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WALL OPENING CONSTRUCTION

Joseph Dworetz, New York, N. Y.

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My invention relates generally to building construction. More particularly, my invention relates to novel constructions for wall openings.

One of the objects of my invention is to provide an improved one-piece metal frame for a wall opening of the character described, which is so constructed and arranged that the usual type of molding and plaster terminal members may be dispensed with, thereby avoiding the tendency of welded or otherwise connected parts to become loosened, with the consequent breaking of the plaster.

Another object of my invention is to provide an improved wall opening construction of the character described having an improved one-piece metal frame in conjunction with improved means for anchoring the same to adjacent wall portions surrounding the openings.

Still another object of my invention is to provide a metal frame construction for wall openings of the character described which shall comprise relatively few and simple parts, which is easy to construct and install and which, at the same time, possesses a high degree of efficiency for the purposes intended.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the claims.

In the accompanying drawing, in which is shown one of the various possible embodiments of this invention,

Fig. 1 is a front elevational view of the wall opening with a portion broken away to disclose the metal frame of my invention attached thereto;

Fig. 2 is an enlarged cross-sectional view taken substantially on the line 2-2 of Fig. 1;

Fig. 3 is an enlarged cross-sectional view similar to Fig. 2 but showing a modified form of my invention;

Fig. 4 is a view similar to Fig. 3 but illustrating my invention as applied to a different type of wall opening, such as an archway;

Fig. 5 is a cross-sectional view taken substantially on the line 5-5 of Fig. 4;

Fig. 6 is a view similar to Fig. 2 but showing a modified form of my invention as applied to a different type of opening, such as a window; and

Fig. 7 is a cross-sectional view similar to Fig.

4 but illustrating still another modified form of my invention.

Referring now in detail to the drawing, I have disclosed my invention, in Figs. 1 and 2, as applied to a door opening in which wooden members or studs 21 are employed surrounding the opening. I employ a metal frame member constructed in accordance with my invention which comprises a pair of vertically disposed side sections 11 interconnected by a top section 12. Such interconnection may be effected by any suitable means such as mitering the corners of adjacent sections and welding the same in position, as shown. While in the drawing I have illustrated my invention as applied to a rectangular shaped wall opening, it is understood that my invention may be satisfactorily employed in connection with any other shaped wall opening. Each of the frame sections 11 and 12 are made of a single sheet of suitable metallic material stamped, pressed or otherwise formed so as to be of generally channel-shaped cross section, having a web portion 14 defining the opening 10, said web portion being formed with an outwardly projecting portion 15 designed to serve as a doorstop. The web portion 14 terminates at its outer ends in rounded nose portions 16 to which there is integrally joined the flange portions 17 disposed at an angle of substantially 45 degrees to the plane of the web 14. The said flange portions 17 are integral with and lead into flange portions 18 which lie in a plane substantially parallel to opposite surfaces of the studs 21, and substantially at right angles to the plane of the web 14. For permanently fixing the frame member in position there is provided openings 19 in the flange portions 18, through which there is adapted to pass suitable fastening members such as screws, bolts or nails 20, as shown in the drawing, said nails being embedded in the studs 21. It is thus seen that the frame member is caused to be firmly held in position on the stud 21 so that when the door strikes against the lip or stop 15, the shock will not dislodge the frame member from the surrounding wall. It is also noted that the web 14 of the frame extends beyond the stud 21 on both sides thereof for a predetermined distance and then is brought inwardly to lie against the stud 21 as hereinbefore described. The space between the outermost surface of the noses 16 and the surfaces of the stud 21 adjacent the flange portions 18 may be filled with a plastic material, such as plaster, in the usual manner known to the art. There is thus provided a neat appearing wall surrounding the

opening 10, in which no molding members are necessary to trim the corners formed by the walls of plaster. Thus, there is eliminated the possibility of dust collecting areas and at the same time, a rigid and sturdy construction is provided for the frame. It is also noted that the nose portions 16 tend to strengthen the frame and to prevent distortion thereof due to the jarring action which occurs when closing a door.

To more firmly attach the frame to the stud 21, the angularly disposed flange portions 17 are provided with spaced apertures 25 through which the plaster P from the walls passes to enter the area between the frame and the stud 21.

In Figs. 3, 4 and 5 I have shown my invention as applied to a wall opening in which, instead of the wooden studs 21, the material surrounding the opening 10 may be of bricks 21', concrete or similar material. In Fig. 3 my invention is shown as applied to a door opening, whereas in Fig. 4 the invention is shown as applied to an archway of any desired shape. The principle of the invention in both of these forms is the same except that in Fig. 4, there is no lip or door stop provided, the web portion 14' thereof being a uniform flat surface. In the Figs. 3, 4 and 5 form of my invention, the frame parts are constructed in the same manner as that described in connection with the Figs. 1 and 2 form of my invention except that the distance between the flanges 18' may be greater to accommodate the greater thickness of the brick wall. Instead of attaching the flange portions directly to the surrounding wall 21', I provide anchor members 30 which are suitably spaced along the longitudinal axis of the frame parts. Each of the said anchor members 30 comprises a flat sheet of metallic material having a flared or enlarged end portion 30a and a longitudinal body portion 30b extending therefrom. The flared portion 30a is designed to conform substantially to the shape of the inner surface of the frame, as shown, and is preferably of flat construction, whereas the body portion 30b is corrugated transversely of the length thereof by a series of corrugations 30c. The anchor members are inserted between layers of brick 21' at predetermined spaced portions, or the same may be embedded in the concrete at predetermined spaced portions from each other. It is noted that the corrugations 30c of the anchor member 30 will rigidly hold the same in position while the flared portion 30a will hold the frame in attached relationship to the surrounding wall. In this form of my invention, as in the Figs. 1 and 2 form of my invention, a layer of plaster P' may be applied as shown, the said plaster passing through the apertures 25' to more firmly attach the frame and the anchor member 30 to the wall. It is noted that in Figs. 3 and 4 I have shown the plaster wall P' so arranged that a portion of the nose 16' will be exposed to furnish a more decorative effect. If desired, however, the same type of plaster construction may be employed in the Figs. 3 to 5 form of invention as that shown in Fig. 2.

In Fig. 3 I have shown the method of attaching the door D to the frame. As clearly shown, the flange 41 of the hinge H is fixed to the door in the customary manner while the corresponding flange 42 of the hinge H is fastened to the frame. In order to prevent undue strain on the material of the frame adjacent the point of attachment of the hinge, a reinforcing strip 43 may be fixed to the inner side of the frame, as

shown. There is also provided the usual form of lip 15' similar to the lip 15 in the Fig. 2 form of my invention.

In Fig. 6 I have shown my invention as applied to a window opening. In this form, the metal frame member comprises a flat portion 50 terminating at one end thereof in a nose portion 50a, which in turn is integrally connected to an angularly disposed portion 50b, the said last named portion terminating in a flange 50c designed to contactively engage the surface of the frame F surrounding the window. The flange portion 50c is provided with a series of apertures 51 adapted to receive therethrough any suitable fastening members, such as the nails 52 which are embedded in the frame F. A suitable plaster layer 53 is provided which may be flush with the outer surface of the nose 50a or slightly offset therefrom. The flange portion 50b is provided with a plurality of spaced openings 54 through which the plaster 53 is adapted to pass to more firmly hold the frame in position. The free end of the frame portion 50 may be retained in position by a fastening member such as a nail 55 passing therethrough and embedded in the frame F, as shown, or any other suitable means for retaining the free end of the portion 50 in proper position may be employed. It is thus seen that in this form of the invention, no finishing moldings are required for the corner of the wall formed by the plaster.

In Fig. 7 I have shown my invention as applied to a modified form of wall opening. In this form, the frame sections are constructed in substantially the same form as disclosed in Figs. 1 to 5, comprising the web 14'' and the flange portions 17'' and 18'', said web terminating at its outer ends in rounded nose portions 16. The portions 17'' are provided with apertures 25'' while the flange portions 18'' are provided with openings 19''. However, instead of the stud 21 or the brick or concrete walls 21', there is employed an angle member 60, surrounding the wall opening. In this form of my invention, the frame is anchored in position by means of a wire member 61 having a portion 61a formed into a loop after being passed through the openings 19'' and another portion 61b adjacent the free ends of the loop being twisted. The twisted portion 61b passes through an opening 65 in one leg of the angle member 60. Plaster P'' completely surrounds the member 60, covering the wire member 61 as well as the flange portions 17'' and 18'' and passing through the apertures 25''. It is noted the outer surfaces of the plaster is substantially flush with the points of junction of the web 14'' and flange portions 17''.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matters herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A metal frame for openings in a plaster-coated wall comprising a member generally channel-shaped in cross-section and so formed out of a single sheet of flat material as to provide a pair of flanges, an interconnecting web,

and rounded noses of relatively large radius at the junction of said flanges and said web, the major external portion of said noses being adapted to be free from plaster, portions of said flanges being disposed at less than a right angle to the plane of said web, said last named flange portions being adapted to serve as plaster terminals, whereby the space back of said noses between said flanges and said web will be free from plaster.

2. A metal frame for wall openings in a plaster-coated wall comprising a member generally channel-shaped in cross-section, said member being formed out of a single sheet of flat material and including a web, a flange, and a rounded nose of relatively large radius at the junction of said web and said flange, the major external portion of said nose being adapted to be free from plaster, a portion of said flange being disposed at less than a right angle to the plane of said web, said portion being adapted to be used as a plaster terminal, whereby the space back of said nose between said flange and said web will be free from plaster.

3. A wall construction of the character described, comprising a wall having a plastic covered exterior and defining an opening, a metal frame for said opening, said metal frame being generally of channel-shaped cross-section and formed out of a single sheet of flat material so as to provide a pair of flanges, an interconnecting web, and rounded noses of relatively large radius at the junction of said flanges and said web, the space in back of said noses between said flanges and said web being free from plaster, portions of said flanges intermediate the ends thereof being disposed at less than a right angle to the plane of said web, said plastic coating terminating at and covering said flanges, a large external portion of said noses being free from plaster.

4. A wall construction of the character described, comprising a wall portion having a plastic coating and defining an opening, a metal frame for said opening, said metal frame being

generally of channel-shaped cross-section and formed out of a single sheet of flat material so as to provide a pair of flanges, an interconnecting web, and rounded noses of relatively large radius at the junction of said flanges and said web, the space in back of said noses between said flanges and said web being free from plaster, portions of said flanges intermediate the ends thereof being disposed at less than a right angle to the plane of said web, and portions adjacent the free ends of said flanges being substantially parallel to said wall portion, said plastic coating terminating at and covering said flanges and a small portion of said noses, the major portion of said noses being free from plaster, the space underlying said web between said noses being also free from plaster.

5. A wall construction of the character described, comprising a wall portion of predetermined thickness having a plastic coating on opposite sides thereof and defining an opening for an archway or a door, a metal frame for said opening, said frame being generally of channel-shaped cross-section and formed out of a sheet of flat material so as to provide a pair of flanges, an interconnecting web and rounded noses of relatively large radius at the junction of said web and said flanges, the space in back of said noses between said flanges and said web being free from plaster, said web being of greater width than said wall portion thickness and projecting beyond both sides of said wall portion, portions of said flanges intermediate the ends thereof being disposed at less than a right angle to the plane of said web whereby the free ends of said flanges are disposed adjacent the opposite sides of said wall portion underneath said plaster, said free ends being substantially parallel to said wall portion sides, said plastic coatings terminating at and covering said flanges and a small portion of said noses, the major portion of said noses being free from plaster, the space underlying said web between said noses being also free from plaster.

JOSEPH DWORETZ. 45