed relation with the bracket member uppermost within the stile so as to extend transversely at the desired position across the stile in bridging relation to the opening 16. In this position, the base parts 31 and 32 will engage the curved inner surface of the nose wall respectively on opposite sides of the opening 16. The leg portions 33 and 34 extend downwardly adjacent the inner surfaces of the side walls 14 and 13, respectively.

The spring retainer member B is longitudinally aligned below the bracket member with its opening 41 in axial registration with the opening 26 of the bracket member. As thus disposed, the finger extensions 43 and 44 will be in the positions shown in dotted lines. By means of a suitable tool, upwardly directed pressure is then applied to the fingers 43 and 44 substantially at the positions and in the directions indicated by the arrows 47 and 48. This causes deflection of the fingers towards the adjacent ends of the bracket member A, this movement being limited by the edges 38 and 39. During this movement, the arcuate end edges 45 and 46 of the spring retainer member will be carried into engagement with the adjacent inner wall surfaces of the side walls 14 and 13 of the stile extrusion, and the edges caused to bitingly grip these surfaces so that the spring retainer member will act to position and hold the bracket member A in its operative position. It will be observed that during the deflection of the fingers 43 and 44, the finger 44 passes into the notch 37 and thus holds the two members against relative rotational movement. The securing screws 21 in each case would pass through the opening 26 of the bracket member and the threads engaged by the spiralled edge of the opening 41, thus permitting tightening of the securing screws.

Referring to FIG. 9, it will be observed that the same disposition of the bracket member and spring retainer member are utilized in the case of a stile extrusion having a flat nose wall as indicated by the numeral 15*a*.

Where the nose wall is inclined or bevelled, as indicated by the numeral 15*b* in FIG. 10, the bracket member is turned upside down and positioned so that the end portion 30 will be positioned on the most elevated side of the nose wall. Thus the different leg portions compensate for the angle or bevel on the nose wall and result in a horizontal positioning of the bracket member.

As shown in FIG. 11, there may be installations wherein it is desirable to slightly modify the bracket member A for use in inverted position as shown in FIG. 11. For such installations, the leg portions at the ends of the bracket member may be made of the same length. In other words, both J-shaped end portions would be made similar to the end portion 29.

From the above, it will be readily apparent that the lock mounting means composed of the bracket member A and spring retaining member B are of such construction that flexibility of mounting will be obtained under variable installation conditions, and that the mounting means provide an improved arrangement in the form of a composite clip structure for the mounting of locks, which is particularly advantageous in the case of narrow stile door frame extrusions.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention, and, hence, I do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims, wherein various portions have been separated for clarity of reading and not for emphasis.

I claim:

1. Means for mounting a lock in a wall opening of a tubular narrow stile of a door frame structure, comprising:

(a) an elongate rigid first member having opposite ends adapted to abut adjacent wall inner surface portions, when positioned within the narrow stile adjacent the wall opening therein, said member having an opening between its ends; and

(b) a cooperable elongate bowed resilient member adapted to be longitudinally aligned contiguous the first member with a central portion thereof engaging the first member and its ends initially spaced from the ends of said first member, said ends of the second member being deflectable towards the ends of the first member into gripping holding engagement with the adjacent inner side wall surfaces of the stile, said central portion of the second member having a threaded opening adapted to engage a lock holding screw extending through the said opening of the first member.

2. Clip means for mounting a lock in a wall opening of a tubular narrow stile of a door frame structure between spaced stile side walls, comprising:

(a) an elongate rigid part having an opening and being adapted to be positioned within the stile so as to extend transversely between said side walls adjacent the stile wall opening;

(b) an adjacent aligned elongate part for retaining said rigid part in said position, said part having an opening and resilient end portions respectively normally lying in angular extending relation to the ends of said rigid part, but being swingably deflectable towards the ends of said rigid part to positions in which the end termini of the resilient end portions are positioned beyond the end termini of the rigid part in gripping contact with said side walls; and

(c) means carried by one of said parts for threadedly

engaging a mounting screw positioned in the openings of said parts.

3. Clip means for mounting a lock in a wall opening of a tubular narrow stile of a door frame structure tween spaced stile side walls, comprising:

(a) an elongate rigid part adapted to be positioned within the stile so as to extend transversely between said side walls adjacent the stile wall opening, said part having a centrally apertured generally flat portion terminating in deformed end margins, each of said end margins projecting in opposite directions beyond the flat portion;

(b) an adjacent aligned part having a central aperture and resilient end portions respectively normally lying in angular extending relation to the end margins of said rigid part, but being swingably deflectable towards the end margins of said rigid part to positions in which the resilient end portions extend beyond the end margins of the rigid part for engagement with said side walls; and

(c) means carried by one of said parts for threadedly engaging a mounting screw positioned in said apertures.

4. Clip means for mounting a lock in a wall opening of a tubular narrow stile of a door frame structure between spaced stile side walls, comprising:

(a) an elongate rigid backing part adapted to be potioned within the stile so as to extend transversely beween said side walls adjacent the stile wall opening, said part having a central flat portion terminating at its opposite ends in substantially right angled end portions, each having an outer arcuate end face, said flat portion having an opening for receiving a fastening member extending perpendicular to said flat portion; and

(b) deflectable spring gripping fingers connected by said fastening member with said rigid part and at the end portions thereof being adapted for movement to gripping positions in which their ends will engage surfaces of said side walls positioned adjacent the arcuate end faces of said end portions.

5. Clip means for mounting a lock in a wall opening of a tubular narrow stile of a door frame structure bebetween spaced stile side walls, comprising:

(a) an elongate rigid backing member having a central portion with an upper surface and a lower surface, the rigid member terminating at its opposite ends in substantially right angled end portions, each of said end portions having an abutment projecting beyond the upper surface, and a finger projecting beyond the lower surface; and

(b) means connected with said rigid member including an element associated with each of said fingers adapted for movement to a gripping position with respect to a side wall surface positioned adjacent the associated end portion of said member.

6. Clip means for mounting a lock in a wall opening of a tubular narrow stile of a door frame structure between spaced stile side walls, comprising:

(a) an elongate rigid backing member having a central portion with an upper surface and a lower surface, said rigid member terminating at its opposite ends in substantially right angled end portions, each of said end portions having an abutment projecting beyond the upper surface, and a finger projecting beyond the lower surface, the finger at one end portion projecting a greater distance than the finger at the other end portion; and

(b) means connected with said rigid member including a spring element associated with each of said fingers adapted for movement to a gripping position with respect to a side wall surface positioned adjacent the associated end portion of said member.

7. Clip means for mounting a lock in a wall opening of a tubular narrow stile of a door frame structure between spaced stile side walls, comprising:

(a) an elongate rigid backing member having a central portion with an upper surface and a lower surface, said rigid member terminating at its opposite ends in substantially right angled end portions, each of said end portions having an abutment projecting beyond the upper surface, and a finger projecting beyond the lower surface, the finger at one end portion projecting a greater distance than the finger at the other end portion and having an end notch therein; and

(b) means connected with said rigid member including a spring element associated with each of said fingers adapted for movement to a gripping position with respect to a side wall surface positioned adjacent the associated end portion of said member, the spring element at the said one end portion being adapted to enter said notch in said gripping position.

8. As an article of manufacture, clip means including an elongate rigid member formed from a flat blank, comprising:

(a) a flat portion having a central opening therein; and

(b) a J-shaped portion integrally formed at each end of said flat portion and positioned so that its curved base extends beyond one face of the flat portion, and the leg portion thereof extends at a right angle to the flat portion and projects beyond the other face of the flat portion, each of said J-shaped portions having an outer curved surface with a center of curvature coincident with the center of said opening.

9. As an article of manufacture, clip means including an elongate rigid member formed from a flat blank, comprising:

(a) a flat portion having a central opening therein; and

(b) a J-shaped portion integrally formed at each end of said flat portion and positioned so that its curved base part extends beyond one face of the flat portion, and the leg portion thereof extends at a right angle to the flat portion and projects beyond the other face of the flat portion, each of said J-shaped portions having an outer curved surface with a center of curvature coincident with the center of said opening, one of said J-shaped portions having a longer leg portion than the other and terminating in an end notch.

10. As an article of manufacture, clip means including an elongate member formed from spring material of substantially uniform thickness, comprising:

(a) an arcuate portion formed to have a central section of substantially rectangular projection with parallel side edges, and having a central opening with associated thread engaging means; and

(b) flat integrally formed portions respectively providing finger extensions at the opposite ends of the arcuate portion, each of said extensions being of less width than said central section and terminating in an arcuate end edge having a center of curvature coincident with the center of said opening.

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ALBERT H. KAMPE, *Primary Examiner.*