J. J. EARLEY.

FLEXIBLE JOINT FOR STUCCOED BUILDINGS.

APPLICATION FILED FEB. 21, 1918.

1,355,756. Patented Oct. 12, 1920.

Fig. 1.

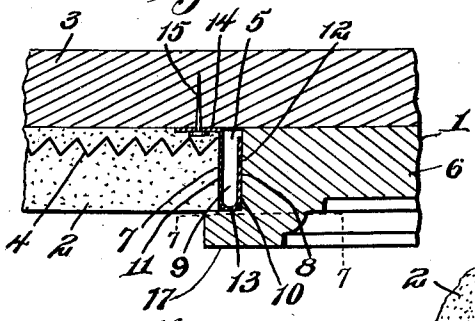


Fig. 2.

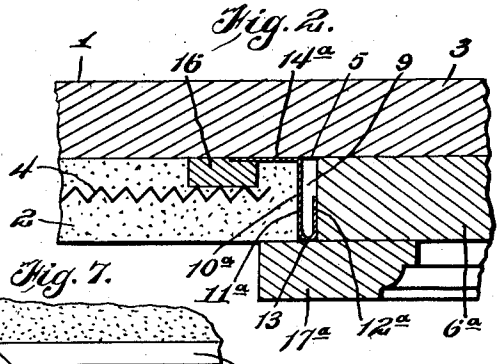


Fig. 7.

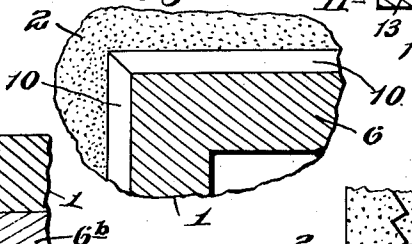


Fig. 3.

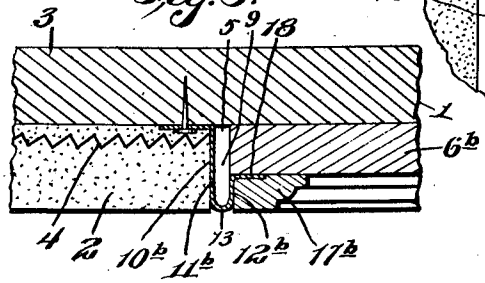


Fig. 8.

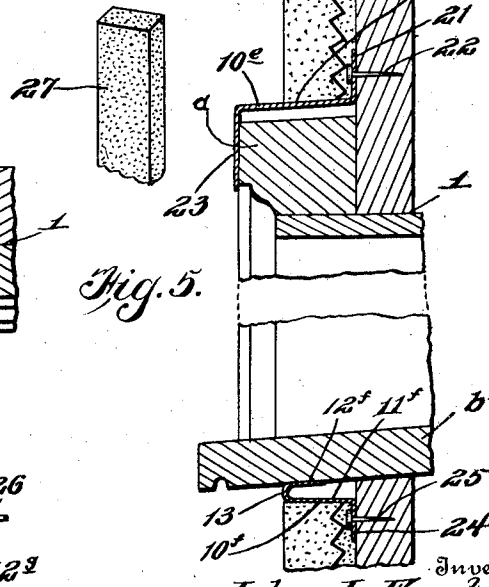


Fig. 4.

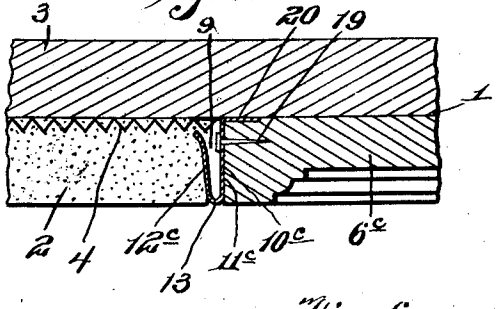
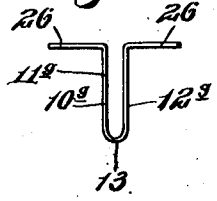


Fig. 5.

Fig. 6.



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FLEXIBLE JOINT FOR STUCCOED BUILDINGS.

1,355,756. Specification of Letters Patent. Patented Oct. 12, 1920.

Application filed February 21, 1918. Serial No. 218,453.

To all whom it may concern:

Be it known that I, JOHN J. EARLEY, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Flexible Joints for Stuccoed Buildings, of which the following is a specification.

My invention relates to the provision, in houses or other structures covered with stucco or exterior plaster, of a novel joint construction between the exterior coating or surface of stucco and the outside frames of doors, windows or other openings, and is primarily for the purpose of providing a flexible joint between the body of the stucco and such outside frame elements.

It is well known that of the defects commonly occurring in stucco or exterior plaster, none are more prevalent than the unsightly cracks which develop more particularly at the corners of openings and radiate from these openings. Such cracks are most conspicuous and of greatest magnitude on wooden frame structures where the openings are nearly always framed in wood.

As the stucco or exterior plaster is a hard, brittle and comparatively non-elastic material, the cracks which develop are evidences of tension in the stucco, the directions of these tensile forces being approximately at right angles to the cracks. It follows, therefore, that cracks radiating from the corners of windows or other openings as above described indicate that stresses exist across these corners in the adjoining stucco. An analysis of the conditions at these points further indicates that the stresses are due in large measure to the pressure exerted by the swelling of the wooden frame, which in time is caused by the absorption of moisture in damp or rainy weather. Thus, as stucco of any character is comparatively weak in tension, it is evident that any appreciable swelling of the wood embedded in the stucco, which is obviously the condition at the corners of window or similar openings, must result in cracking of the stucco along a line which is approximately the bisector of the angle formed by the meeting of the two sections of frame at the corner in question.

It is with the object of nullifying the expansive force of the wood above described, and permitting of relative movement between the framing of an opening and the stucco, that I have devised my invention, which consists broadly in the interposition between the adjacent surfaces of the frame and stucco of a flexible joint so constructed and arranged as to form an intermediate filler zone of low resistance, whereby the free expansion of the framing is allowed without imposing strains upon the stucco, thus obviating or practically eliminating the production of cracks. In the accompanying drawing I have shown, for purposes of exemplification, some of the many forms in which the joint element may be made for carrying the invention into practical effect. I do not, however, limit the invention to these forms or to the use of any particular material, as any form of the device and any material may be employed within the spirit and scope of the invention, so long as the essential characteristics are preserved, as defined in the appended claims.

In the drawing,—

Figure 1 is a horizontal transverse section through a portion of a wall of a stuccoed building, showing one form of embodiment of my invention interposed between the stucco coating and stile of a window frame.

Figs. 2, 3 and 4 are similar views showing modified forms of the joint element and the use of different trims.

Fig. 5 is a vertical section through a window frame fitted in the wall, showing the use of still other forms of the invention at the top and bottom of the frame.

Fig. 6 is an end view of still another form of the invention.

Fig. 7 is a vertical section, on the plane indicated by the line 7—7 of Fig. 1, showing the structure at one corner of the frame.

Fig. 8 is a view showing a filler composed of felt, rubber or equivalent material

Referring to the drawing, 1 designates generally the wall of a building of the type described, including an outer coating or facing 2 of stucco or other exterior plaster, forming the outer wall surface, the sheathing 3, and the metallic or other lathing 4. In such a type of building the outer wall surface 2 is provided at proper points with openings 5 for the formation of doors, windows or the like, 6 designating a portion of the frame of a window which is fitted in an opening 5 and in practice partially or wholly surrounded by the body of stucco 2. In accordance with my invention, the adjacent surfaces 7 and 8 of the stucco body and frame element 6 are arranged in approximate but spaced relationship, the space

9 between them being of sufficient depth or width to permit of relative movements in the stucco or other plaster and the frame element without intertransmission of strains. It is, of course, to be understood that the invention is not limited in any respect to the use of any particular style or construction of frame element or trimming, as any of those in common use may be employed or the construction varied as desired or required. I have in the present instance, however, shown some of the many variations in the form of the invention and framing which may be employed, as illustrative of some of the many adaptations the invention may take to meet varying conditions of service.

In accordance with my invention I dispose in the space 9 between the adjoining surfaces 7 and 8 of the stucco body 2 and framing 6 a flexible or elastic filler 10. The filler 10, in the form shown particularly in Fig. 1, comprises a U-shaped strip of spring metal, embodying spaced parallel plates or members 11 and 12 connected at their outer edges by the fold 13, which is arranged at the outer portion of the space 9 to close the same against the ingress of moisture. The plates or members 11 and 12 are arranged to lie in contact with the surfaces 7 and 8 of the stucco body and framing, and suitable means may be provided for securing the filler 10 in place. As shown in Fig. 1, the side plate or member 12 is made of somewhat less length or width than the side plate or member 11, and such plate or member 11 is provided at its free edge with a right angularly bent flange 14 arranged to lie between the stucco body and sheathing and secured to the sheathing by suitable fastening members 15. In the form of the invention shown in Fig. 2 the filler 10^a has its side plate or member 11^a provided with a flange 14^a which is arranged to lie between the sheathing 3 and a furring strip 16 and may be suitably secured thereto, and the side plate or member 12^a of said filler is made considerably shorter than the member 11^a, being shown in the present instance as approximately half its width or depth. Fig. 1 shows a form of window frame 6 in which the frame is provided with a bead 17 overlapping the joint between the same and the stucco body and concealing the filler, while in Fig. 2 the frame 6^a is shown provided with a molding or facing strip 17^a secured thereto and similarly extending across the joint.

In Fig. 3 I have shown another modified form of the invention in which the filler 10^b is provided with a side member 11^b and flange 14 similar to the filler 10 in Fig. 1, but in which the side member 12^b is of materially less depth or width than the side member 11^b and provided with a flange 18 which is held and suitably secured between the body of the frame 6^b and a facing or molding strip 17^b secured thereto.

In Fig. 4 I have shown a construction of filler 10^c in which the main limb 11^c of the filler is secured to the frame element 6^c as by fastenings 19 and is provided with a flange 20 clamped or secured between the frame and sheathing, while the opposite or relatively free side member 12^c is longitudinally curved and arranged to bear against the surface of the stucco body. In this construction, as in the construction shown in Fig. 3, the fold of the filler closes the forward portion of the space between the stucco body and framing and the latter is devoid of a bead or other projection across the joint, but this form of filler may be employed with any of the other types of framing shown.

In Fig. 5 I have shown particular forms of fillers 10^e and 10^f for use between the stucco body and the lintel *a* and sill *b* of a window frame. The filler 10^e is approximately L-shaped, comprising a body plate or member 11^e interposed between the lintel and superposed portion of the stucco body and bearing against the latter, and having at its inner edge a flange 21 secured to the sheathing by suitable fastenings 22, the outer edge of the body portion having a flange or plate 23 which extends down over the face of the lintel. This plate or flange 23 also closes the joint and may serve as a water shed. The filler 10^f is similar in form to the fillers shown in Figs. 1 to 4, inclusive, and comprises a side plate or member 11^f and a shorter side plate or member 12^f, said plates or members being connected at their outer edges by a fold 13. The plate or member 11^f is provided with a flange 24 projecting between the stucco body and the sheathing and secured to the latter by suitable fastenings 25, while the plate or member 12^f, which is comparatively short, is arranged to bear against the underside of the sill *b*. It will, of course, be understood that these particular fillers may be used to meet certain conditions and may be employed at the top and bottom of the window frame while fillers of any of the forms previously described are arranged at the sides of the window frame or between the stiles of the frame and the adjacent surfaces of the stucco body. It is to be further understood that where the openings in the stucco wall are of rectangular or other angular form, the fillers are disposed between the angular surfaces of the framing and the adjacent angular surfaces of the wall of the stucco body, thus disposing them to compensate for the swelling and expansion of the wood framing in all directions.

In Fig. 6 of the drawing I have shown another modified form of the invention in

which the filler 10^g is composed of side plates or members 11^g and 12^g which are of equal length, said plates or members being connected at their outer edges by a fold 13 and provided at their inner edges with laterally extending flanges 26 designed to be disposed between the stucco and sheathing and frame and sheathing, respectively. It will, of course, be understood that one of these flanges will be secured to the sheathing in any suitable manner, as in any of the ways previously described.

It will be evident from the foregoing that the invention provides a filler which is disposed in the space between the wood framing and stucco body, so as to close the joint, and which is made of resilient material, or othewise made flexible or elastic, so as to always maintain contact with the adjacent surfaces of the wood framing and plaster. Hence the woodwork may expand and contract without affecting the stucco body, the filler yielding to compensate for the expansion and then returning to normal position upon subsequent shinkage of the wood. A positive closure of the joint against entrance of moisture will thus be obtained and the plaster and framing allowed to have relative movement without resulting strains upon the plaster. Where the surfaces come together in the form of corner angles, it will also be understood that the framing will be allowed to expand in directions at right angles to each other without transmitting strains of the character referred to to the body of plaster. Accordingly the development of cracks from tension in the stucco will be avoided at all points and the difficulties mentioned overcome in a simple and efficient manner.

In some cases, the fillers, while preferably made in channeled form of spring metal, may be otherwise formed. In Fig. 8 I have shown a form of filler 27 which may be used under some conditions, said filler consisting of a strip of felt, rubber or other similar flexible or elastic material.

Having thus fully described my invention, I claim:—

1. In a stuccoed building, the combination with a wall sheathing having a facing of stucco, and a framing of greater expansibility than the stucco secured to the wall sheathing, said framing and stucco having spaced and opposed surfaces beyond the sheathing, of cushioning means disposed in said space and between said surfaces, said cushioning means operating to absorb the tensile strains from the expansion of the framing and to prevent the transmission of such strains to the stucco facing.

2. In a stuccoed building structure, a sheathing, a wall surface of stucco secured to the sheathing, a frame structure of a material of greater expansibility and contractibility than the stucco, said wall surface and frame structure having marginal portions disposed in spaced relationship and substantially coextensive in thickness with each other, and a filler of yielding material disposed in said space between and bearing throughout upon the said opposed margins of the stucco wall surface and the frame structure, said filler operating to permit expansion and contraction of the frame surface and to absorb and prevent the transmission of tensional strains therefrom to said stucco surface.

3. In a stuccoed building, the combination of a wall sheathing having an opening therein, a metallic lathing secured to said sheathing, a wall facing of stucco secured to the sheathing and lathing and having a surface thereof arranged to form an opening of greater dimensions than and surrounding the opening in the sheathing, a framing of greater expansibility than the stucco secured in the opening in the sheathing and having a marginal portion extending on the outside of the sheathing beyond the said opening therein and into the opening formed in the stucco wall facing, said marginal portion of the framing and portion of the stucco bounding the opening therein being relatively arranged to form opposed and spaced surfaces, and a cushioning medium disposed between said opposed surfaces of the stucco wall facing and marginal portion of the framing, said cushioning material operating to absorb the tensional strains resulting from the expansion of the framing and to prevent transmission of such strains to the stucco wall facing.

4. In a stuccoed building, the combination of a wall sheathing having an opening therein, a metallic lathing secured to said sheathing, a wall facing of stucco secured to the sheathing and lathing and having a surface thereof arranged to form an opening of greater dimensions than and surrounding the opening in the sheathing, a framing of greater expansibility than the stucco secured in the opening in the sheathing and having a marginal portion extending on the outside of the sheathing beyond the said opening therein and into the opening formed in the stucco wall facing, said marginal portion of the framing and the portion of the stucco bounding the opening therein being relatively arranged to form opposed and spaced surfaces, and a channeled strip of resilient cushioning material disposed in the space between said opposing surfaces of the stucco and framing and having the members thereof arranged to bear respectively against said surfaces, said strip operating to absorb the tensional strains resulting from the expansion of the framing and to prevent transmission of such strains to the stucco facing, one member of said strip having a flange

bent at an angle thereto and disposed between the sheathing and one of the aforesaid elements secured to said sheathing.

5. In a stuccoed building, the combination of a wall sheathing having an opening therein, a metallic lathing secured to said sheathing, a wall facing of stucco secured to the sheathing and lathing and having a surface thereof arranged to form an opening of greater dimensions than and surrounding the opening in the sheathing, a framing of greater expansibility than the stucco secured in the opening in the sheathing and having a marginal portion extending on the outside of the sheathing beyond the said opening therein and into the opening formed in the stucco wall facing, said marginal portion of the framing and the portion of the stucco bounding the opening therein being relatively arranged to form opposed and spaced surfaces, and a channeled strip of resilient cushioning material disposed in the space between said opposing surfaces of the stucco and framing and having the members thereof arranged to bear respectively against said surfaces, said strip operating to absorb the tensional strains resulting from the expansion of the framing and to prevent transmission of such strains to the stucco facing, one member of said strip having a flange bent at an angle thereto and disposed between the sheathing and the stucco wall surfacing.

In testimony whereof I affix my signature.

JOHN J. EARLEY.