United States Patent [19]

Molyneux

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[45] **Jan. 2, 1973**

[54] **BUILDING CONSTRUCTION AND ELEMENTS FOR USE THEREIN**

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July 7, 1969 England 34,191/69

[52] **U.S. Cl.** **52/213,** 52/713, 52/710, 52/565

[51] **Int. Cl.** **E06b 1/58,** E06b 1/32, E05b 1/02

[58] **Field of Search** 52/350, 565, 567, 561, 258, 52/252, 213, 214, 212, 257, 243, 252, 710, 738, 740, 706, 707, 696, 698, 564, 204, 208, 210, 367, 426, 562

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[57] **ABSTRACT**

An upstanding channel member, serving as a mounting for a door or window frame, has a rectangular or trapezoidal central portion received with all-around clearance in a space between two adjoining wall elements and bears with one or two transverse base flanges upon an end face of one or both wall elements. Two flat anchor members, secured to opposite sides of the central channel portion by a dovetail fit, are independently shiftable along these surfaces to fit between courses of building blocks or bricks constituting the wall elements. The mortar bonding these courses together flows into the clearance around the central channel portion and holds it, together with the anchor members, in position between the wall elements.

7 Claims, 12 Drawing Figures

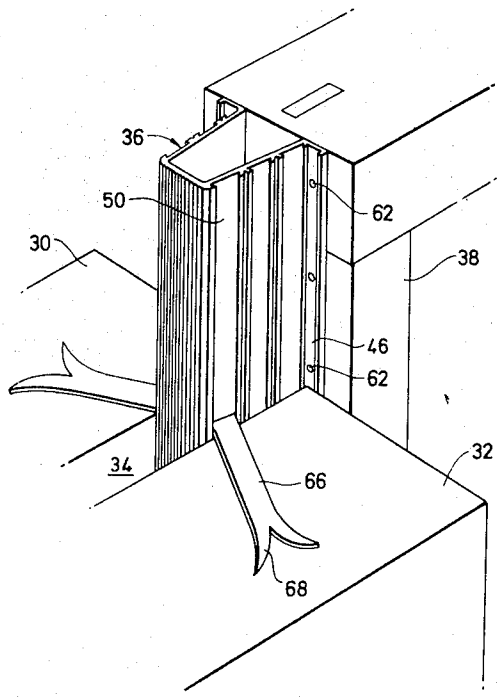


FIG. 1. PRIOR ART

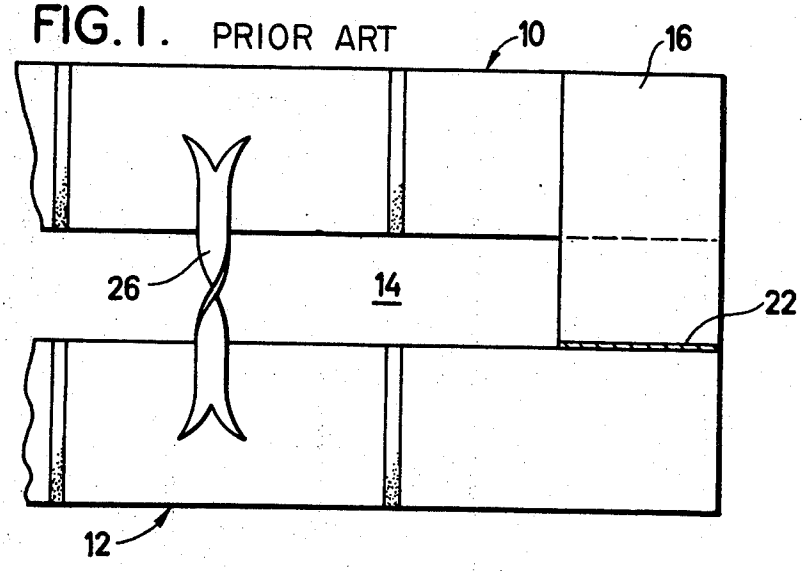
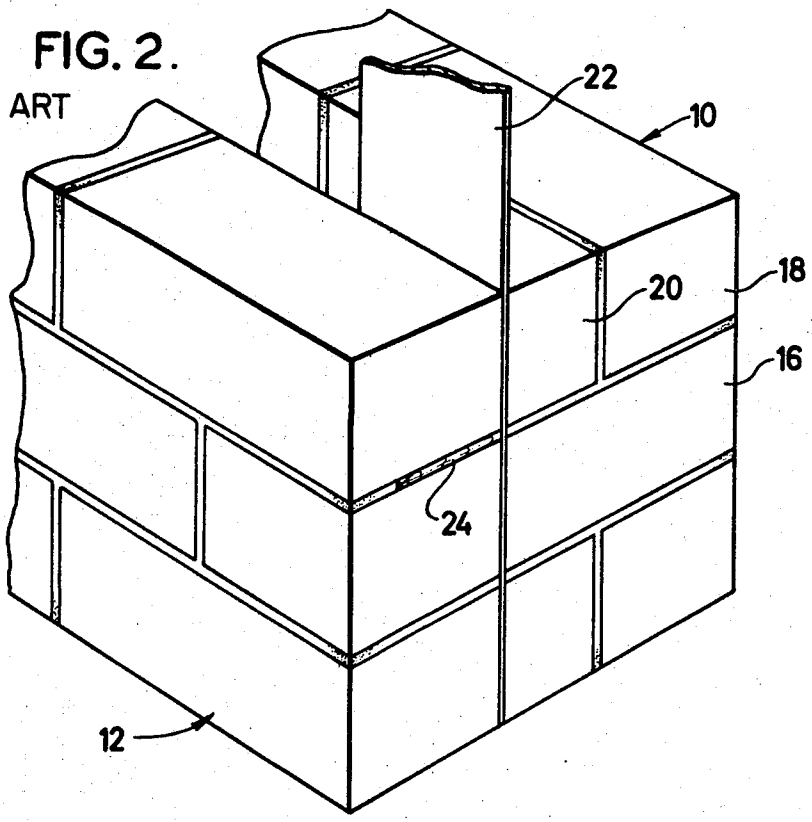


FIG. 2.
PRIOR ART



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FIG. 3.

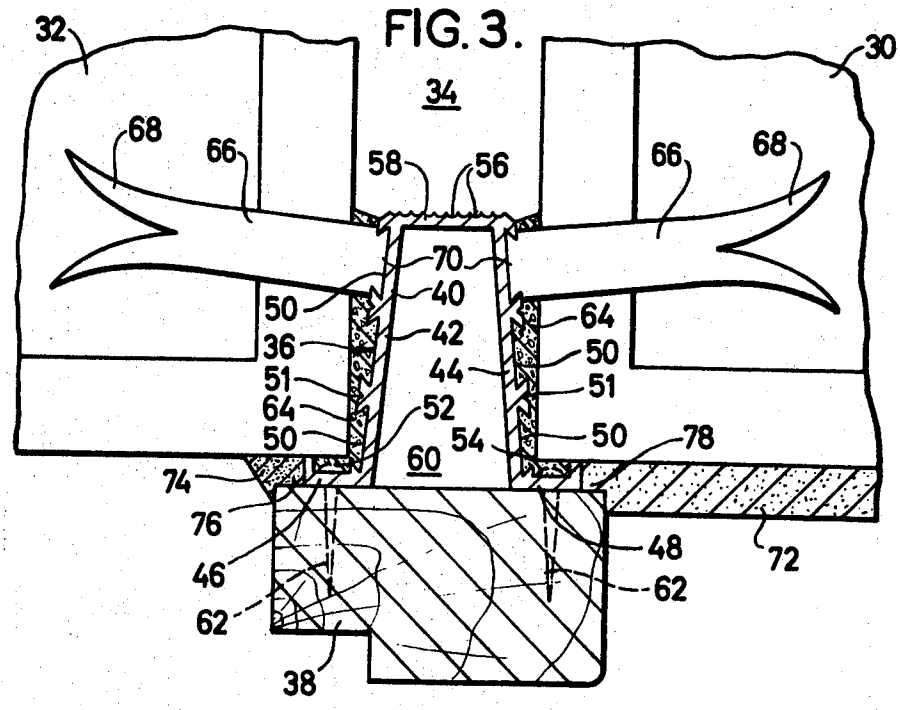
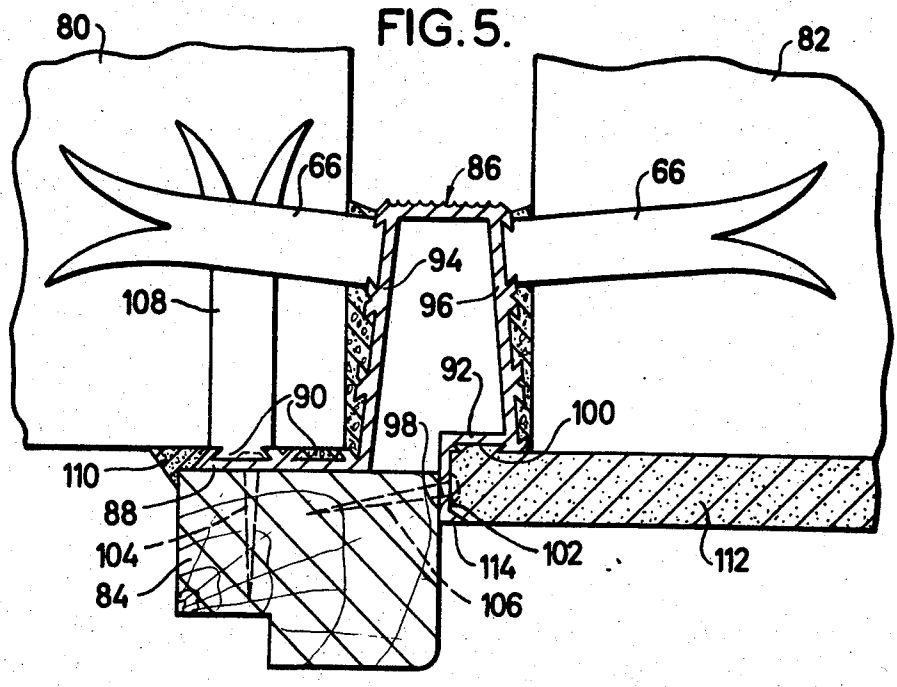


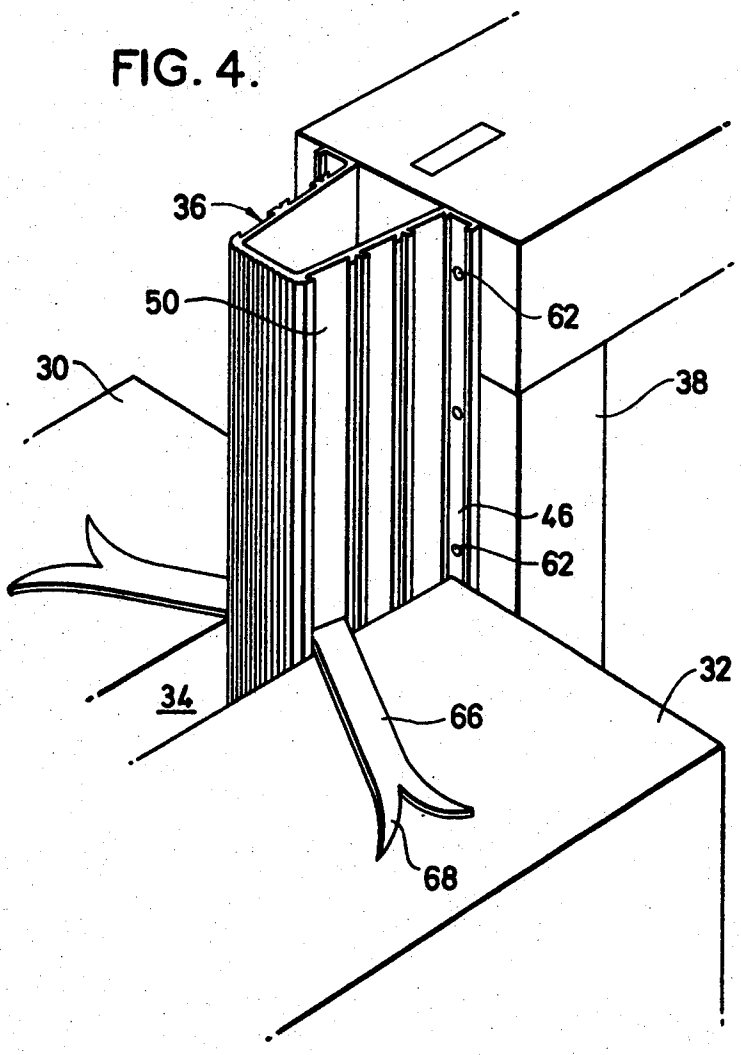
FIG. 5.



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FIG. 4.



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FIG. 6.

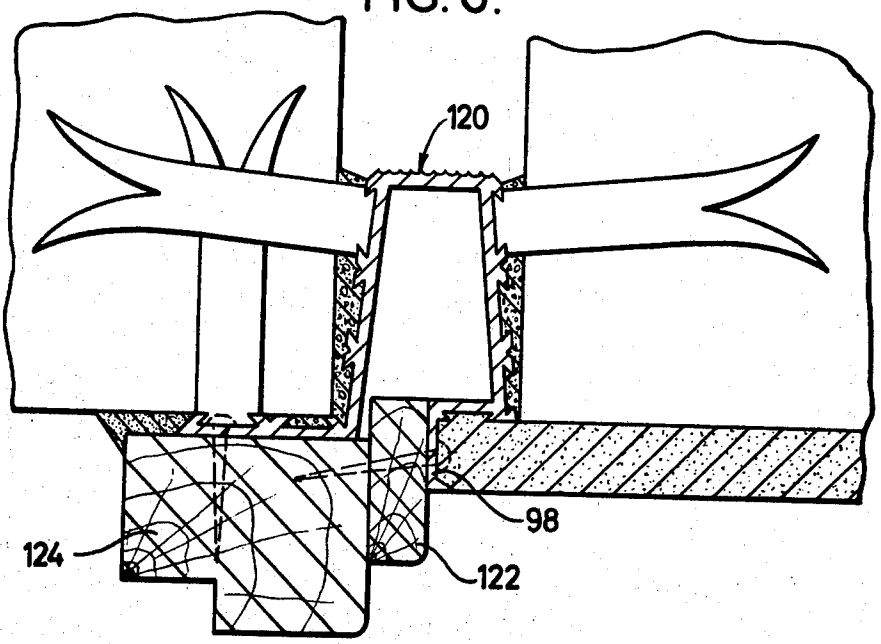
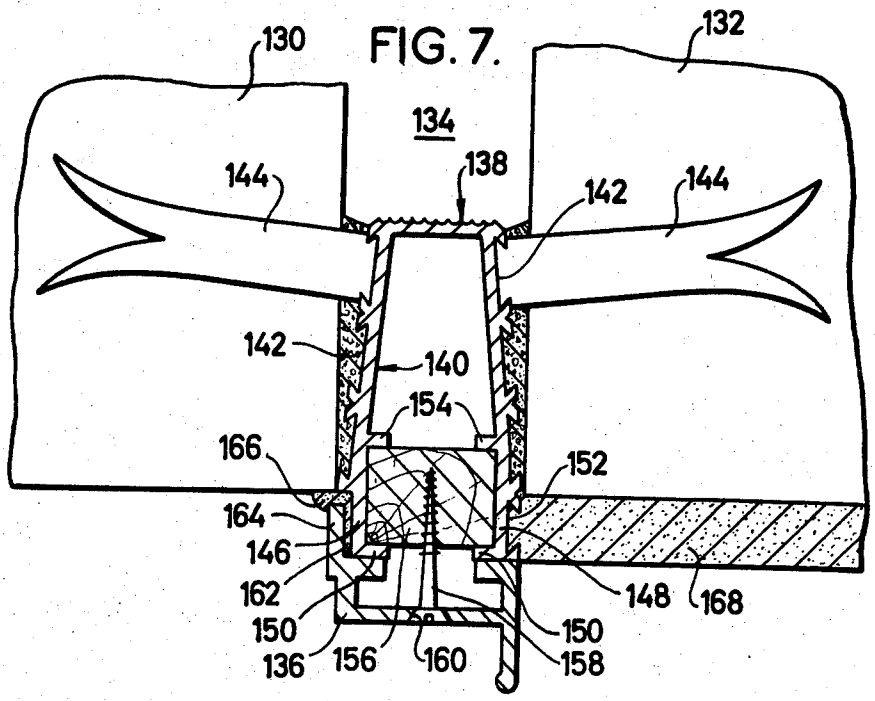


FIG. 7.



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FIG. 8.

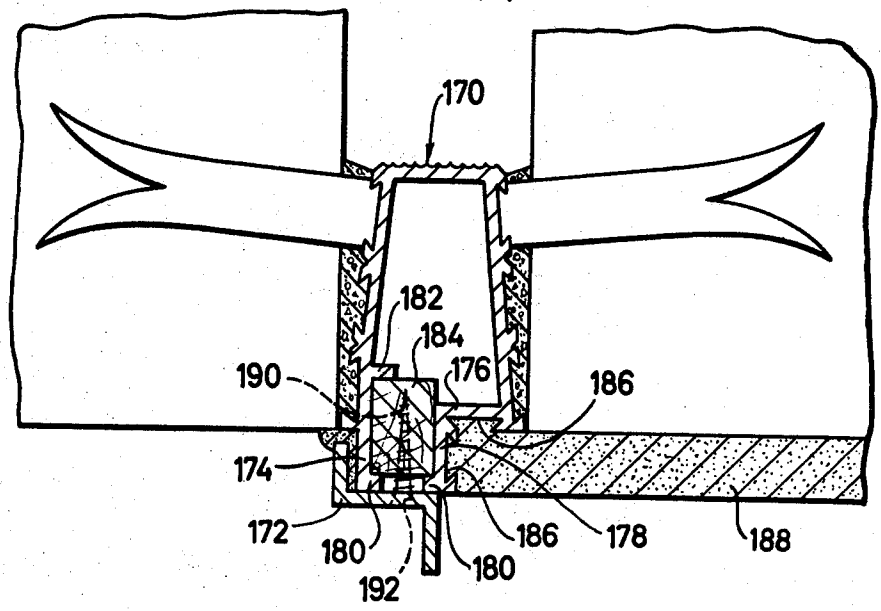
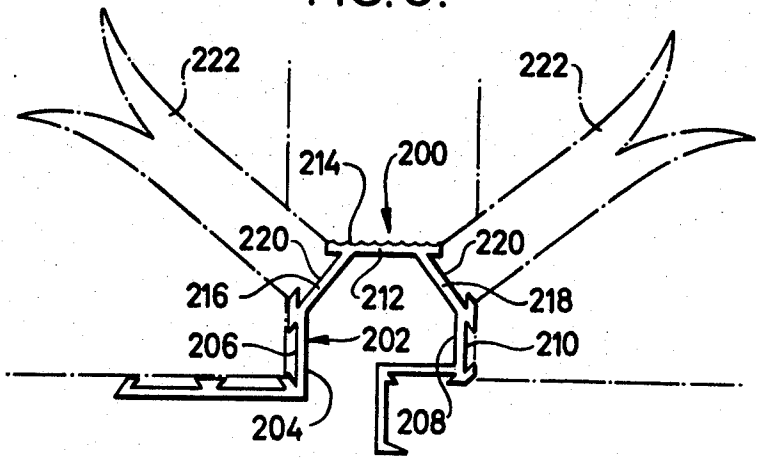


FIG. 9.



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FIG. 10.

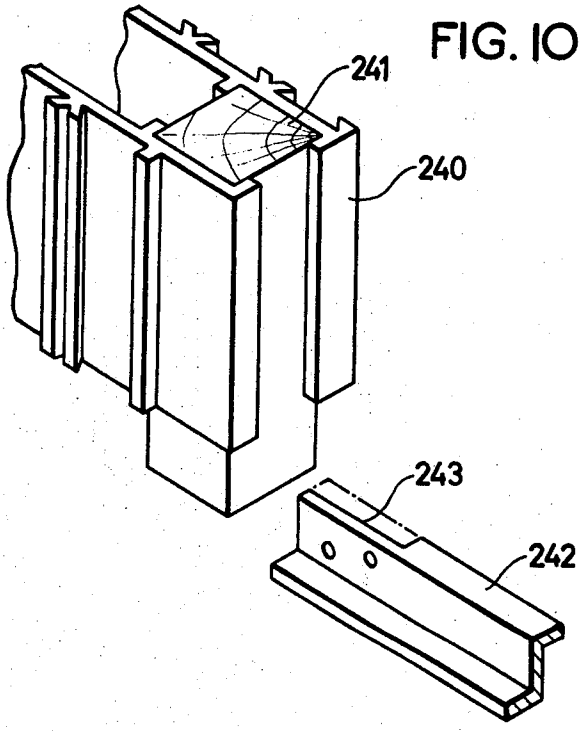
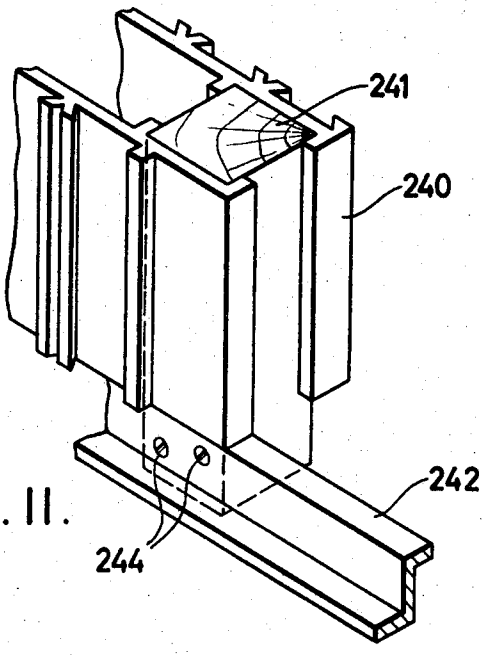


FIG. 11.



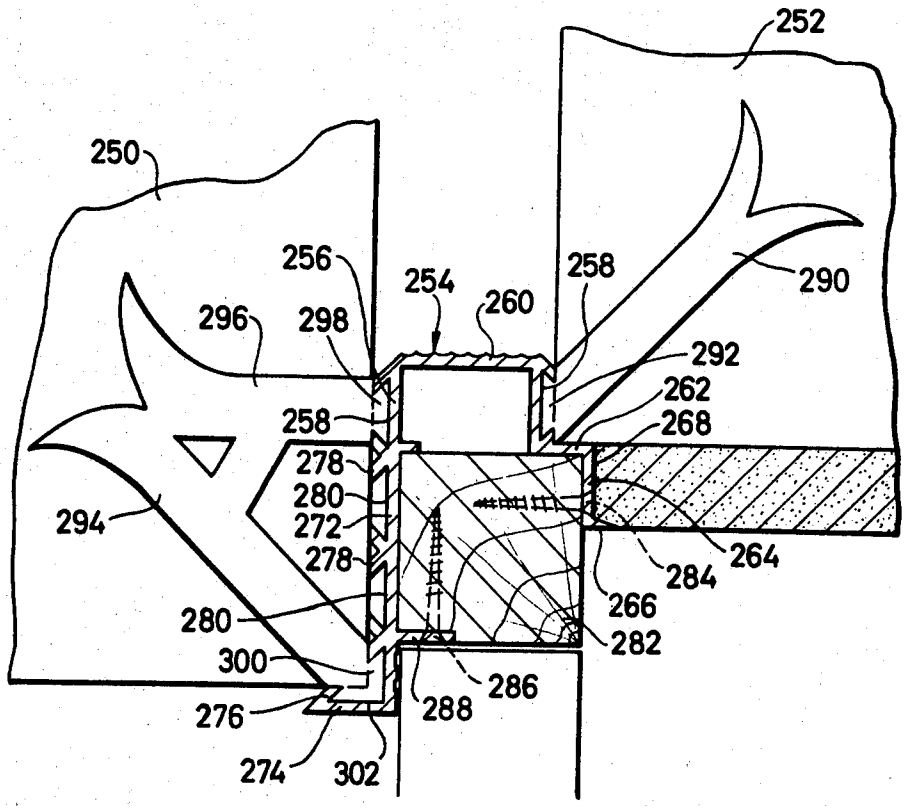
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FIG. 12.



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BUILDING CONSTRUCTION AND ELEMENTS FOR USE THEREIN

FIELD OF THE INVENTION

This invention relates to building construction and especially to the construction of recessed walls adjacent to openings for windows, doors, shutters or other closures. It should be understood, that while this specification will, in general, refer to walls of brick, the invention is not restricted to brick walls but can be used with walls of any material or any combination of materials (e.g. prefabricated slabs and blocks).

BACKGROUND OF THE INVENTION

In the traditional method of forming the vertical end of an opening in a recessed wall, it is necessary in one course to use a brick cut to extend across one leaf (usually the inside leaf) and across the end of the recessed, but not on to the other leaf. In the next course a short piece of brick has to be cut, merely to lie across the end of the recess. These cut portions of brick are referred to respectively as three-quarter and quarter bricks, and it is a time consuming operation for the bricklayer to produce the cut portions. Furthermore, a layer of damp-proof course material — usually felt impregnated with bitumen — has to be fitted vertically between the one leaf of bricks and the edge formed at the ends of the three-quarter and quarter bricks abutting this one leaf. There are several problems with this construction and, in practice, it is difficult to achieve a fully waterproofed seal up the sides of the frame stiles.

Quite apart from the problems of labor costs and weatherproofing involved with the conventional method, the two leaves of the wall are not tied together as adequately in the region of the wall end as in other regions because it is not possible to fit tie bars through the vertical damp-proof course.

Moreover, if a timber window frame is being fitted, any joggles on the frame must be built into the brickwork in which case they are exposed to dampness, and then, after the brickwork has set, the carpenter has to fix the frame by nailing it to wooden plugs let into the brickwork. This is often an unsatisfactory job because, as has been noted previously, the brickwork is not strong in this region and the plugs may not be held.

In accordance with the invention I provide a moistureproof assembly for affixing a frame for a door, window or the like to a recessed building wall of the character described, i.e. a wall wherein two wall elements with substantially coplanar end faces are separated by a space which is generally perpendicular to these end faces, each wall element being composed of several tiers or courses of building blocks held together by layers of adhesive material hereinafter referred to as mortar; the assembly includes, besides the two wall elements, an upstanding channel member of profiled sheet material having a central portion which projects with all-around clearance into the space or recess between the two wall elements and whose base, lying outside that recess, has a flange or a pair of flanges bearing upon either or both of their end faces. The clearance formed around the inserted central portion of the channel member is occupied by a moistureproofing filler which bonds that member to the wall elements and which, advantageously, is an overflowing mass of the mortar forming bonding layers between the building-block courses; a pair of flat tie bars, serving to anchor the channel member to the wall elements, positively engage opposite outer surfaces of the central portion of that member and extend laterally outwardly therefrom between successive courses of each wall element.

According to a more specific feature of my invention, the two opposite outer surfaces engaged by the anchor members or tie bars are provided with vertical keying formations, such as dovetailed grooves, matingly receiving adjoining ends of the two anchor members so as to enable their independent vertical displacement therealong until the enveloping filler (mortar) has hardened. The two anchor members advantageously include with each other an obtuse angle pointing toward the exposed base of the channel member, as by extending at right angles to a pair of lateral surfaces of a generally trapezoidal profile converging in a direction away from the base, so as to take a better grip on the adjoining wall elements.

DESCRIPTION OF THE DRAWING

The invention will be better understood from the following descriptions of several practical embodiments of the invention which are described, by way of example only, with reference to the accompanying drawing, in which:

FIG. 1 is a horizontal cross-section through the end portion of a recessed wall whose end is closed in the conventional manner;

FIG. 2 is a perspective view of the end of a recessed wall during construction, this view also showing the conventional method of closing the end;

FIG. 3 is a horizontal cross-section through the end of a recessed wall showing an embodiment of the present invention used with a timber window or door frame;

FIG. 4 is a perspective view showing part of a window and part of a recessed wall during construction;

FIG. 5 is a view similar to FIG. 3 but showing an alternative embodiment, for use with a timber window or door frame;

FIG. 6 is a view similar to FIG. 5, showing another embodiment using an element of the same kind as that illustrated in FIG. 5;

FIG. 7 is a view similar to FIG. 3 but showing an embodiment for use with an aluminum window frame;

FIG. 8 is a view similar to FIG. 3 but showing an embodiment for use with a steel window frame;

FIG. 9 is a view similar to FIG. 3 but showing another embodiment for use with a timber window or door frame;

FIG. 10 is a fragmentary perspective view showing the construction of a sub-frame;

FIG. 11 is a view similar to FIG. 10 but showing the assembled sub-frame; and

FIG. 12 is a view similar to FIG. 3, showing the application of the invention to a door frame.

SPECIFIC DESCRIPTION

FIGS. 1 and 2 of the drawing illustrate the conventional method of closing the end of a recessed wall at an opening for a window or door. The purpose of these illustrations is to show the disadvantages of the conven-

tional method which are overcome by the use of the invention.

In FIGS. 1 and 2, two wall elements or leaves **10** and **12** of a recessed brickwork wall are shown separated by a standard recess or space **14** approximately 2 inches wide. It is necessary to close the end of the recess to ensure correct spacing of the leaves **10** and **12** at the end and to provide a mounting for the window or door frame.

In one course of bricks, a brick **16** is cut to a length just less than the width of a brick plus the width of the recess, and this brick **16** is laid as shown with its length extending across the end of the wall from one outer face. The brick **16** therefore covers one leaf of the wall and almost closes the end of the recess, and because of its subsize length it is referred to as a three-quarter brick. When the next course of bricks is laid, the part of the threequarter brick in the leaf **10** is covered by a brick **18** which forms part of the ordinary bond of the leaf **10**. For this course, therefore, it is necessary to cut a brick **20** to a length just less than the width of the recess; this one is called a quarter brick and simply extends across the end of the recess.

This construction enables a strip **22** of conventional damp-proof course material to be laid vertically between the leaf **12** of the wall and adjacent ends of the three-quarter and quarter bricks and together with the three-quarter and quarter bricks it fills the end of the recess. The vertical damp-proof course is essential to prevent dampness from bridging the recess at the closed end.

At intervals timber pads such as shown at **24** are let into the end of the leaf **12** during construction, so that nails or screws for securing the window or door frame can be driven into them at a later stage. Tie bars **26** are used in the conventional manner to hold the two leaves **10** and **12** together, but these cannot be used at the end where the damp-proof course **22** is fitted.

The drawbacks of the system of recess closing illustrated in FIGS. **1** and **2** are well known to those skilled in the art. Clearly the cutting of bricks to produce the three-quarter and quarter bricks is time-consuming and wasteful. It would be possible to provide special bricks for this purpose, but builders try to avoid the use of nonstandard items as far as possible because of their cost and the additional quantities to be calculated and stored separately.

In practice, it is often difficult to obtain proper sealing against the ingress of moisture. This is because it is easy to bridge the vertical damp-proof course **22** at the edges — especially the inside edge. This can be guarded against by the use of extra-wide damp-proof course material, but this also involves the use of nonstandard elements.

As far as the wall itself is concerned, it will be apparent that it is not possible to fit ties of any kind at the end of the wall, because of the vertical damp-proof course **22**, and consequently the two leaves **10** and **12** cannot be firmly secured to each other in the zone of the window or door frame. This not only is deleterious in itself, but is a source of difficulty in fitting the frame. Clearly it is impossible to fix the frame to the wall while the wall is being built, yet there is also the problem of the fixing pads **24** becoming loose afterwards when the mortar dries. Generally the frame is used as a template for the building of the walls around the opening and then, when the mortar has set, the carpenter has to adjust the frame if necessary and nail it to the timber pads **24**.

Another problem arises because timber window frames are made with joggles (i.e., projections beyond the corners). These should be built into the brickwork to assist in tying the frame to the brickwork and the joggles have to be cut when the frame is fitted, thus causing more work on the site.

In FIGS. **3** and **4** of the drawing, there is shown an inner leaf **30** and an outer leaf **32** of a brickwork wall, with a recess or space **34** between them. The two leaves or wall elements **30** and **32** are tied together by conventional tie bars (not shown) except at the end portions adjacent an opening for a window or door frame as illustrated. A stile **38** at one end of a window frame (which is made in wood) would, in the conventional construction, abut the end of the wall, but the recess (usually **2** inches wide) would be closed by alternate courses of (*a*) three-quarter bricks laid on the inside leaf — or, very rarely, on the outside leaf — and (*b*) quarter bricks laid in the end of the recess on the three-quarter brick below it as described with reference to FIGS. **1** and **2**.

It will be noted that in this construction there are no bricks (three-quarter or quarter) across the end of the recess but, instead, there is a special sealing member **36** fitted across the end of the space **34**. This end sealer forms in itself an important feature of the invention, and will be described in some detail.

The sealer **36** is made as an extruded channel section of a plastic material so as to be substantially rigid — (although some flexibility would be permissible) — water resistant and water impermeable. It is also desirable that the sealer should be capable of retaining these characteristics more or less permanently, and certainly for long periods, without protective coating. It should be understood, however, that a sealer made of other than plastic materials (e.g. metal) and coated with a suitable layer of plastic would be within the scope of the invention.

Polyethylene or polyvinylchloride are suitable substances for the manufacture of the sealer.

It is also to be noted that the sealer or channel member **36** is of constant cross-section throughout its length. This enables it to be produced by an extrusion process, which makes the production of large quantities relatively cheap, and also enables the sealer to be supplied in long lengths for cutting into the lengths required on any particular job.

The profile of members **36** forms a deep channel portion **40** with side walls **42** and **44**, which converge toward one end, and outwardly extending flanges **46** and **48** at the wider end. This gives the sealer an overall "top-hat" or trapezoidal cross-sectional appearance as seen in FIG. **3**. The channel portion **40** must be capable of entering the recess **34**, and its overall width at the wider end (i.e. where its walls join the flanges **46** and **48**) is only about ¼ inch (6 millimeters) less than the width of the recess itself, but it will be observed that the flanges **46** and **48** extend well beyond each side of the recess.

A series of three longitudinal flutes **50** are formed in the outside of each side wall **42** and **44**, each of these

grooves being undercut so as to be of dovetail cross-section. In addition, there are longitudinal grooves **52** and **54** one in each of the flanges **46** and **48**, but these are not undercut. Finally a series of shallow longitudinal grooves **56** are formed in the outside of a wall **58** which forms the base of the channel portion **40** at its narrow end. The purpose of the grooves and grooves will appear later, but it should also be mentioned that the inwardly converging trapezoidal section provides a large space **60** within the sealer and that this space is open at the flanged side of the sealer. As shown, shallow "V" grooves **51** are formed in the dovetail-shaped pieces of the side walls between the grooves, but these are simply for ease of manufacture.

The stile **38** of the window frame is wide enough to bridge the width of the recess **34**, with some timber projecting on each side of the recess. When installing the sealer **36**, a length of channel profile is cut off equal to the overall height of the window frame **38**. This length is placed against the outside of the stile and is secured thereto by nails **62** driven through the reduced portion of the flanges **46** and **48** below the grooves **52** and **54**. I have found that by using a suitable grade of plastic material for the sealer it is quite easy to drive nails through the flanges for securing purposes. Of course, other methods of securing could be used, for example holes could be preformed in the flanges to accept fastening screws, but this would entail forming the holes after extrusion which would add to the cost of the sealer. Again, it might be possible to secure the sealer to the stile by an adhesive but, whatever method is adopted, it will be apparent that the sealer must have flanges or equivalent formations to receive fixing means for securing the sealer to the stile.

During the construction of the building, the window frame is placed in the required upright position resting on the conventional sill (not shown). Then the leaves **30** and **32** of the recessed wall are built up adjacent the window frame, and the channel portion **40** of the sealer **36** is sandwiched between the leaves. The end bricks of the leaves can be pressed directly against the flanges **46** and **48** or any gap between these bricks and the flanges can be filled with mortar. Indeed, as the wall rises, mortar **64** squeezed out from between the bricks will flow into the grooves **52** and **54** of the flanges **46** and **48** (so that the heads of the nails **62** will be completely sealed) and into the narrow spaces between the side walls **42** and **44** and the bricks. Furthermore, some mortar will flow into the dovetailed grooves **50** so as to forming a key between the two leaves **30** and **32** and the sealer **36**. This not only holds the sealer firmly in position, but also acts to tie the two wall leaves together. While there will normally be a sufficient quantity of mortar squeezed out of the leaves, the bricklayer may place extra mortar between the courses in the area of the sealer to ensure that a good bond is obtained.

Special tie bars or anchor members **66** are used with the sealer. Each of these bars is made of galvanized steel plate, and has the usual forked end **68** to engage between the courses of bricks, but only one end is forked; the bar is shorter than usual and quite flat, without precautions such as twisting to prevent moisture from creeping along it. All this makes the tie bar very easy to produce; in fact, it can be made as a stamping.

At its inner end, each tie bar has a root portion **70** which is adapted to fit snugly in one of the grooves **50** of the sealer **36**. It should be understood that the tie bars could also be made of plastic material if desired, and that the shape of the outer forked end can be varied.

As illustrated in FIGS. **3** and **4**, the tie bars **66** are fitted between the side walls **42** and **44** of the sealer and the brickwork leaves **30** and **32**. To fit a bar to the sealer, it is tilted about its own longitudinal axis until its root **70** will pass into the dovetailed groove **50**, and then, when the root is within the groove, the bar is turned into its flat position — resting on a brick — and its dovetail root engages neatly in the groove.

The bar is then firmly anchored to the sealer, and can be moved only by twisting it, which of course cannot happen once the next course of bricks is laid on top of it. The tie bars offer additional security to the sealer **36** and also effectively tie together the leaves **30** and **32** in the zone where the tying is weak in conventional constructions.

While it would be possible to fit the bars **66** into any of the grooves **50**, prefer that they should be fitted into the grooves remote from the flanged side of the sealer. This is to ensure that there is sufficient mortar between the bar and the end of the wall to prevent the bar from being pulled sideways out of the brickwork by loads applied to the window frame. Advantageously, those recesses **50** which receive the bars **66** are spaced from the outer or flanged end of the sealer by a distance at least equal to half the width of the channel portion **40**, and in the particular example illustrated in FIGS. **3** and **4**, it will be clear that this distance is considerably greater than the width of the center portion **40**.

The tie bars are fitted as desired, and one of the advantages of the extruded section of the sealer is that the bars can be placed anywhere along its length, so that the courses in the two leaves **30** and **32** do not need to be level with each other.

The window frame is fixed in position when the walls are built up and requires no further attention. Plaster **72** is applied to the inside reveal up to the window frame, and mastic **74** is applied to the outside in the usual way. It will be observed that the mastic seal is not so vital when using the invention as it is in the conventional construction, because the center sealer itself acts to prevent ingress of water. The flanges **46** and **48** ensure that the frame is spaced from the brickwork — which, of course, helps to keep the timber stile dry — and there are clearances **76** and **78** formed between the stile and the brickwork which act as keys for the mastic and the plaster.

The comparatively large air space **60** is useful because it allows moisture in the timber stile to dry out, which is not always possible with known mounting for a window frame. Furthermore, if there are joggles on the frame, they can be cut to fit into the space **60** (so that it is not necessary to remove them). This advantageous because (*a*) it is good practice to leave the joggles on the frame if a shouldered tenon is not used, and (*b*) the joggles are not in contact with damp brickwork.

It will be clear that the impervious nature of the sealer **36** ensures that there is a satisfactory moisture-proofing insert between the inner and outer leaves of the recessed wall at the critical area near to the window

opening. Moisture cannot creep around the sealer because of the grooves **56**, which act as moisture traps, nor can it cross the large gap between the side walls **42** and **44** if it should attempt to flow by capilliary action between the flange **46** and the stile **38**. Another important feature is that, because this insertion extends throughout the height of the stile between the sill and the lintel, it is not possible for mortar to fall onto it and bridge the recess. It is particularly worthy of note that the frame cannot get out of true during the building and does not require adjustment after the mortar is set.

In FIG. **5**, there is again illustrated part of a recessed wall having leaves **80** and **82**, a window-frame stile **84** and a sealer **86**. The sealer **86** differs from the sealer **36** shown in FIGS. **3** and **4** in that (*a*) its outer flange **88** is considerably longer than the flange **46** and has two dovetail-shaped grooves **90** and (*b*) its inner flange **92** projects outwardly (i.e., part way across the open end of the space between the side walls **94** and **96** of the portion which enters the recess) and has a right-angled leg **98**. A shallow dovetailed groove **100** is formed on the face of the flange **92** and a shallow groove **102** is formed on the inside face of the leg **98**. The principal advantage of the sealer **86** over the sealer **36** is that it allows the window frame to be fitted nearer to the outside of the wall.

During construction, the sealer **86** is cut to length and fastened to the window frame as described with reference to FIGS. **3** and **4** except that nails **104** are driven through the flange **88** and nails **106** are driven substantially at right angles to the nails **104** through the leg **98**. The window frame is then placed on the sill and the wall built up as before. In addition to the tie bars **66** which are fitted and function exactly as described in relation to tee sealer shown in FIGS. **3** and **4**, additional tie bars or anchor members **108** of the same kind as the bars **66** can be fitted into the outer groove **90** of the flange **88** to project as shown into the end of the outer leaf **80** substantially at right angles to the bars **66**. Alternatively a special tie plate can be used which is shaped to perform the functions of both the bars **66** and **108**.

Finally, mastic **110** and plaster **112** can be applied. Whereas the mastic keys into the space between the stile **84** and the brickwork as in the previous case, it will be observed that the plater keys into the grooves **100** and **102** in the sealer itself. Moreover the land **114** at the end of the leg **102** acts as a guide for the plasterer's trowel.

In the construction shown in FIG. **6**, a sealer **120** of the same cross-section as that shown in FIG. **5** is used. Indeed, the only difference between the construction shown in FIG. **5** and that shown in FIG. **6** is that the latter illustrates the use of a timber spacer **122** between the leg **98** and the stile **124** of the window frame. This construction enables the window frame to be fitted nearer to the outside of the wall, and in FIG. **6** the stile **124** is almost entirely at the front of the recess.

Metal window frames are now commonly used, and the invention can be adapted to such frames. In FIG. **7** a recessed wall is shown with an outside leaf **130** and an inside leaf **132**, and a space **134** between them. Element **136** is the stile of an aluminum window frame of well known type, and unit **138** is the sealer.

It will be apparent that this sealer **138** resembles the sealer **136** in many respects, including the channel portion **140** which is adapted to enter the recess **134**, and has grooves **142** to act as mortar keys and anchors for tie bars **144** which are of the same kind as the bars **66** previously described.

However, the sealer does not have diverging flanges, but instead there are extensions **146** and **148** of its side walls. Both extensions have inturned lips **150**, but whereas the extension **146** is flat-sided, the extension **148** has a dovetailed groove **152**. In addition there are lugs **154** projecting inwardly from the walls of the channel portion **140**.

When the sealer **138** has been cut to length, and before it can be fixed to the window frame, a wooden insert **156**, which just fills the space bounded by the extensions **146** and **148**, the lips **150** and the lugs **154**, is introduced. The insert can be slid into the sealer from one end, or the extensions **146** and **148** can be distended to allow the timber insert to be pushed between the lips **150**. In any event, it is preferable that the insert shall be slightly wider than the space between the extensions **146** and **148** so that the latter grip the insert tightly.

In order to fix the sealer onto the aluminum stile **136**, a wood screw **158** is passed through a clearance hole **160** provided in the stile and is screwed into the insert **156**. It is possible to fit the sealer so that a narrow gap **162** is left between the flat face of the extension **146** and a flange **164** on the stile. This gap **162** provides an additional key for mastic **166**. Once the sealer **138** has been emplaced, the building construction can proceed as described in the previous examples. The groove **152** acts as a key for plaster **168**.

FIG. **8** shows a sealer **170** in many respects similar to that shown in FIG. **7** but adapted for use with a steel window frame with a stile **172** of small cross-section. A short extension **174** is formed on the outside wall of the central channel portion of the sealer, and a flange **176** extends from the inner wall of this portion part way across the open end of the channel, there being a leg **178** on the end of the flange **176**. The flange **176** and its leg are somewhat similar to the arrangement of flange and leg shown in FIG. **5**, but it will be apparent that the leg **178** is parallel to the extension **174**.

Lips **180** are formed on the ends of the extension **174** and the leg **178**, and there is a leg **182** on the inside of the front wall of the channel portion. It is possible therefore to slide or press a timber insert **184** into the space bounded by the extension **174** the leg **178**, the lips **180** and the leg **182**. Dovetailed grooves **186** are formed in the flange **176** and leg **178** to act as keys for plaster **188**.

The sealer is secured to the stile **172** by a wood screw **190** passed through a hole **192** in the stile and screwed into the timber insert **184**, and then the window frame can be fitted as described in the previous examples.

Another variant of the invention is shown in FIG. **9**. The actual sealer **200** is similar to that shown in FIGS. **5** and **6**, and is fitted to a timber window frame in the same way as illustrated in those Figures. However, although it has a central channel portion **202** which is capable of entering the recess of the wall, this portion is much shallower than those shown in all the other Figures.

In fact, the channel portion comprises a short outer wall **204** with a single dovetailed groove **206**, a corresponding inner wall **208** with a single groove **210**, a cross-wall **212** with moisture-trap grooves **214**, and two oblique walls **216** and **218** joining their respective side walls **202** and **208** to the cross wall **212**. A dovetailed groove **220** is formed in the outside of each of the oblique walls **216** and **218**.

During the build-up of the wall, tie bars **222** identical with the bars **66** shown in FIGS. **3** and **4** are anchored in the grooves **220**. Thus the tie bars extend at approximately 45° to the face of the wall and, despite the fact that their roots are quite near to the wall end, are well secured in the leaves of the wall because their forked ends are some distance from the wall end.

For metal or plastic window frames it is usual to employ a timber sub-frame. It is possible to use the present invention for this purpose also. In FIGS. **10** and **11** there is shown a sealer strip **240** which is of the cross-section illustrated in FIG. **7**. This strip is cut to the length required for the height of the sub-frame between its head and its sill. A timber insert **241** is cut to the length of the full height of the sub-frame, and when this insert is installed it projects at each end of the sealer. Two such strips are provided (each with its timber inserts) to form the stiles of the sub-frame.

The head and sill of the sub-frame are formed from standard Z-section metal or plastic strip, and only the sill **242** being shown in the drawing. A notch **243** is cut at each end of the head and sill to receive the projecting end of the insert **241**.

When the head and sill sections are fitted to the stiles, they are secured by nails or screws **244**. This provides a very easily constructed sub-frame incorporating all the advantages of the invention.

In the arrangement shown in FIG. **12**, element **250** is part of the outer leaf of a recessed wall adjacent a door opening, and element **252** is part of the inner leaf. It will be noted that the outer leaf **250** extends beyond the inner leaf so that there is a reveal on the inside.

A sealer **254** is fitted into the recess and into the reveal. This sealer is made as an extrusion from plastic material, as in the previous examples, but its shape is quite different. There is a short channel portion **256** which enters the recess, and the opposed side walls of this portion have dovetailed grooves **258** similar to the previously described sealers, but in this instance the opposed side walls are parallel. An end wall **260** with moisture-trap grooves joins the side walls.

On the inside, there is a short flange **262** with a leg **264** at right angles to it, and a lip **266** on the end of the leg forms a groove **268** between itself and the end of the leaf **252**. The flange **262** abuts the end of the leaf **252** and plaster covers that end and seats in the groove **268**. The wide face of the lip **266** acts as a guide for the plasterer's trowel.

The outside wall **272** of the sealer extends just beyond the end of the outer leaf **250** and has an outwardly directed flange **274** with an inturned lip **276**. On the outside of the wall **274** there are diverging protrusions **278** forming dovetailed grooves **280**.

A timber insert **282** is held in place by nails or screws **284** and **286** passed respectively through the leg **264** and a rib **288** formed on the wall **272**. The insert must be rabbeted to receive the rib **288**, but as it is on the inside of the building it can be made of timber of a lower quality than that which would be required outside.

Special tie bars **290** are used in the inside leaf, and these are similar to the bars **66**, but their dovetail roots **292** are so beveled that the bars extend at approximately 45° into the leaf **252** when the roots are fitted into the recess **258**.

Special tie plates **294** are used to tie the sealer **254** to the outer leaf **250**. These plates are generally A-shaped. One leg **296** is formed with a dovetail root **298** to fit into one of the grooves **258**, but the other has an arrowhead root **300** which fits into a corner groove **302**.

When the sealer is installed as shown in FIG. **12**, it provides a complete jamb of a door frame, and the door abuts the inside face of the wall **272** where the latter projects beyond the rib **288**. This form of sealer can be used to form both jambs and a top cross-piece of a complete door frame.

It should be understood that the invention is not restricted to features specifically shown in the foregoing embodiments. For instance, the anchoring grooves need not be dovetail-shaped so long as they provide a proper key for mortar or for the roots of the tie bars. Further, the moisture-trap grooves could be replaced by a single dovetailed groove in the cross-wall of the sealer.

It should also be understood that while most of the embodiments have referred to window frames, the sealers described could be used with door frames or with other building components. Furthermore, some of the sealers could be used horizontally as lintels, header members or sills.

In the foregoing examples, the invention has been described in relation to recessed walls made of bricks. However, it will be readily appreciated that it could be used with other types of wall construction. For example, the two leaves of the walls could be made of formed blocks but the application of the invention would be exactly the same as described above. On the other hand, if the wall were made with a single outer leaf of bricks or blocks, and an inner leaf consisting of a timber frame with paneled covering, it would be desirable to secure the sealer to the timber frame (e.g., by special tie bars) but the brick or block leaf could be secured by its mortar and/or by tie bars. Again, if the invention is used with a wall made of solid mortar, the channel portion of the sealer will be completely embedded in the wall during forming.

For solid walls or walls with a narrow recess, the hollow central portion of the channel member constituting the sealer may be replaced by a single solid flange with grooves to anchor the mortar and tie bars in its opposite faces.

I claim:

1. A moistureproof assembly for affixing a frame to a wall, comprising a pair of wall elements separated by a space, a damp-proofing course element of water-impermeable corrosion-resistant material of hollow uniform cross-section over its entire length extending all along said frame, said course element having a trapezoidal-cross-section body tapering away from said frame and projecting into said space, said body having mutually converging legs formed along the exterior thereof with respective channels of dovetail configura-

tion extending the full length of the course element, the interior of said body opening in the direction of said frame, and at least one flange extending transversely to one of said legs and unitary therewith; means for securing a frame element to said flange; and flat dovetail anchors received in said wall and engaging in said channels at selected locations therealong, said channels providing sites for said anchors anywhere throughout the length of said course element.

2. A moistureproof assembly for affixing frame to a building wall, comprising:

a pair of wall elements with substantially coplanar end faces each composed of several courses of building blocks held together by layers of adhesive material, said wall elements being separated by a space generally perpendicular to said end faces;

an upstanding channel member of profiled sheet material having a central portion projecting with all-around clearance into said space and further having a base outside said space with said flange means bearing upon at least one of said end faces;

a cementitious filler occupying said clearance and bonding said channel member to said wall elements; and

a pair of flat anchor members positively engaging opposite outer surfaces of said central portion within said filler and extending laterally outwardly therefrom between successive building-block courses of said wall elements in respective layers of said adhesive material.

3. An assembly as defined in claim 2 wherein said opposite outer surfaces are provided with vertical keying formations matingly receiving adjoining ends of said anchor members.

4. An assembly as defined in claim 2 wherein said anchor members include with each other an obtuse angle pointing toward said base.

5. An assembly as defined in claim 4 wherein the profile of said channel member is generally trapezoidal, said outer surfaces converging in a direction away from said base.

6. An assembly as defined in claim 2 wherein said filler is an overflowing mass of said adhesive material fully enveloping said anchor members.

7. An assembly as defined in claim 2, comprising a further anchor member positively engaging said flange means and extending into one of said wall elements through said one of said end faces.

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