

[54] SELF LOCKING DOOR LIGHT MOLDING

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[56] References Cited

UNITED STATES PATENTS

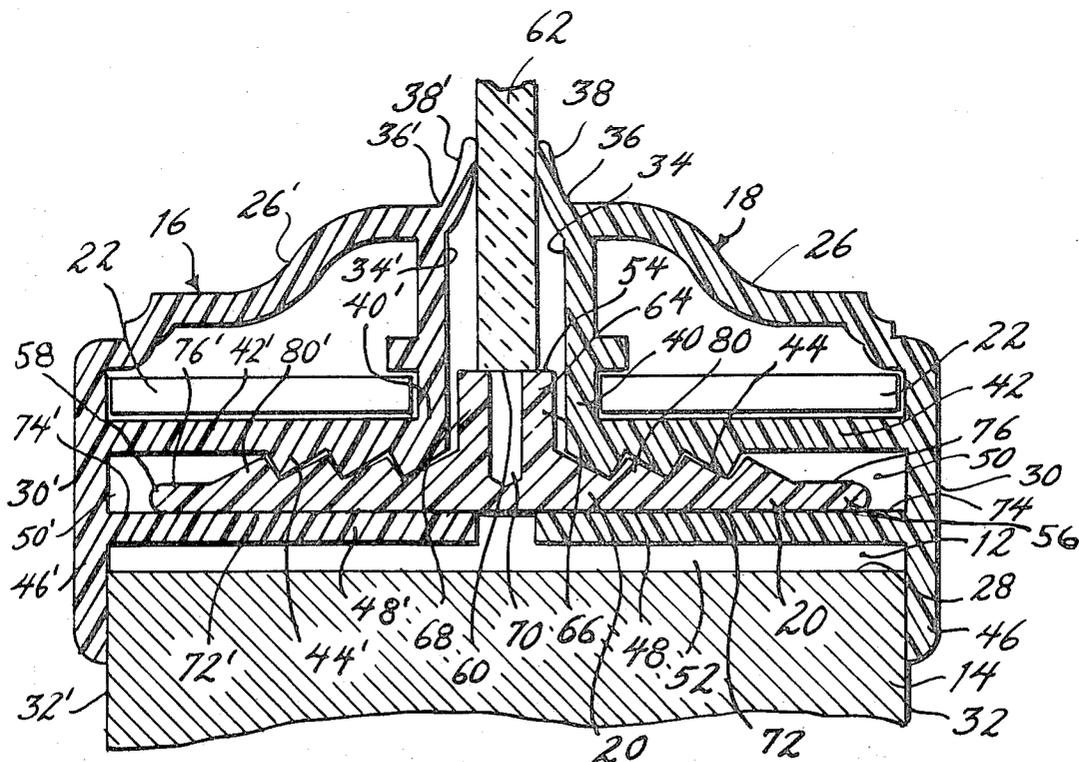
|           |         |                   |          |
|-----------|---------|-------------------|----------|
| 3,527,011 | 9/1970  | Bloom et al. .... | 52/616 X |
| 2,812,558 | 11/1957 | Lobanoff .....    | 52/403 X |
| 3,024,881 | 3/1962  | Haas .....        | 52/616 X |
| 3,233,381 | 2/1966  | Von Wedel.....    | 52/476 X |

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[57] ABSTRACT

A self locking door light molding for use with doors of steel or other construction wherein it is desired to mount glass in a door light opening. The molding incorporates a peripheral exterior frame member and a matching, peripheral interior frame member, the said exterior and interior frame members projecting inwardly about the door light opening for glass holding purposes. Both the interior frame member and exterior frame member include matching facing, locking surfaces of saw tooth configuration which extend about the periphery of the opening. A plurality of horizontal locking members space about the periphery of the door light opening and incorporate saw tooth construction of size and design to cooperate with and lock upon the locking surfaces of the interior and exterior frame members in a manner to secure the frame members together interiorly and exteriorly of the glass insert and to prevent disassembly of the respective frame members.

5 Claims, 4 Drawing Figures



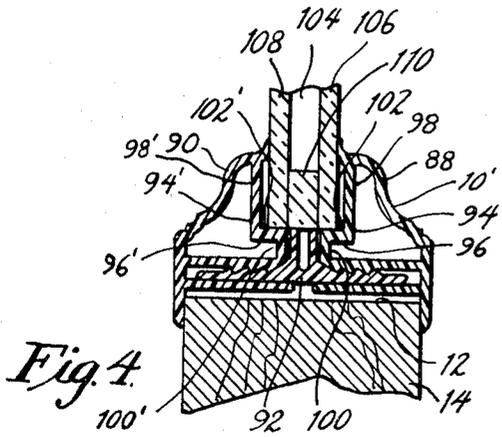


Fig. 4

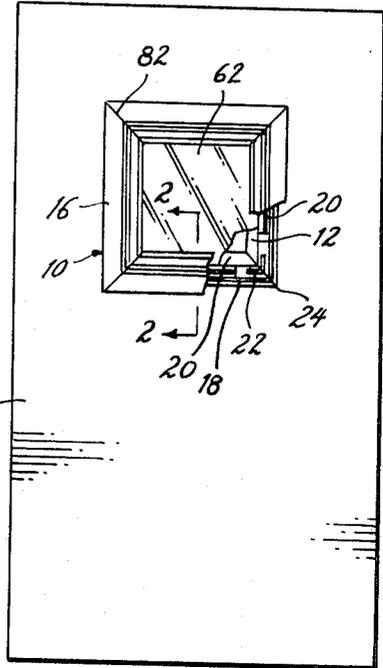


Fig. 1

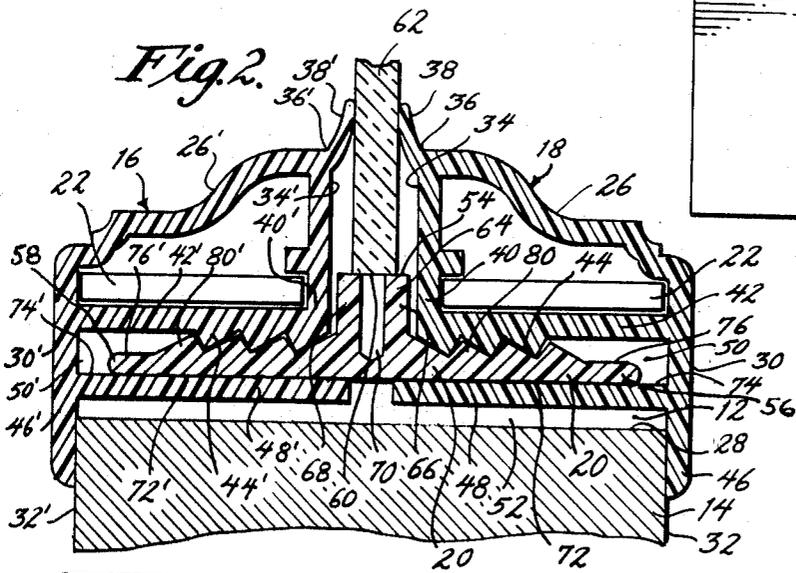
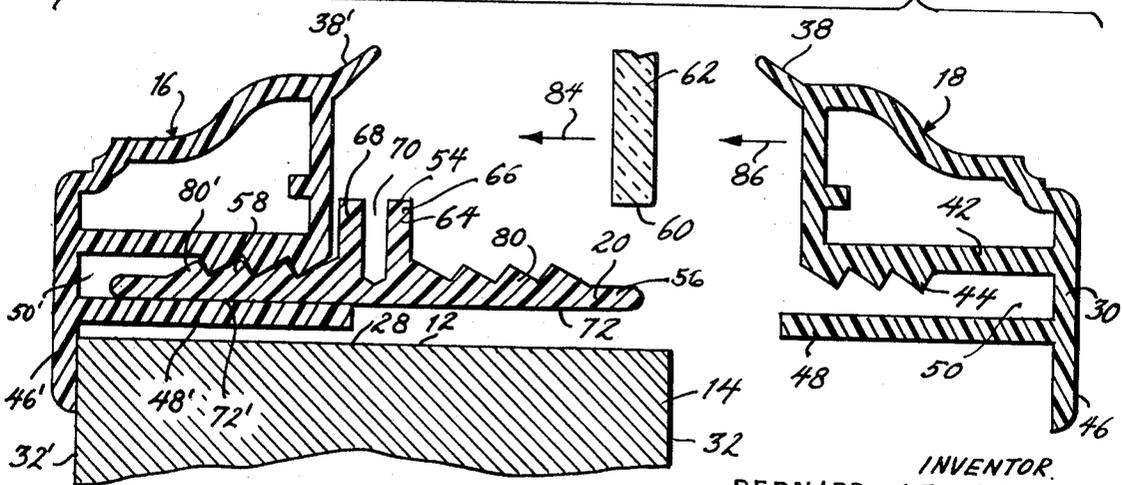


Fig. 2

Fig. 3



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## SELF LOCKING DOOR LIGHT MOLDING

### BACKGROUND OF THE INVENTION

This invention relates to the general field of buiding materials, and more particularly, is directed to a self-locking door light molding for use in affixing glass lights in exterior doors of metal or other construction.

In an effort to develop longer lasting, maintenance free and structurally sound exterior door constructions, architects, builders and others concerned with improving designs in the home construction industry have been seeking improved exterior door constructions. The interested members of the trade have been attempting to develop doors that are not subject to the deficiencies common to presently available wooden doors such as warping, rotting and extensive maintenance costs due to repeated painting. Most improvements in the art up to the the present time have proceeded along the path of simply substituting hollow metallic door constructions in the place of the usual solid exterior wooden doors which have quite uniformly been previously adopted for the purpose.

Metallic doors are usually fabricated of hollow steel and are insulated against the cold by utilizing well known construction and fabrication techniques. The steel doors as presently available are usually factory finished to thereby present a finished product which requires no painting at the time of installation. Because of the factory finish, the home owner can now expect greatly reduced maintenance costs by eliminating the need for repainting, even after extended periods of use. In those instances, where exterior doors of solid metallic construction have been employed, there are no unusual problems and such doors have been generally well accepted after installation. However, the solid metallic doors do have a drawback in that in most instances, homeowners are not satisfied with a solid steel door construction. Such doors offer little aesthetic appeal and are further deficient in that no facility is provided for looking outside to determine exterior matters such as the identity of callers or the weather conditions. Accordingly, it has become increasingly apparent that it is necessary to provide an opening in the steel door construction to permit the insertion of a glass light to thereby gain ready acceptance by homeowners and other users. It is now the usual practice to employ a glass light which is retained within a peripheral wooden frame as the simplest and most inexpensive method of production.

By providing such a wooden frame mounted glass light within a steel door construction, the former advantages of maintenance free installation were thereby lost inasmuch as the periphreal wooden frame which was necessary for retaining the glass in position within the door then required frequent painting, maintenance and other attention. Prior workers in the field have found that such wooden frames have a tendency to rot rather quickly in view of the exposed nature of the construction which thereby greatly increased maintenance costs. Additionally, wooden door light frames as presently available are not normally painted at the shop and are usually delivered to the site in an unpainted condition. The builder must then both install the steel door and then make necessary arrangements to paint the peripheral wooden frame. This problem becomes quite annoying as the entire steel door itself need not be painted as it is usually factory finished prior to delivery.

Therefore, in order to employ a painter only to paint a small wooden peripheral frame, the cost of painting the door has resulted in greatly disproportionate costs in view of what actually needs to be accomplished.

### SUMMARY OF THE INVENTION

The present invention relates to a vinyl plastic door light frame construction which is particularly adaptable to install a glass light within a metallic or solid wooden door construction. The frame includes an exterior peripheral frame member which cooperates with a similar interior peripheral frame member to mount a plate of glass within a door opening. Both the interior frame member and exterior frame member are preferably extruded of pigmented vinyl plastic material and are cut and mitered to the desired size for weather tight installation within a door opening without requiring the use of screws, nails, or other similar fastening members. The interior and exterior frame members include sawtooth locking construction of similar configuration which arrange in facing relationship to receive inwardly positioned locking members in locking engagement. The locking members are fabricated to include cooperating sawtooth configuration to slide over and lock upon the saw tooth construction of the respective interior and exterior frame members to secure the members together within the door opening to retain the glass light therein.

The interior and exterior peripheral frame members are fabricated both of hard vinyl components for weather resistance and freedom from maintenance and incorporate integrally molded soft vinyl sealing components arranged to provide a weather-tight, maintenance free seal between the frame members and the glass itself.

It is an object of the present invention to provide an improved self locking door light molding suitable for use in mounting a glass light within an exterior door of the type set forth.

It is another object of the present invention to provide a novel self-locking door light molding construction suitable for assembly within a solid wooden or hollow metal door without requiring the need of screws, bolts, or similar fastening members.

It is another object of the present invention to provide a novel, self locking door light molding that is entirely maintenance free and that is comprised entirely of components impervious to exterior weather conditions.

It is another object of the present invention to provide a novel, self locking door light molding for retaining a light of glass within a door construction comprised of materials requiring no painting or other preventive maintenance effort.

It is another object of the present invention to provide a novel, self locking door light molding including a pair of cooperating interior and exterior peripheral frame member of design suitable for affixing to an opening provided in an exterior door in a completely weather-tight manner.

It is another object of the present invention to provide a novel, self locking door light molding that includes interior and exterior peripheral frame moldings which secure together by utilizing interiorly positioned fastening means.

It is another object of the present invention to provide a novel self locking door light molding which in-

corporates an interior frame member, an exterior frame member and a plurality of saw tooth, interior locks which secure interiorly to both the interior and exterior frame members to bind the frame members together without the need of any external fastenings.

It is another object of the present invention to provide a novel, self locking door light molding that is inexpensive in manufacture, simple in design and trouble-free when in use.

Other objects and a fuller understanding of the invention will be had by referring to the following description and claims of a preferred embodiment thereof, taken in conjunction with the accompanying drawings wherein like reference characters refer to similar parts throughout the several views and in which:

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view, partially broken away to expose details of interior construction, showing the invention applied to an exterior door.

FIG. 2 is an enlarged, cross sectional view taken along Line 2—2 FIG. 1, looking in the direction of the arrows.

FIG. 3 is an enlarged view similar to FIG. 2 showing the parts in exploded relation to illustrate the method of assembly.

FIG. 4 is a reduced cross sectional view similar to FIG. 2, showing a modified design suitable for use with insulated glass.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

Although specific terms are used in the following description for the sake of clarity, these terms are intended to refer only to the particular structure of my invention selected for illustration in the drawings and are not intended to define or limit the scope of the invention.

Referring now to the drawings, I show a self locking door light molding 10 applied about an opening 12 in an exterior door 14 which may be of solid wood or a hollow metal construction in accordance with well known principles of door fabrication. The door light molding 10 comprises a mating pair of substantially identical peripheral frame members which may be considered as an interior peripheral frame member 16 and an exterior peripheral frame member 18. The interior frame member 16 inserts into the opening 12 from the inside and the peripheral frame member 18 inserts into the opening 12 from the exterior surface of the door 14. A plurality of lock members 20 position about the periphery of the door opening 12 to secure the respective interior and exterior frame members 16, 18 together as hereinafter more fully set forth. Angular stiffening members 22 may be applied at the respective corners 24 of the frame members for reinforcement purposes if so desired. The angle stiffening members 22 align within inwardly extending portions of the frame member construction for corner stiffening purposes.

Referring now to FIGS. 2 and 3, a door 14 is illustrated of solid wooden construction such as commonly employed for fabricating exterior doors. It will be appreciated that hollow metallic construction could also be interchangeably employed with the self locking door light molding 10 of this invention in exactly the same manner herein illustrated for use with the wooden doors. Each of the interior and exterior peripheral

frame members 16, 18 are identically formed and include decorative surfaces 26, 26' which space inwardly from the peripheral edges 28 of the door opening 12 to furnish a pleasing, finished appearance to the door light molding 10. The decorative surfaces 26, 26' terminate outwardly respectively in the door contacting sides 30, 30' which are formed to overlies the interior and exterior surfaces 32, 32' of the door 14 without requiring screws, nails or other fastening members.

The decorative surface 26, 26' of each frame member 16, 18 terminates inwardly in a vertical face 34, 34' which dispose in a plane parallel to planes drawn through the door interior and exterior surfaces 32, 32'. The angular junction between each face 34, 34' and its associated decorative surface 26, 26' preferably approximates 90° and forms a seat 36, 36' for the continuous, soft vinyl sealing strips 38, 38'. By employing the fabrication technique known as dual durometer extrusion, the hard vinyl frame members 16, 18 with affixed soft vinyl sealing strips 38, 38' can be fabricated in a single extrusion step. In this manner, elongate strips of material, fabricated to the desired cross sectional configuration and having the two different vinyl materials continuously shaped and joined can be readily extruded.

The bottoms 40, 40' of each respective vertical face 34, 34' join with the toothed locking strips 42, 42' and each locking strip 42, 42' extends between the bottom of the respective associated vertical face 34, 34' and the frame member sides 30, 30'. The locking strips 42, 42' both siffen the respective frame members 16, 18 and also furnish a plurality of depending teeth 44, 44' for cooperation with the lock members 20 as hereinafter more fully set forth. Each side 30, 30' connects at one end thereof to the decorative surface 26 or 26' and terminates at the other end thereof in an extending flange 46, 46' which overlies the respective door surfaces 32, 32' peripherally outwardly from the door opening 12.

A continuous positioning strip 48, 48' extends at right angles from the respective frame member sides 30, 30' and spaces from the similarly projecting toothed locking strips 42, 42' to define a peripheral locking area 50, 50' therebetween. The positioning strips 48, 48' overlie the peripheral edge 28 of the door opening 12 and are fabricated to provide a slight clearance space 52 between the strips 48, 48' and the peripheral opening edge 28 to thereby facilitate easy insertion of the respective interior and exterior peripheral frame members into the opening 12. Of course, each flange member 46, 46' must be constructed longer than the height of the clearance space 52 to act as a stop against the respective door surfaces 32, 32' as the mating frame members 16, 18 are pushed inwardly towards each other to frame the opening 12 as hereinafter more fully set forth.

A plurality of individual lock members 20 position about the periphery of the door light molding 10 and preferably, three such lock members 20 are employed along each side of the door opening 12. Optionally, if so desired, the lock members 20 may be fabricated in continuous strips to form continuous locking contact with the respective peripheral frame members 16, 18. As seen in FIGS. 2 and 3, each lock member 20 medially forms a glass retaining surface 54 which integrally rises above the right and left locking arms 56; 58 and carries the peripheral edge 60 of the glass light 62. The

glass retaining surfaces 54 of each respective lock member 20 contacts the peripheral edge 60 of the glass light 62 in spaced relationship about the periphery of the glass light 62 to thereby provide numerous spaced supports to securely retain the glass light 62 within the peripheral frame members 16, 18 without building up undue stresses in any concentrated area. It is contemplated that the lock members 20 will be fabricated of extruded hard vinyl plastic material similar to that employed for fabricating the interior and exterior peripheral frame members 16, 18.

The lock member glass retaining surface 54 represents the inner terminus of the medially positioned glass carrier 64. The glass carrier 64 bifurcates into a pair of spaced arms 66, 68 which define an axially positioned trough 70. The glass carrier 64 bottomly terminates in the locking arms 56, 58 which extend substantially at right angles to the glass carrier 64. The peripheral outer surfaces 72, 72' of the lock member 20 are extruded to a substantially smooth surface to readily slide over the cooperating surfaces 74, 74' of the respective positioning strips 48, 48'. The inwardly facing surfaces 76, 76' of the locking member 20 are extruded in the shape of plurality of locking teeth 80, 80' which form in a generally saw tooth pattern to cooperate with the teeth 44, 44' which have been extruded in the toothed locking strips 42, 42' of the respective peripheral frame members 16, 18. It will be noted that the height of the locking area 50, 50' is carefully controlled to insure interlocking engagement of the lock member teeth 78, 78' upon the toothed locking strip teeth 44, 44' when the peripheral outer surfaces 72, 72' of the lock member 20 position upon the surface of the respective positioning strips 48, 48'.

Referring now to FIG. 3, it will be seen that the lock members 20 serve to secure the interior and exterior peripheral frame members 16, 18 about an opening 12 provided in a solid wooden or hollow metallic door 14 without the need for nails, screws or any other external fastening means. In order to use the invention, continuous vinyl plastic extrusions are fabricated having the configuration of the interior and exterior peripheral frame members 16, 18 as hereinbefore described with the inwardly projecting soft vinyl sealing strips 38 affixed by utilizing the dual durometer extrusion fabricating process. Similarly, the lock members 20 are extruded to the desired configuration and are then cut to desired width, for instance, approximately one inch in width. The extruded lengths of frame members are then measured to fit the dimensions of any of a number of usual door light opening configurations and are cut to provide miter junctions 82 in well known manner to provide similar, finished appearing, interior and exterior peripheral frame members 16, 18 which are continuous about the periphery of the door opening 12. One peripheral frame member 16 is then positioned within the opening 12 having its flange 46 in contact with the door surface 32' and with the positioning strip 48' peripherally inwardly overlying the peripheral edge 28 of the opening 12. The plurality of lock members 20 space about the periphery of the opening 12 and are positioned with the glass carrier 64 facing inwardly. One locking arm 58 of the lock member 20 is urged into the locking area 50' and has its teeth 80' urged into locking relation with the teeth 44' of the toothed locking strip 42'. It will be noted that the positioning strip 48' has limited flexibility about its junction with

the frame member side 30' so that the respective teeth 80', 44' can cooperate and seat upon each other for locking purposes. The natural resiliency of the positioning strip 48' serves to secure the locking arm 58 into locking engagement with the toothed locking strip 42'.

With the lock members 20 positioned with one of the peripheral frame members 16, the glass light 62 is then positioned upon the spaced glass retaining surfaces 54 of the various peripherally spaced lock member glass retaining surfaces 54. The glass presses against the soft vinyl sealing strip 38' for a weather-tight installation as indicated by the directional arrow 84. The second peripheral frame member 18 then applies about the periphery of the opening 12 with its positioning strip 48 inwardly peripherally overlying the edge 28 of the opening 12. The frame member 18 is urged against the glass 62 by pressing in the direction indicated by the arrow 86. The lock member locking arm 56 inserts into the locking area 50 in the manner hereinbefore described until the lock arm teeth 80 lock against the toothed locking strip 42 projecting teeth 44 for locking purposes. When the frame member 18 fully seats, the soft vinyl sealing strip 38 presses against the glass 62 in weather-tight sealing engagement therewith. In this position, the flange extension 46 of the side 30 pushes against the surface 32 of the door 14 to provide a uniform, weathertight and mechanical fastener free construction.

Referring now to FIG. 4, I show a modified door light molding 10' for use with an insulated glass light 104. The molding 10' affixes to a door 14 about an opening 12 provided therein by employing interior and exterior peripheral frame members 88, 90 of general construction similar to that set forth hereinbefore in the embodiment illustrated in FIGS. 2 and 3. Similarly, a plurality of lock members 92 join the respective frame members 88, 90 about the periphery thereof in a plurality of interlocking toothed connections. In the embodiment illustrated, the respective vertical inward faces 94, 94' are extruded to provide a step 96, 96' which defines the widened faces 98, 98' from the narrow faces 100, 100'. The steps 96, 96' form at right angles to the faces 98, 98' and 100, 100' to provide base surfaces 102, 102' to receive and retain a widened glass construction such as insulated glass 104. The insulated glass 104 may comprise an exterior glass surface 106 and an interior glass surface 108 which are retained in parallel spaced relationship by the peripheral spacers 110 in accordance with well-known insulated glass construction techniques. In this manner, a similar construction can be employed to accommodate glass lights 104 of any commonly utilized width.

It will be noted that the construction is entirely tamperproof inasmuch as there are no screws or other exposed mechanical fastening members which can be removed to thereby remove the door light molding. Rather, the only way the joined frame members 16, 18 or 88, 90 can be separated is to first actually break the glass light 62 or insulated glass 104 to thus expose the interior construction between the joined frame members. Then by inserting a tool such as a screw driver between a vertical face 34 or 100 and the associated glass carrier 64, outward pressure can be applied to momentarily flex the positioning strip 48 about its junction with the frame member side 30 to thereby allow the locking teeth 80 of the lock member 20 to ride clear of

their interconnection with the teeth 44 of the toothed locking strip 42. To replace the glass 42 or 104, one peripheral frame member 16 or 88 should first be removed as herein described. A new light of glass is then positioned within the opening 12 by placing the peripheral edges 60 upon either of the glass retaining surfaces 54 as in the embodiment of FIGS. 2 or 3 or upon the base surfaces 102, 102' in the embodiment illustrated in FIG. 4. Once the glass has been so positioned, the peripheral frame members 18 or 88 can then be reinstalled by engaging their respective teeth 44 or 80 in the manner hereinbefore described in detail.

I claim:

- 1. In a self locking door light molding for retaining a panel within an opening defined within peripheral edges and positioned in a building construction member having two sides, the combination of
  - A. a first peripheral frame member in contact with a first side of the construction member,
    - 1. said first member having a first decorative surface spaced inwardly of the said peripheral edges,
    - 2. the first decorative surface terminating outwardly in a first member contacting side,
      - a. said contacting side overlying and contacting a portion of a first side of the construction member,
    - 3. said first decorative surface terminating inwardly in a first vertical face and forming a junction therewith,
    - 4. said first vertical face terminating downwardly in a first toothed locking strip,
      - a. said first locking strip interconnecting between the first contacting side and the first vertical face,
      - b. said first toothed locking strip having a plurality of depending teeth;
  - B. a peripheral frame member in contact with a second side of the construction member,
    - 1. said second member having a second decorative surface spaced inwardly of the said peripheral edges,
    - 2. the second decorative surface terminating outwardly in a second member contacting side,
      - a. said contacting side overlying and contacting a portion of a second side of the construction member,
    - 3. said second decorative surface terminating inwardly in a second vertical face and forming a junction therewith,

- 4. said second vertical face terminating downwardly in a second toothed locking strip,
  - a. said second locking strip interconnecting between the second contacting side and the second vertical face,
  - b. said second toothed locking strip having a plurality of depending teeth; and
- C. a plurality of lock members positioned about the periphery of the opening and contacting the first and second frame members,
  - 1. the lock members including a medially positioned panel carrier and a pair of transversely extending first and second locking arms,
  - 2. the said first locking arm having a first toothed surface which carries a plurality of first locking teeth,
  - 3. the second locking arm having a second toothed surface which carries a plurality of second locking teeth,
  - 4. the said first locking teeth engaging upon and securing to the second toothed locking strip, whereby the first and second peripheral frame members are securely held together without screws or nails to frame the said opening.
- 2. The invention of claim 1 wherein the locking strips contact the respective contacting sides inwardly of the periphery of the opening and wherein the contacting sides extend outwardly beyond the periphery of the opening in extending first and second flanges.
- 3. The invention of claim 2 and first positioning strips extending inwardly from the respective first and second flanges, said first and second positioning strips inwardly overlying the periphery of the opening and being inwardly spaced therefrom.
- 4. The invention of claim 3 wherein the first positioning strip and first toothed locking strip define an inwardly open first locking area therebetween and wherein the second positioning strip and second toothed locking strip define an inwardly open second locking area therebetween, the said first locking arm being positioned within the first locking area and contacting the first locking strip and the first positioning strip, and the second locking arm being positioned within the second locking area and contacting both the second locking strip and the second positioning strip to join the first and second frame members together.
- 5. The invention of claim 4 wherein the panel carrier bifurcates to define a pair of spaced arms and an axially positioned trough.

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