United States Patent [19]

Aliotta

[11] **3,918,207**

[45] **Nov. 11, 1975**

[54] **DOOR FRAME PROTECTOR**

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[22] Filed: **May 7, 1974**

[21] Appl. No.: **467,650**

[52] **U.S. Cl.** **49/462;** 49/504; 52/211; 52/514

[51] **Int. Cl.²** **E06B 1/04**

[58] **Field of Search** 49/504, 503, 460, 462; 52/514, 211, 216; 292/346

[56] **References Cited**

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[57] **ABSTRACT**

A door frame protector consisting of a plate, adapted for attachment to the hidden outer face of an upstanding frame side member, and a flange adapated for engagement with the inside edge of the frame side member.

7 Claims, 4 Drawing Figures

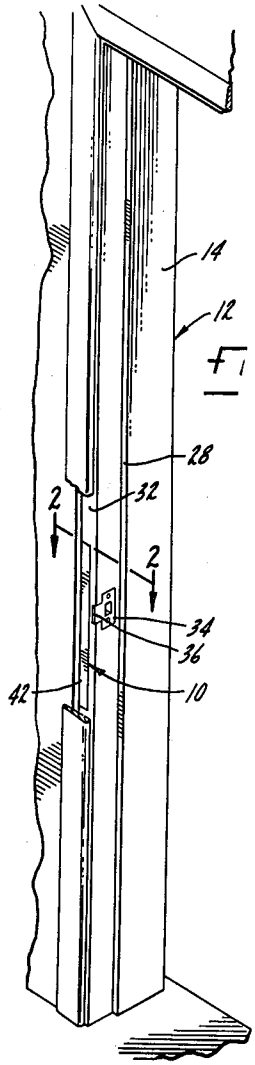


FIG. 1

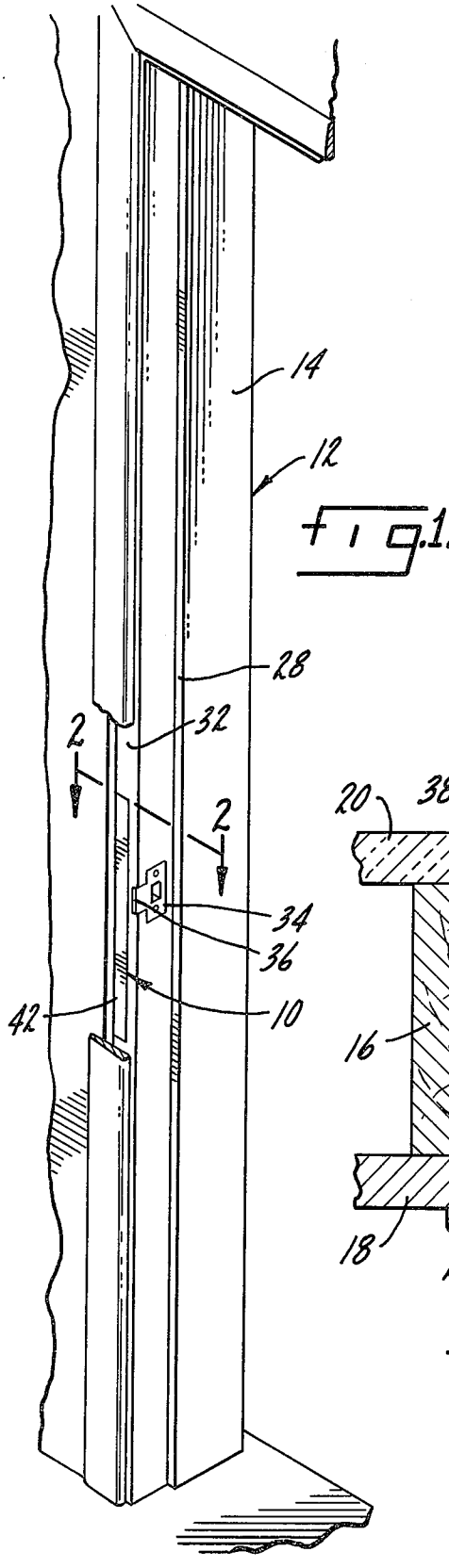


fig.1.

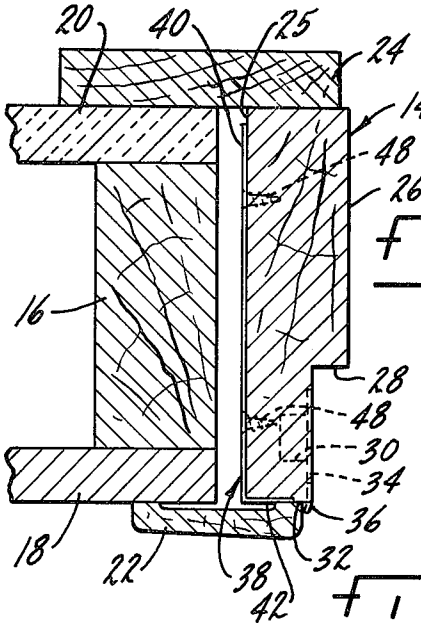


fig.2.

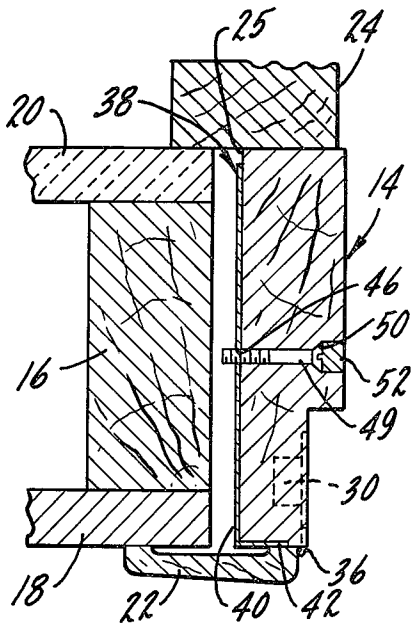
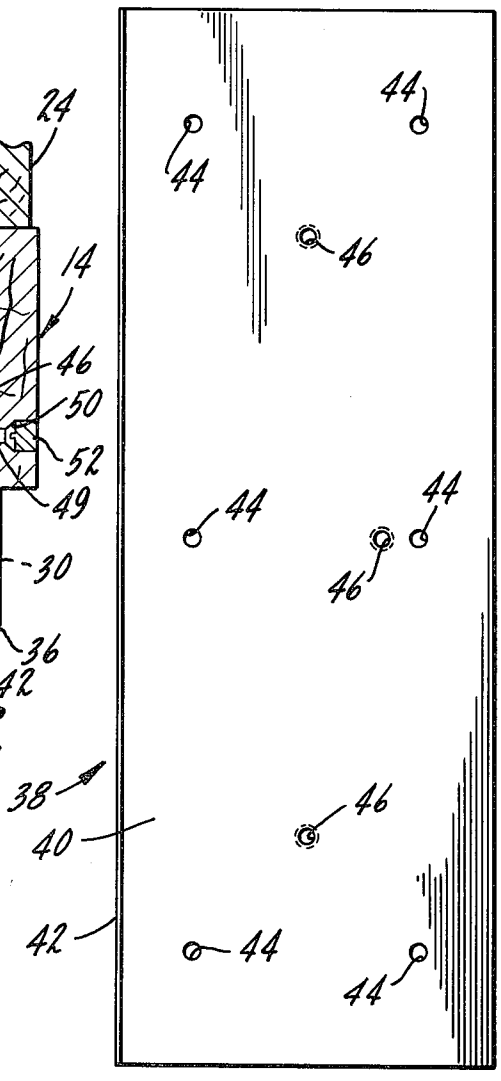


fig.3.

fig.4.



DOOR FRAME PROTECTOR

SUMMARY OF THE INVENTION

This invention relates to door frame construction and has particular relation to a protective device for preventing the splitting of the door frame by force.

A primary purpose of the invention is a protective device for attachment to a door frame to increase its strength and resistance to splitting.

Another purpose is a protective device for a door frame which distributes a given force, applied to the door frame, over a greater area, thereby decreasing the stress in the door frame.

Another purpose is a protective device for a door frame which will frustrate attempts to forcibly enter a door which is locked within the door frame.

Another purpose is a protective device for a door frame which is simple and compact in construction and operation, economical to manufacture and highly efficient and durable in use.

Another purpose is a protective device for a door frame which is easily installed on door frames of new and existing construction regardless of the location, size or material of the door frame.

Another purpose is a protective device for a door frame which is concealed and inaccessible in its installed position.

Another purpose is a protective device for a door frame which performs its function with no interference with the normal use and operation of the associated door.

Other purposes will appear in the ensuing apecification, drawing, and claims.

BRIEF DESCRIPTION OF THE DRAWING

The invention is illustrated diagramatically in the following drawing wherein:

FIG. **1** is a perspective view of a portion of a door frame, partially fragmented to show the installed position of the door frame protector,

FIG. **2** is a section along plane **2—2** of FIG. **1,**

FIG. **3** is a section, similar to FIG. **2,** of a modified installation of the invention, and

FIG. **4** is a plan view of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. **1,** the installed door frame protector is indicated generally at **10.** It is installed on a door frame, indicated generally at **12.** The structure of the door frame (FIG. **2**) includes an upright frame side member **14** adjacent to, but spaced from, a wall stud **16.** Attached to and supported by stud **16** are an inside wall **18** and an outside wall **20.** To connect the frame side member to the inside and outside walls along the entire vertical height of the frame side member, inside and outside trim boards **22** and **24** are provided.

The upright frame side member has an outer face **25** which is generally concealed by the inside and outside trim boards and walls. An exposed inner face **26** of the frame side member is cut away along the inside edge of the frame side member to form a door stop surface **28** against which the door is closed. A recess **30** is formed in the frame side member between the door stop surface **28** and an inside edge **32** of the frame side member. Recess **30** is provided to receive a bolt of a lock or

handle mechanism of a door (not shown). A striker plate **34** engages the edge of recess **30** to provide a hard, strong surface about the perimeter of the recess for engaging the lock bolt. Striker plate **34** may be provided with a lip **36** for protecting the inside corner of the frame side member adjacent recess **30** since this portion of the frame side member first engages and depresses the bolt of a closing door.

The door frame protector of the present invention is indicated generally at **38** in FIG. **4.** Door frame protector **38** consists of a generally flat plate **40** adapted for attachment to the concealed outer face of the frame side member, and a flange **42** for engagement with the inside edge **32** of the side member. To facilitate manufacturing, the door frame protector may be formed from a generally rectangular sheet of rigid material having one edge turned up generally perpendicular to the sheet. The turned up edge forms flange **42** which thus may be integral with plate **40.**

To attach plate **40** to the concealed outer face of the frame side member, a series of holes are formed in the plate. In the preferred embodiment shown in FIG. **4,** two separate sets of holes are provided. A first set **44** consists of six holes arranged along two lines parallel to flange **42,** each laterally offset from the center of plate **40.** Three holes are cut along each line, one in the center and the other two generally equally spaced from the respective top and bottom edges of the plate **40.** A second group **46** consists of three holes arranged in a triangular pattern on plate **40.** Holes **46** are provided with internal threads for a purpose to be explained below.

In its installed position on a door frame, the door frame protector is arranged so that plate **40** engages the concealed outer surface **25** of side member **14** and flange **42** is mortized into the inside edge **32** of the side member. The top and bottom edges of the door frame protector may be spaced vertically above and below recess **30.** As shown in FIG. **1,** the door frame protector need not be exactly centrally located about recess **30.**

In frame construction, (FIG. **2**), it is preferred that the door frame protector be attached to the frame side member by means of six wood screws **48** insertable through holes **44.**

In brick construction, (FIG. **3**), an alternate means of attachment may be used. The frame side member is provided with three holes axially aligned with holes **46** of the door frame protector in its installed position. A bolt **49** is inserted into each hole and screwed into the internal threads of holes **46** in the door frame protector. The head of the bolt may be counter-sunk as at **50** so that a suitable filler material **52** may be used to conceal the bolt hole and to make the head of the bolt inaccessible.

While the present invention may be installed on the door frame of either a new or existing construction, the limited accessibility of the outer face of the frame side member in existing construction may require that the wood screws or bolts be inserted through the inner face of the frame side member as shown in FIG. **3.**

It is to be understood that although two specific bolt hole patterns have been shown, any arrangement of more or less holes may be suitable. Preferably, more than one hole should be provided, with the holes sufficiently spaced so that the entire surface area of the door frame protector is rigidly secured against the frame side member. Similarly, alternate fastening means may be provided without departing from the scope of the present invention. Nails, rivets or other

suitable fasteners may be used in conjunction with the holes described above, or the door frame protector may be simply glued or otherwise rigidly affixed to the frame side member, with no holes required.

The use, operation and function of the invention are as follows

An important function of the door frame protector is to reinforce the structural frame side member about the bolt receiving recess and striker plate so as to prevent splitting by force. Typically, the outer hinged doors of a home, office, manufacturing plant or whatever generally will swing inwardly to open. The striker plate and bolt receiving recess in the door frame are positioned close to the inside edge of the frame side member so that the inwardly extending lip of the striker plate will first engage and depress the lock bolt of a door as it is closed. Only a limited amount of material of the frame side member separates the bolt receiving recess from the inside edge of the frame side member. Thus, if force is applied against the outside of the door by a burglar or anyone attempting a forcible entry, that force is transmitted by the lock bolt of the door against the inside edge of the bolt receiving recess. The total force must be resisted by the limited amount of material separating the bolt receiving recess from the inside edge of the frame side member. The small striker plate provides a hardened edge about the bolt receiving recess but provides only a very limited resistance to the force applied to the door.

The present invention is adapted to be attached to and to rigidly engage an elongated surface of the inside edge of the frame side member and its concealed outer face. In its installed position, the door frame protector greatly increases the resistance of the door frame to external forces applied against the door. The door frame protector accomplishes this by distributing the force over a greater surface area of the door frame, thereby decreasing the stress in the critical area of the frame side member between the bolt receiving recess and inside edge.

The door frame protector distributes the inwardly directed impact force applied to the bolt receiving recess in primarily two ways. First, the flange reinforces the inside edge of the frame side member so as to prevent rupture of the critical area of the side member due to a sudden impact load. Secondly, the load absorbed by the flange is transmitted through the plate to the screws or fastening means used to attach the plate to the concealed outer face of the frame side member. The shear stress in the screws or other fastening means substantially reduces the stress in the critical area of the frame side member adjacent the bolt receiving recess. Furthermore, the plate not only distributes the load over a longitudinally greater section of the frame side member, but also may distribute the stress over substantially the entire width of the frame side member. This is particularly important because the widest and thus strongest portion of the side member is that portion on the outside of the recess. This portion of the side member in an unprotected door contributes very little to preventing a forcible entry since the greater width of a door only increases the bending strength. In a forcible entry, the door frame will almost never fail by bending but rather it ruptures at the critical area. The wide plate portion of the door frame protector thus transmits the force which is applied to the critical area to the stronger previously non-loaded inside portion of the side member. With the impact force thus distributed over an increased area of the door frames, the stress due to a given force is necessarily decreased. Conversely, for a given tolerable maximum stress in any particular portion of the frame side member, a much greater impact force can be resisted with the aid of the present invention.

Although the door frame shown in the drawing is constructed of wood, frames of any other suitable material may similarly be strengthened by the installation of the present invention. Similarly, the door frame protector may be used on the doors of buildings of brick or frame construction.

Whereas the preferred form of the invention has been shown and described herein, it should be realized that there may be many modifications, alterations and substitutions thereto.

I claim:

1. In a door frame comprising an upstanding side member having a generally concealed outer face and an exposed inner face, said inner face having a doorstop surface associated therewith and a bolt receiving recess formed therein between the stop surface and one edge of the side member, a door frame protector comprising a plate attached to the concealed outer face of said member, said plate having a flange engaged with the said one edge of the side member.

2. The structure of claim **1** wherein the door frame protector comprises an angle-shaped member with the flange being integral with the plate and extending from one edge thereof.

3. The structure of claim **2** wherein the flange is disposed generally perpendicular to said plate.

4. The structure of claim **3** wherein the plate is provided with a plurality of spaced holes.

5. The structure of claim **4** wherein the frame side member is provided with at least two holes, said holes being aligned axially with corresponding holes in said plate.

6. The structure of claim **1** wherein the door frame protector is positioned along said frame side member such that the top and bottom edges thereof are spaced substantially above and below the bolt receiving recess.

7. The structure of claim **5** wherein at least two of the holes in said plate are provided with internal threads.

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