PROTECTIVE BARRIER MEANS FOR DOOR FRAME CONSTRUCTION

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This invention relates to a means and method for protecting surfaces of metal members employed in building construction and more particularly to door frame members made of metal which frame a door or window opening in which closure panels may be mounted.

This invention may be best understood in connection with the construction and installation of door frame members in a door opening in a wall of a building.

Heretofore certain of such door frame members have been installed with surfaces in direct contact with the material of the wall which may include plaster, cement, stucco, brick, mortar and the like. In such installations of metal frame members, metal surfaces seated against the material of the wall were often untreated and as a consequence reaction between the wall material and the contacted metal surfaces produced deterioration of the metal surfaces, discoloration, staining, or marring thereof, which ultimately spread to visible areas and detrimentally detracted from the appearance of the door frame. Often such discoloration could not be removed.

In some installations certain back surfaces of such metal frame members were coated with a heavy bituminous material, clear methacrylate lacquer, spray type strippable coatings, or tapes of various types. Each of such prior proposed protective coatings included certain disadvantages which made the coating ineffective if the coating was not properly and carefully applied. For example, lacquer coatings were transparent but required proper surface preparation before lacquering as thin spots or unlaquered "holidays" in the coating were to be prevented. Such lacquer coatings were only partially effective against abrasion and eventually thinned away.

Sprayable, strippable coatings required that the spray coating be thick enough for easy removal and on irregular shapes, it became difficult to completely cover interrupted surfaces and openings therein because of shadow areas disposed out of the path of spray particles. Such strippable coatings were intended to be peeled from the metal by hand, however, after exposure to sunlight for long periods such coatings often tended to adhere very tightly to a metal surface and thus prevented easy removal.

Prior proposed protective tapes provided good protection against abrasion and staining but were very costly and were practical to use only upon readily accessible flat surfaces.

Generally speaking, this invention relates to a novel means and method for protecting metal door frame members by providing a barrier between the surfaces of the metal members and material of the wall. The means of this invention includes a sleeve of flexible plastic sheet material composed of compositions based on thermoplastic resins or polymers and characterized by resistance to moisture, solvents, acid, and alkalies. The sleeve is of selected thickness and may be used as a barrier between the metal door frame opening and the plastic sleeve therein so that a portion of the sleeve is positioned between normally unexposed surfaces and seating faces of the frame member and the material of the wall. After installation of the door frame members is complete and the wall has been finished as by plastering and painting, the portion of the sleeve which covers exposed surfaces on the frame members is removed by cutting along the joint line defined by the edge of the plaster, paint, or other wall coating and the metal frame members. The portion of the sleeve retained around the frame opening is effectively positioned to serve as a barrier against action of the wall material on the metal surfaces, provides a complete unbroken covering for the unexposed metal surfaces, and terminates at edges which define a precise clean line surrounding the frame.

An object of this invention is to disclose and provide a novel protective means for metal members used in building construction.

An object of this invention is to disclose and provide a means and method for protecting aluminum extruded shapes utilized as door frame members for sliding doors.

Another object of this invention is to disclose and provide a protective means for a metal member of selected irregular shapes having exposed surfaces, non-exposable surfaces, and seating faces.

A still further object of this invention is to disclose and provide a frame construction wherein a metal frame member is initially relatively loosely encapsulated in a sleeve member of plastic material for handling during installation and for permanently protectively covering surfaces thereof facing the wall material surrounding the frame.

Many other objects and advantages of this invention will become readily apparent from the following description and drawings in which an exemplary embodiment of the invention is shown.

In the drawings:
Fig. 1 is a side elevational view of a door frame embodying this invention installed in a door opening in a wall with a plastic sleeve member encasing the frame members.
Figs. 2a, 2b and 2c are transverse sectional views taken through the sill, head, and jamb members respectively as indicated by lines Ila—Ihb, Ilb—Ihb, and Iic—Ihc.
Fig. 3 is a transverse sectional view of a door jamb member with the plastic sleeve trimmed therefrom.
Fig. 4 is a fragmentary longitudinal sectional view of an end of a jamb with the sleeve trimmed.
Fig. 5 is a fragmentary perspective view of a jamb member in a plastic sleeve.

In the example illustrating this invention in the drawings, a wall 10 of a building is provided with a door opening 11 within which is installed in rectangular relation door frame members including a sill or threshold member 12, jamb members 14, and a head member 16. The wall 10 illustrated may comprise a wall formed of plaster, mortar, stucco, concrete, brick, masonry, or other composition building material. It is understood that while the example shows a masonry wall, the invention is not limited to utility on the type of wall herein described.

The marginal portions of wall 10 which define opening 11 may sometimes be referred to as a surround. The surround may include bottom, side, and top unfinished edge faces 18, 19 and 20 respectively which define opening 11 slightly larger than the external dimensions of the door frame to be installed therein.

The door frame members 12, 14 and 16 are connected together at their corners by suitable means to provide a door frame opening within which closure panels, such as horizontally sliding panels, may be mounted. Each frame member 12, 14 and 16 may be made of suitable metal, such as steel or aluminum alloy. In this ex-
ample, each frame member is an extruded aluminum alloy member of selected cross-sectional shape and design, each member having back seating faces as 12a, 14a and 16a, and also provided with back and side surfaces which will be normally unexposed after installation such as, surfaces 12a, 14a, and 16a. In addition, each door frame member includes normally exposed front surfaces after installation such as 12a, 14a and 16a. When the door frame members are installed in the door opening 11, it will be readily apparent that the seating faces 12a, 14a and 16a and the normally back unexposed surfaces 12a, 14a, and 16a are opposed by edge faces 18, 19 and 20 and unexposed side surfaces by opposing faces on suitable selected trim means extending inwardly from edges of opening 11.

The present invention contemplates providing in a novel manner a permanent protective barrier means, cover means, or gasket means between the back and side unexposed surfaces and opposed surround faces 18, 19, 20, in order to prevent undesirable reaction between such metal surfaces and the surround faces and to permanently isolate the metal member from the wall. It will be readily understood that wall material composed of plaster, stucco or other cementitious compounds contains alkalis which may react against aluminum metal surfaces to produce discoloration, staining and marring thereof.

With reference to Fig. 5 a barrier means may initially comprise an elongated, seamless, extruded sleeve member 22 of an impervious, inert, non-reactive plastic material. Such plastic material may be based upon thermoplastic resins or polymers including selected compounds to provide a plastic sleeve characterized by resistance to tearing, moisture, solvents, acids, and alkalis, by sufficient compliance and flexibility to permit readily erecting the plastic sleeve member over a metal member, and by resistance to aging. Such plastic material may include polyethylene and compounds thereof, vinyl polymers, and cellulose derivatives. Sleeve member 22 may comprise a longitudinally extending sleeve portion 23 which covers the back and side seating faces and normally unexposed surfaces on a door frame member and a coextensive sleeve portion 24 which covers initially the normally exposed surfaces on a door frame member and serves to secure portion 23 in proper relation to the door frame member.

In Fig. 5, it will be noted that the jamb member 14 is completed, relatively loosely encased in the plastic sleeve member 22. Ends of the sleeve member project beyond the ends of the jamb member and may be secured in closed relation in any suitable manner as by heat sealing, by folding, or by suitable mechanical means such as clips, staples and the like. Each door frame member is similarly encased.

Installation of a door frame in accordance with the present invention comprises assembly of the sill, jamb, and head members without removal of the sleeve members 23 therefrom. When the top end of a jamb member 14 is connected to the head member 16, the sleeve member on head member 16 may be left undisturbed and the end of member 16 laid across the top end of jamb member 14. The top end of the sleeve member on the jamb member may be slipped or skimmed inwardly and away from the jamb end to temporarily expose the metal while making the connection to the head member. After the members are secured the skimmed plastic sleeve end is pulled outwardly to cover the unexposed surfaces on the jamb end and end of the head member. The end of sleeve portion 24 on the jamb member will be somewhat bunched at the inside of the corner, however, this is later removed, such bunching does not effect the provision of a barrier over the normally unexposed surfaces. The joining of the bottom end of jamb member 14 and the sill member may be made in similar manner, the bottom end of sleeve member 22 being slipped upwardly to expose the metal end. It is understood of course that in other types of end connections between jamb and sill or head members, the sleeve members 22 may be left intact or may be slipped back from the end, but in each instance ends of sleeve portions 23 will be arranged in overlying or overlapping relation to provide a cover for all unexposed metal surfaces at the corner.

When the frame has been assembled, it is placed in the door opening, shimmed in well known manner, and then secured. Securing bolts or screws may be driven through the sleeve portion 23 and since the sleeve material is resilient, the screw holes made therein are virtually self sealing.

During further construction in a building after the door frame is installed, the sleeve portion 24 provides a protective cover over the normally exposed metal surfaces on the frame members. During such construction, trim means such as molding strips or plaster may be applied around the frame opening and grouting may be introduced between the space between the bottom edge face of the opening and the sill frame members. The sleeve portion 23 provides a protective barrier against contact of such materials with the seating faces and with the unexposed surfaces and permanently maintains such barrier after installation.

Upon final finishing of the wall surfaces surrounding a door frame as by painting, it will be readily apparent that the trim means provides a sharp joint line 26 with the metal members. During painting of surfaces adjacent to the metal members, it is not necessary that great care be taken in conforming to the joint line. After painting is completed and the closure panels are to be installed in the door frame, sleeve portion 24 may be easily and quickly removed by severing sleeve portion 24 from the sleeve portion 23 at the joint line as by drawing a knife edge along the joint line.

It will be readily apparent from a consideration of Figs. 2, 3 and 4 that when the frame is completely installed the sleeve portions 23 provide a continuous inwardly facing somewhat U-section peripheral barrier serving to isolate the unexposed metal surfaces of the frame members from adjacent building material. Since the plastic material of sleeve portion 23 is virtually inert and non-reactive, moisture from the building wall material cannot reach the metal members. In addition, a watertight gasket effect is produced at the joint line to resist entrance of rain water or foreign material between the trim means and the metal surfaces.

It will be noted that the combination of the metal member and sleeve member provides a composite structural member which permits handling of door frame members and the performance of many messy building construction tasks without damaging of the metal surfaces so that upon completion of construction the beauty of an unmarrred clean metal surface is preserved. The compliance and resistance to tearing of the plastic sleeve material prevents penetration thereof resulting from contact with other objects so that the sleeve portions 23 and 24 and unbroken both before and after installation of the frame members. While the plastic sleeve member has been described as seamless, it will be understood that the sleeve may be formed in other well-known ways. It is important that the sleeve member, initially and after it has been trimmed, be impervious to moisture and resistant to acids and alkalies, vapors and gases so that the metal surfaces of the protected frame member will not be subject to marring from either physical or chemical causes. It is further understood that the invention is useful wherever a surface must be protected in order to retain a desired finish thereon.

It is understood that various modifications and changes may be made in the barrier means described above, and
all such changes and modifications coming within the scope of the appended claims are embraced thereby.

I claim:

1. In a frame construction, the combination of: a plurality of composite protected structural frame members interconnected at their ends and forming an opening, each of said composite members including an elongated metal frame element having back, front and side faces, and a loose, discrete sleeve member of impervious, inert, flexible material for each of said frame elements and greater in length than said frame element and containing the same, each sleeve member having a first permanent sleeve portion loosely over-lying all of the back face and part of the side faces of the contained frame element and having a second impervious sleeve portion loosely overlying the remaining side faces and front face of said frame element, the end portions of the first permanent sleeve portions of adjacent frame elements being arranged in overlapping relation to provide a continuous, peripheral gasket seal, said impervious second sleeve portions being severable from said first sleeve portions to expose said front faces and said remaining side faces.

2. In a frame construction the combination of: a plurality of composite protected structural frame members, each member having ends connected to adjacent frame members, said interconnected frame members providing an opening; each composite member including an elongated frame element having back, front, and side faces, and a loose, discrete sleeve member of inert, impervious, flexible material loosely containing said frame element and overlying all of said back, front, and side faces, a first portion of the sleeve member overlying the back face and the adjacent parts of the side faces of the frame element, and a second portion of the sleeve member overlying the front faces and the remaining parts of the side faces of the frame element, said first portions of the sleeve members containing the interconnected frame elements serving to provide a continuous gasket seal and said second portions of the sleeve members being severable from respective first sleeve portions to expose the front faces and the remaining side faces of said frame elements.

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