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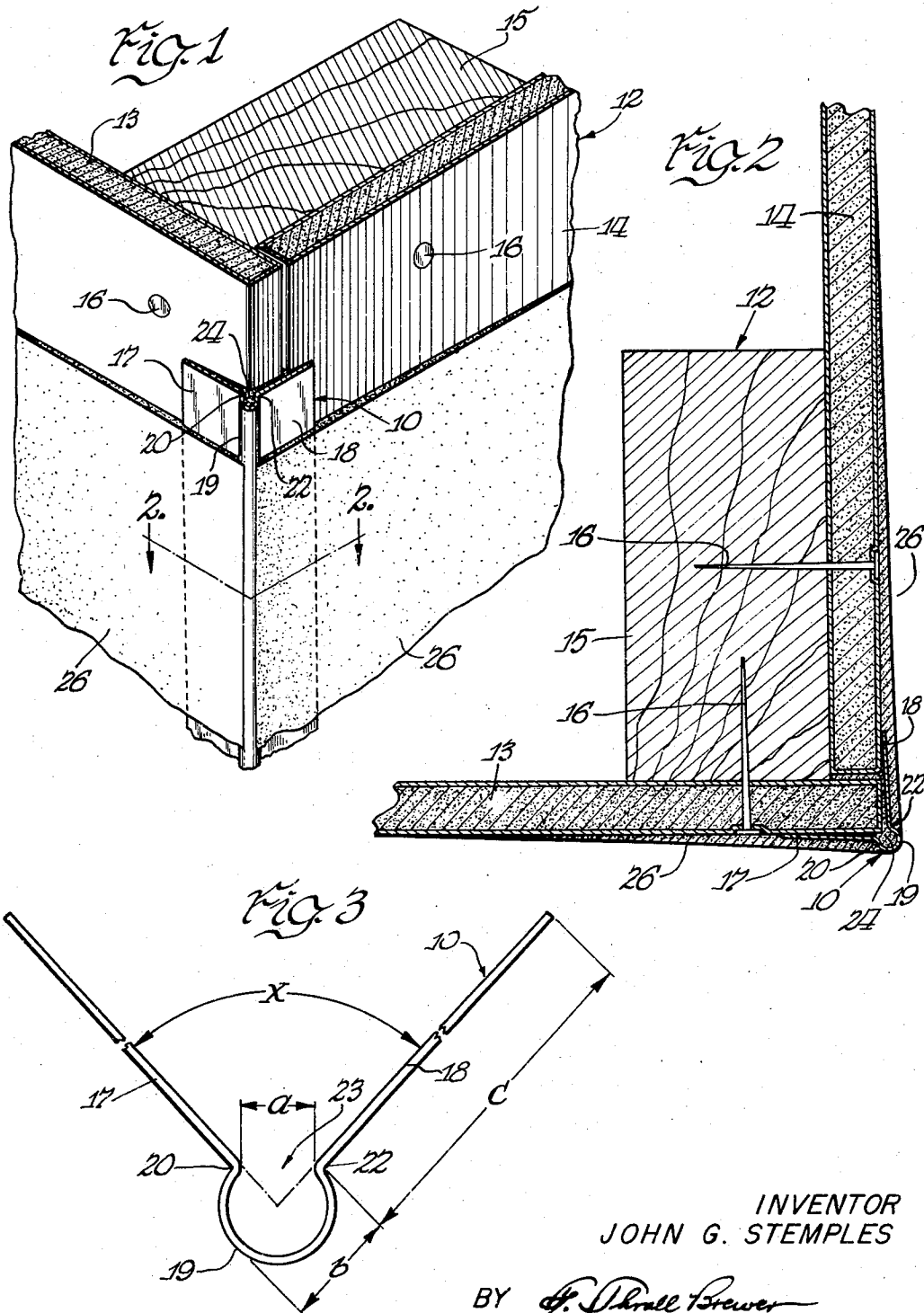
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STRUCTURE FOR REINFORCEMENT OF BUILDING WALL CORNERS

Filed May 20, 1953

2 Sheets-Sheet 1



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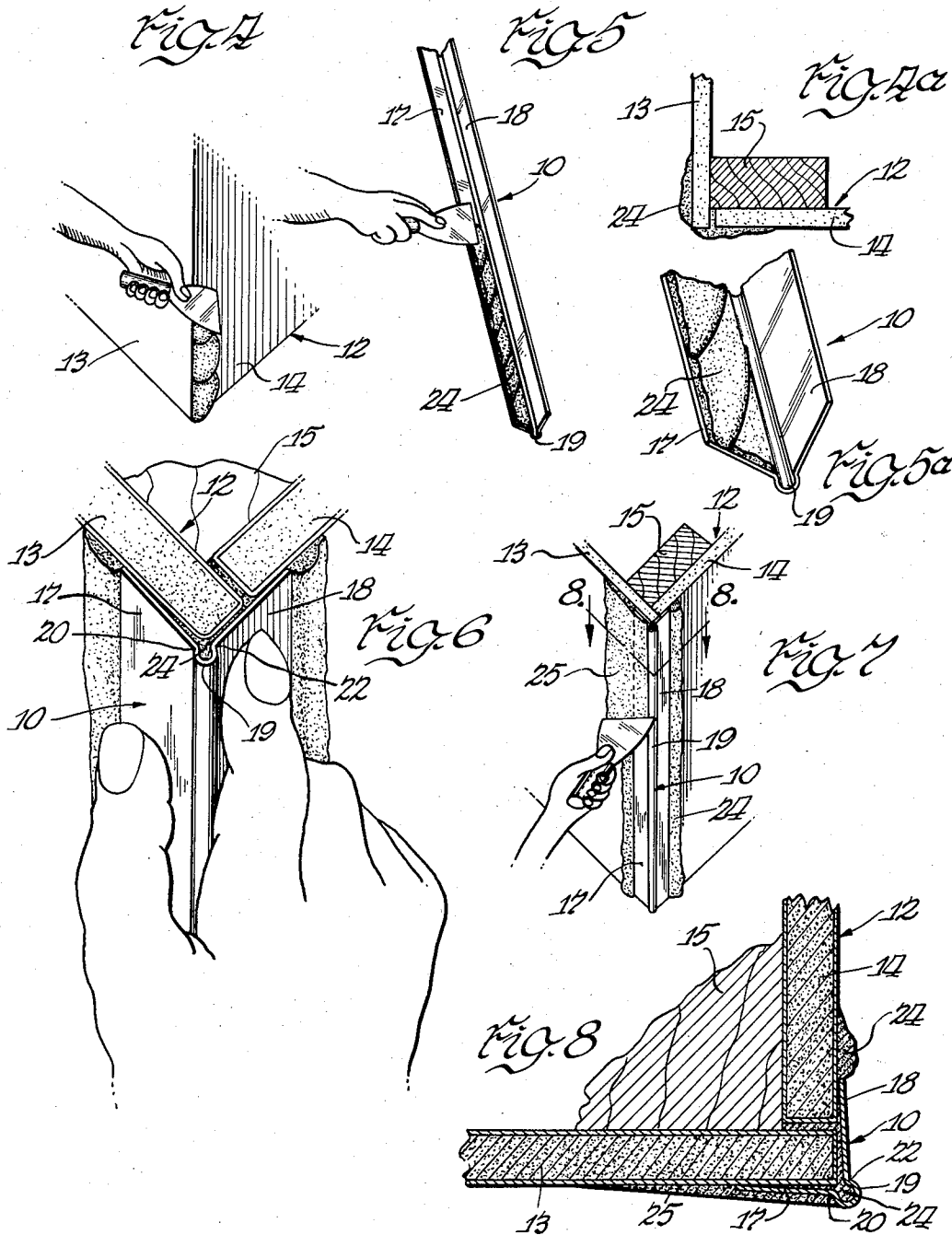
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STRUCTURE FOR REINFORCEMENT OF BUILDING WALL CORNERS

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3 Claims. (Cl. 20—4)

This invention relates to a structure for the reinforcement of the corners of the walls of buildings, such as houses, and more particularly to the structure of a corner reinforcing strip for use on projecting or outside corners of interior walls.

One of the objects of my invention is to provide a wall corner reinforcing strip structure and a method of applying that strip to the corner of a dry wall structure, which reinforcing strip as applied accomplishes the construction of a rugged and smoothly finished wall corner in only the two general operations of applying the strip to the wall corner and finishing the corner.

This invention has within its purview the provision of a corner reinforcing strip adapted particularly for use on dry walls, and the structure and arrangement of parts of which are such that it can be firmly and quickly secured in place without being nailed to the wall structure.

It is a recognized fact that corner reinforcing strips which have holes in the flanges or along the corners, or both, in order to afford a holding coaction with the adjacent cement or plaster material, cause undesirable depressions or unevenness in the surface of the dried cement which covers them, regardless of the fact that such cement or plaster was smooth while wet. The covering of such depressions and the uneven surfaces requires a second coat of plaster material or some added smoothing operation prior to finishing. The structure of my disclosed reinforcing strip presents a surface devoid of such holes and embodies other means for securing it in place. Also, when applied to a dry wall by my disclosed method, a smooth finish plaster coat may be achieved by putting such finish coating directly over the cement by which the strip is held in place.

Considered more specifically, my disclosed corner reinforcing strip embodies flanges and a hollow corner bead integrally formed from strip metal stock with the contours of the interior of the bead and the structures and relationships of the flanges calculated to force cementitious material into the bead, when the corner reinforcing strip is applied to a wall corner in accordance with my disclosed method, and which bead is not only rigidified and strengthened by the cementitious material included therein, when solidified, but the internal contours of which bead are developed to provide means for securely holding the strip in place relative to a wall corner when the cementitious material has become set.

The corner reinforcing strip of my invention has within its purview the provision of substantially flat and unperforated side flange portions disposed in angular relationship relative to one another with the included angle therebetween smaller by from 1° to 10° than the angle of the wall corner to which it is to be applied, and said flange portions being integrally adjoined through a formed hollow bead of arcuate section and the arcuate extent of which is such that the space within the hollow bead opens into the space between the flanges through a throat having a width no greater than the diameter of the arcuate bead and no smaller than one-half of the said diameter, thereby

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to afford space for the movement of cementitious material into the hollow bead, provide ample section across the throat for ample strength in the cementitious material and to effect the formation of a section of cementitious material within the bead which holds the strip in place.

Even more specifically stated, and although variations may be made in the width of the throat between the angularly related flange portions and the hollow arcuate bead of my described corner reinforcing strip without departing from the scope of this invention or eliminating the advantageous results securable therefrom, my preferred corner reinforcing strip structure has a hollow arcuate bead and integral flange portions extending in angular relationship to one another from the bead with the said arcuate bead and said flanges being so constructed and arranged that the inner surfaces of the flange portions are in planes intersecting at substantially the geometric center of the arcuate bead and the width of the open throat at the intersection of the flange portions with the arcuate bead is approximately equal to the square root of two times the square of the radius of the arcuate bead.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings in which similar characters of reference indicate similar parts throughout the several views.

Referring to the two sheets of drawings:

Fig. 1 is a fragmentary perspective view, with parts shown in section, illustrating the structure of a wall corner having the reinforcing strip of this invention applied thereto in accordance with my preferred method;

Fig. 2 is a top sectional view of the structure illustrated in Fig. 1, wherein the section is taken substantially as indicated by a line 2—2 and accompanying arrows in Fig. 1;

Fig. 3 is an end view drawn to a larger scale and showing a preferred embodiment of my corner reinforcing strip;

Fig. 4 is a fragmentary perspective view depicting one preferred manner of applying cement to a wall corner preparatory to the mounting of my corner reinforcing strip in accordance with one phase of my preferred method;

Fig. 4a is a top view of a wall corner prepared in the manner depicted in Fig. 4 and which is ready to have the corner reinforcing strip applied thereto;

Fig. 5 is a perspective view depicting an alternative method of applying cement preparatory to the mounting of my corner reinforcing strip relative to a wall structure, and depicts the cement being applied to the internal surfaces of the corner reinforcing strip;

Fig. 5a is a fragmentary perspective view drawn to a larger scale than Fig. 5 and illustrating in greater detail the application of cement to one surface of my corner reinforcing strip;

Fig. 6 is a fragmentary perspective view depicting one operation of my preferred method of mounting my disclosed corner reinforcing strip relative to the corner of a dry wall structure;

Fig. 7 is another fragmentary perspective view depicting an additional step utilized in my preferred method for mounting and finishing a wall corner embodying my reinforcing strip; and

Fig. 8 is a top sectional view, drawn to a larger scale than Fig. 7, wherein the section is taken substantially on a line 8—8 of Fig. 7 and in the direction indicated by arrows.

In the exemplary embodiment of my invention which is depicted in the accompanying drawings for illustrative purposes, I have shown the structure and method of application of a corner reinforcing strip 10 adapted particularly for use on dry wall structures such as 12 and securely mounted relative to the wall structure without

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the use of nails or other fastening elements. In the disclosed wall structure 12, wallboard panels 13 and 14, such as plaster board, are secured to building framework, such as a stud 15, by suitable fastening means, such as nails 16. As depicted in Figs. 1 and 2, the wallboard panels 13 and 14 abut adjacent one corner of the stud 15, so that the end surface of one panel is substantially, but not necessarily, flush with the outer face of the adjacent panel, thereby providing a substantially square wall corner surface. As is customary, such wall corner surfaces are desirably reinforced and finished by the application thereto of a corner reinforcing strip.

In accordance with this invention, I utilize a corner reinforcing strip 10 which is integrally formed from strip sheet metal stock, such as steel, aluminum or zinc. When steel is used, the stock is preferably galvanized or otherwise suitably surface coated. When aluminum or zinc is utilized, it is preferably either knurled to provide a roughened surface, or etched chemically, as by treatment in a zinc phosphate solution. Such surfaces improve the adhesion between the strip and the cementitious materials utilized therewith in the wall structure.

My disclosed corner reinforcing strip is imperforate, since no holes are required for nails or in order to provide for the holding of cementitious material or plaster relative thereto. Furthermore, as has been mentioned, such holes in corner reinforcing strips now in use cause depressions or roughness in the cementitious material which require additional operations for the attainment of a smooth finish coat on the plaster covering the flanges of the strip. Further than this, my disclosed corner reinforcing strip embodies substantially flat flange portions 17 and 18 which diverge angularly from one another and are integrally joined through a formed hollow bead 19, which bead is relatively small compared to the width of the flange portions and projects outwardly from the general planes of the flange portions.

Considered in greater detail, the hollow bead 19 of my disclosed corner reinforcing strip is practically arcuate in section and the flange portions 17 and 18 are adjoined to opposite sides thereof through relatively abrupt corners 20 and 22. Also, the planes of the inner surfaces of the flange portions are so disposed that they intersect internally of the hollow bead. Since it is contemplated that cementitious material will underlie my disclosed corner reinforcing strip and fill the hollow bead 19 when the strip is mounted on a wall structure in accordance with my preferred method, the arcuate extent of the bead 19 and the angular disposition of the flange portions 17 and 18 are such that the internal width or diameter of the bead 19 is greater than the width of a throat 23 between the corners 20 and 22. In order to provide for the entrapment of cementitious material within the hollow bead, which material will aid materially in securing the corner reinforcing strip in place relative to a wall structure, and also to provide ample strength in the cementitious material at the throat section for accomplishing the desired purpose, as well as to provide for the flow of cementitious material into the bead when the strip is mounted, the width a of the throat should not be greater than the diameter or width of the interior of the bead and should not be less than one-half of the internal diameter or width of the bead. In my preferred structure, the width a of the throat is substantially equal to the square root of two times the square of the radius of the interior of the bead. When the aforementioned proportions are utilized, it may be understood that after the cementitious material within the bead has set and become dried, such cementitious material would have to be sheared from opposite sides of the interior of the bead or would have to break at the throat in order that the reinforcing strip could be moved bodily away from the wall structure. It may also be observed that cementitious material underlying the flange portions 17 and 18 and within the bead 19 extends continuously

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along the full length of the reinforcing strip, as well as providing a hardened reinforcing core for the corner bead when the strip is installed.

To aid in the mounting of the disclosed corner reinforcing strip and to assist in the forcing of cementitious material into the interior of the hollow bead 19 from between the flange portions 17 and 18 and the adjacent margins of the wall surfaces when the corner reinforcing strip is pressed cornerwise into place, the angle x between the flange portions 17 and 18 of my corner reinforcing strip is somewhat less than the angle formed by the wall surfaces to which the corner strip is to be applied. For application to a corner at which the wall surfaces are disposed in right-angular relationship, the angle x between the opposed internal surfaces of the flange portions 17 and 18 is not more than 90 degrees and preferably greater than 80 degrees. In my preferred corner reinforcing strip I utilize an angle of approximately 85 degrees. By utilizing this acute angular relationship between the flange portions 17 and 18 and pressing the corner reinforcement strip into place in a cornerwise direction, as depicted in Fig. 6, with a layer of cementitious material 24 between the inner flange surfaces and the adjacent wall margins, the outer edges of the flange portions 17 and 18 not only serve as guides, but tend to retain cementitious material within the corner reinforcing strip until the bead is filled, and also provide for the extrusion of excess material along those edges and into overlapping relationship with the outer margins of the strip.

In the application of my disclosed corner reinforcing strip to the corner of a wall structure, cementitious material in the nature of plaster may be applied in a relatively heavy coat to the marginal portions of the walls adjacent the corner, as shown in Figs. 4 and 4a, or to both of the internal flange surfaces of the corner reinforcing strip, as shown in Figs. 5 and 5a. In either instance, the amount of cementitious material is desirably sufficient to fill the interior of the bead, provide a complete coating between the internal flange surfaces, and also provide some excess to extrude along the free edges of the flanges. With the initial coating in place, as described, the corner reinforcing strip is placed in contact with the wall corner surface throughout its length and with the cementitious material interposed between the wall and the strip. Then, the reinforcing strip may be effectively pressed cornerwise into place, as depicted in Fig. 6, by applying pressure along the exterior flange surfaces, as by moving the thumb and first finger of the hand along the flange surfaces as pressure is applied. This pressure forces the plastic cementitious material into the bead and effects the extrusion of the excess along the flange edges.

After the corner reinforcing strip has been thus applied to the corner of the wall structure, the outer surface of the bead 19 is used as a screed and the surface of the excess or extruded cementitious material is smoothed and feathered out to the wallboard surface by the use of a straight edge tool, such as a broadknife, as depicted in Fig. 7. This provides a smooth and tapered surface 25 along the corner margin, as depicted in Figs. 7 and 8. Time is then allowed for the initially used cementitious material to become set and at least partially dried. About twenty-four hours is usually allowed for this purpose. After the allowance of time for such setting and drying of the initially used cementitious material, a finish coating of plaster or the like is applied over the initial coat and in a quantity to fill the spaces and interstices in the initial coat and cover the flanges of the corner strip to the level of the projecting bead, after which the finish coat is smoothed while using the bead of the reinforcing strip as a screed and with a straight edge tool, such as a broadknife, which feathers the finish coat out to the surface of the wallboard. This provides a smooth finish coat 26, as shown in Figs. 1 and 2.

While I have illustrated a preferred embodiment of

my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a reinforced corner structure for dry walls wherein prefabricated wall boards abut to provide wall surfaces in right angular relationship, the combination comprising an imperforate metal reinforcing strip having wall surface engaging flanges diverging from one another at an angle of not more than 90 degrees and more than 80 degrees, said flanges being integrally joined through a formed hollow bead which projects outwardly of the included angle between the flanges, said flanges also having substantially straight outer edges, said hollow bead being adjoined to each of the flanges by abrupt corner bends forming an open throat of a width less than that of the interior of the bead and wider than half the interior width of the bead, and said reinforcing strip being secured in place relative to the wall surfaces by a layer of cementitious material interposed between the flanges and wall surfaces and extending into the hollow bead through said throat.

2. In a reinforced corner structure for dry walls as defined in claim 1, said layer of cementitious material increasing in thickness toward the bead between each flange and the wall surface, and said bead being substantially filled with the cementitious material.

3. A corner reinforcing strip adapted to use on dry

wall structures and to be held in place relative to such structures by cementitious material interposed between the internal surface of the strip and the wall surface, said corner reinforcing strip comprising an integrally formed and imperforate sheet metal piece having side flange portions in angular relationship to one another and adjoined through a hollow bead of rounded and smoothly curved section, the juncture of each side flange portion with the hollow bead being in the nature of a relatively abrupt bend defining a corner, and said flange portions and hollow bead being so relatively disposed that said corners are in opposed relationship and define a throat narrower than the interior of the bead and wider than half of the internal width of the bead and through which cementitious material in a plastic state can pass from the adjacent inner surfaces of the flange portions into the bead when the strip is applied to a wall corner, the internal surface of the strip being roughened so as to form an effective bond with cementitious material.

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