Sept. 27, 1932. F. C. ANDERSEN 1,879,005

WINDOW AND DOOR FRAME

Filed Feb. 27, 1929 3 Sheets-Sheet 1

FIG. 1

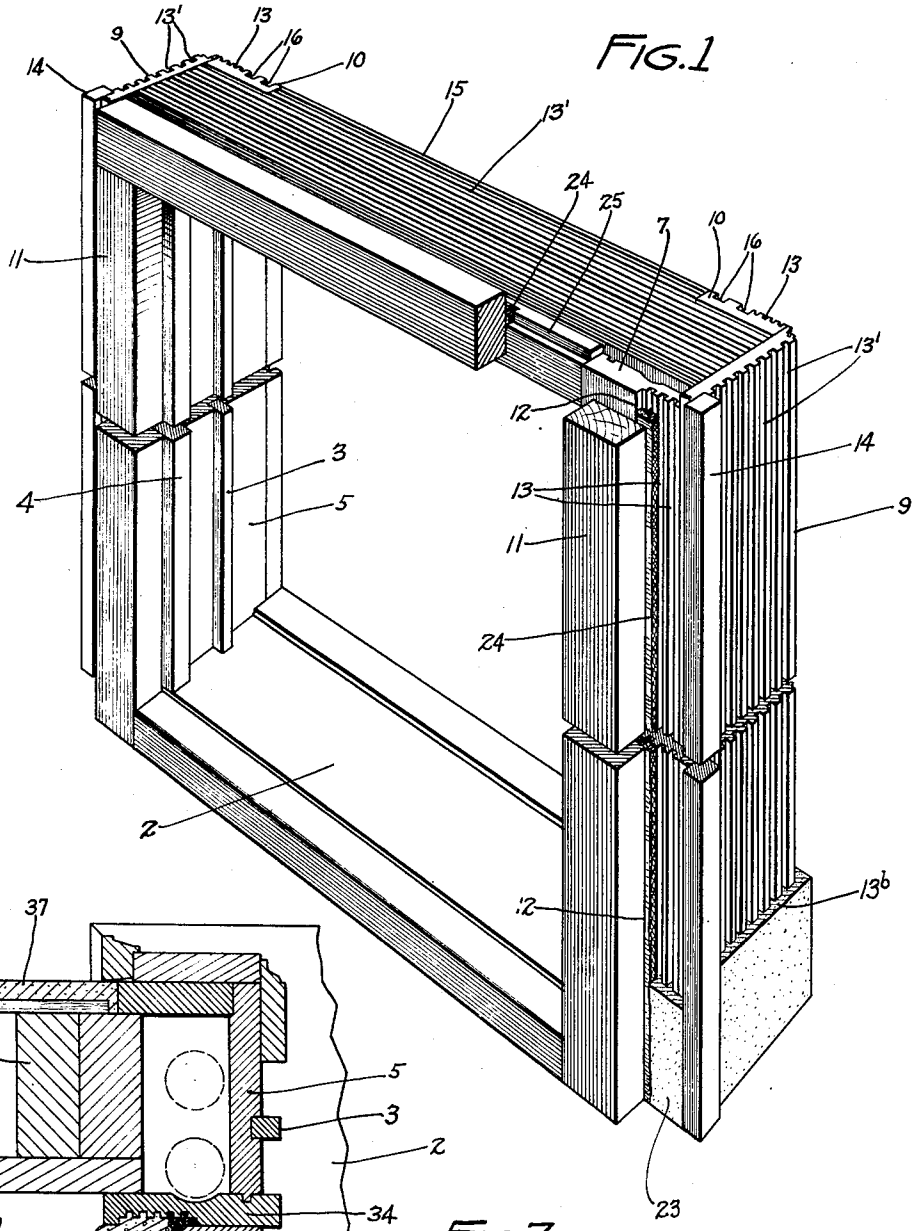






FIG. 7

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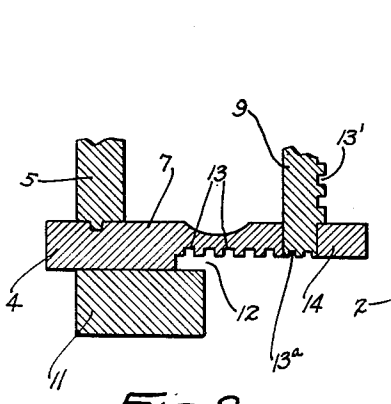



FIG. 8

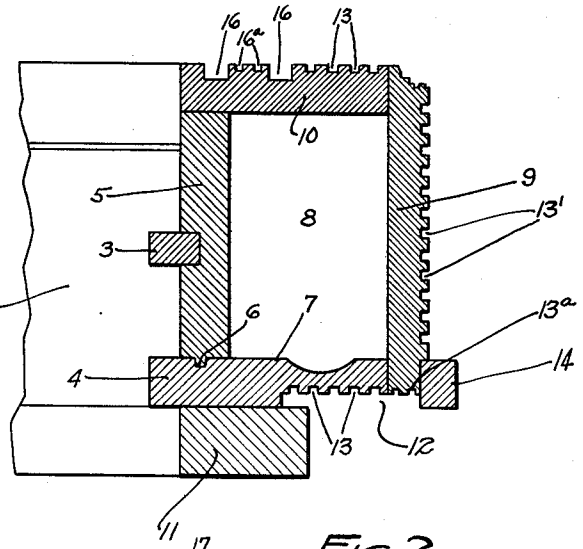



FIG. 2

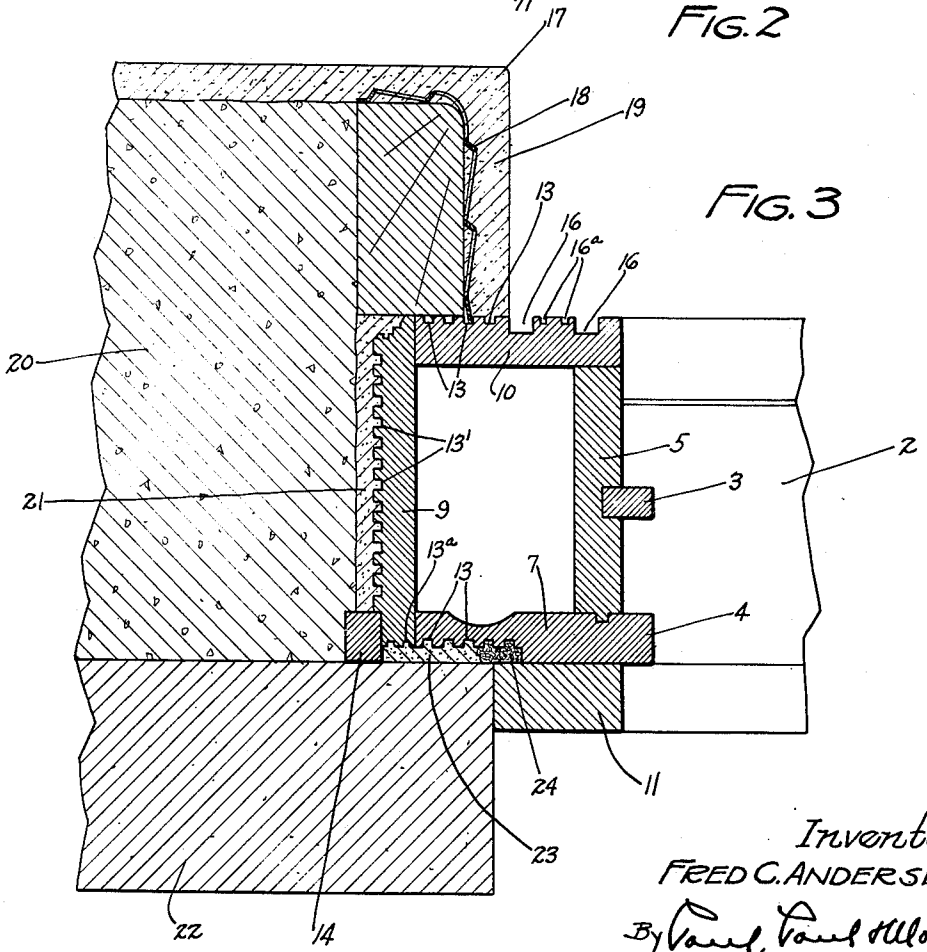



FIG. 3

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WINDOW AND DOOR FRAME

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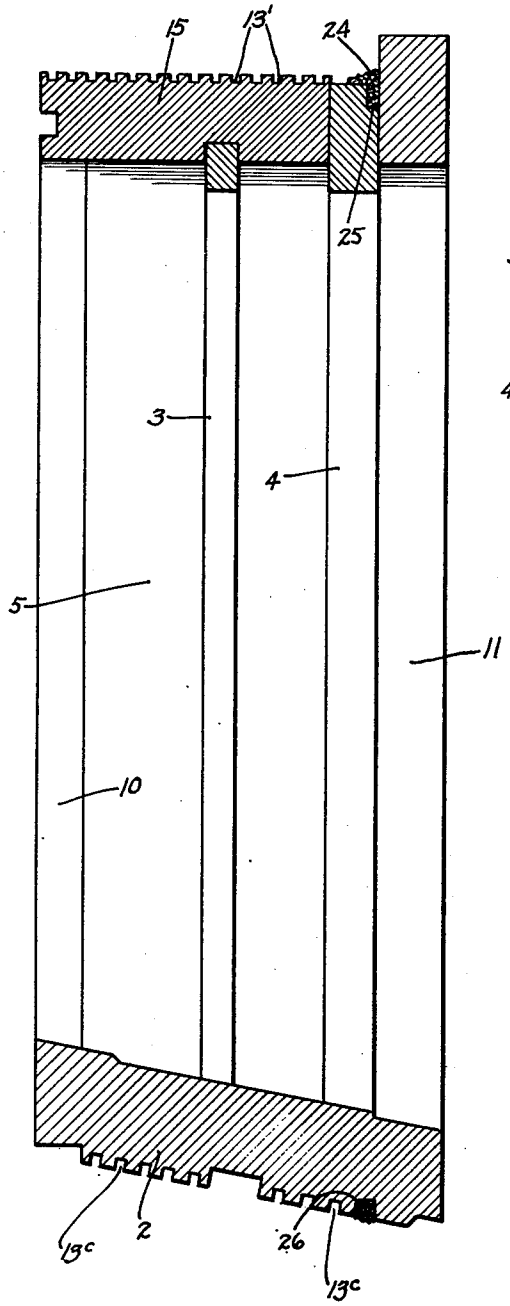



FIG. 4

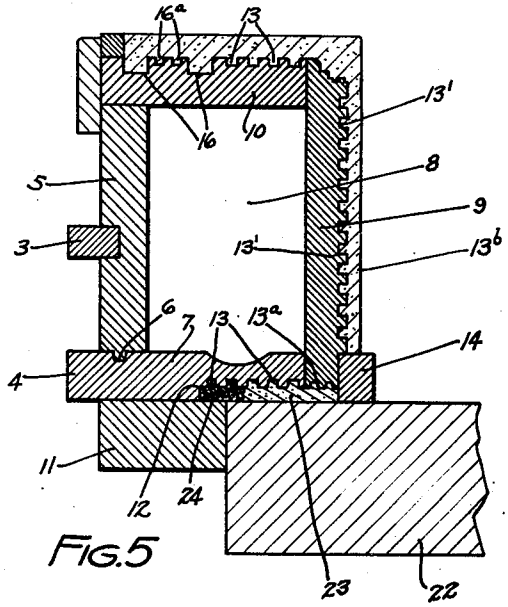
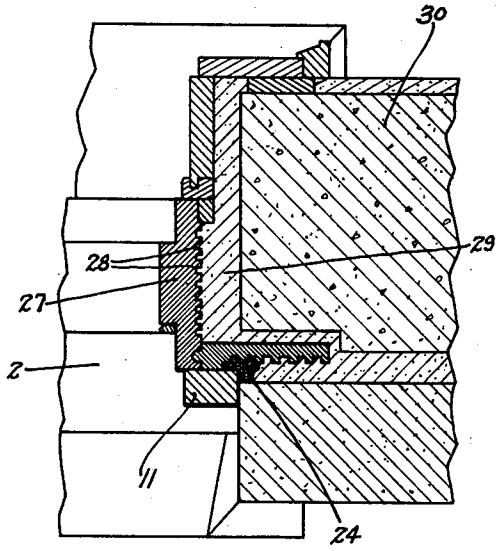



FIG. 5

FIG. 6




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# UNITED STATES PATENT OFFICE

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## WINDOW AND DOOR FRAME

Application filed February 27, 1929. Serial No. 343,010.

My invention while adapted for use in window and door frames of the plank type relates particularly to window frames of the box type, in which it is difficult to prevent cold air from entering the building around and through the space provided for the weights. A frame of this type is set in the building wall and the mortar of the brick work or masonry is placed against the frame around the outside finish or casing. When this mortar becomes dry it has a tendency to shrink away from the wood, leaving a gap or opening through which cold air may enter the building through the box and around the frame. When the frame is set, in some instances a suitable filler of yielding material is inserted between the box and the back of the face brick, thereby interrupting the flow of cold air behind the face brick and around the base.

It has also been common practice to bring the lath on the inner side of the frame up to a point adjacent the frame, the joint being concealed by the inside casing.

The object therefore of my invention is to provide means in the surface of the frame encircling the weight box, which will prevent a gap or opening being formed between the mortar and the surface of the box even when there may be a considerable shrinkage of the wood in the frame or the mortar and consequent opening between masonry and the box wall.

A further object is to provide means whereby an insulating flexible material such as oakum may be inserted under the outside casing when the parts of the frame are assembled so that when the wall is built around the frame, this fibrous material will effectually prevent the entrance of air under and around the outside casing and cooperate with the mortar or plaster that is placed on the casing to insure a wind-tight joint at this point.

A further object is to provide means which will insure a better union between the inside plaster and the inside face of the box.

Other objects of the invention will appear from the following detailed description.

In the accompanying drawings forming part of this specification

Fig. 1 is a perspective view of a box window frame, embodying my invention;

Fig. 2 is a horizontal sectional view through one side of the frame box with the plaster and packing omitted;

Fig. 3 is a similar view showing the preferred means for effecting a better union between the inside plaster and the inside face of the box;

Fig. 4 is a vertical sectional view showing the head of the frame and the manner of grooving it;

Fig. 5 is a sectional view showing the frame with the packing material therein and the mortar filling the grooves in the frame;

Fig. 6 is a sectional view showing a sash or door frame of the plank type adapted for solid brick or masonry construction;

Fig. 7 illustrates the invention incorporated in a frame of a brick veneer structure; and

Fig. 8 is a sectional view showing how the strip on the outer corner of the box may be changed to adapt the frame for a different space.

In the drawings, Fig. 1 illustrates an assembled view in perspective of a window frame of the box type, embodying my invention; the middle portion of the frame being cut away as indicated in the drawings to allow the frame to be shown in a size sufficient to clearly illustrate the details of construction; 2 is a sill and 3 the usual parting bead between the upper and lower sash, not shown, and the usual blind stop 4 provided in window frames; 5 is one of the upright jambs having preferably a tongue and groove joint 6 with the blind stop 4 which, as plainly shown in Fig. 2, is extended laterally to form a wall 7 of the weight box 8. This box is completed by the wall 9, parallel with the jamb 5 and a wall 10 that is seated against the inner edge of the jamb and parallel with the wall 7. 11 represents the outer casing of the frame; 12 is a vertical recess or rabbet in the face of the wall 7 adjacent the casing 11 and extending under the casing as indicated in Fig. 2 so that when the plaster or mortar is put around the frame it will fill this recess and also the series

of grooves 13, which are preferably arranged in parallel relation in the bottom of the recess. These grooves preferably have side walls in parallel relation so that when the mortar dries and pulls away from the wood of the frame, the series of ribs formed in the mortar by these grooves will slide outwardly in the grooves, but when the maximum of shrinkage has been reached the ribs will still project into the grooves and still retain a close enough contact with the side walls of the grooves to form an effective barrier to the passage of currents of cold air which otherwise might flow freely through the joint between the plaster and the window box and enter the building wall and the space enclosed thereby.

There may be any suitable number of these grooves provided in the wall of the box and they may be of any desired depth and, while I prefer to provide grooves of the same width from top to bottom, I do not confine myself to this shape as it may be modified in various ways to suit different conditions.

The gap formed at the inner side of the recesses 12 under the casing 11 provides means for effectually closing the joint at this point with a suitable material, such as oakum or other flexible, fibrous substance that is adapted to yield when subjected to pressure and form a compact packing under the edge of the casing and extending entirely around the frame to prevent the entrance and passage of air currents between the masonry and the frame. This filling or packing material may be inserted when the elements of the frame are assembled so that when the wall is built around the frame by the mason the packing will already be in place automatically caulking the joint between the base and the masonry at this point and it will not be necessary to loosen the casing and insert a packing material under it, as usually or frequently is done under present practice. A considerable saving in time is thus effected in the work of caulking the window frame. This packing, as indicated in Fig. 3, will also enter the adjacent groove in the wall of the box and form a rib in the packing that will aid in holding it in place and also cooperate in preventing the entrance of air through the joint in the casing.

I prefer to close the entrance to and form a wall for the recess 12 at the outer corner of the box by providing a strip 14 that is seated in the outer face of the wall 9 with one edge projecting beyond the corresponding face of the wall 7 so that the recess 12 lies vertically between this strip 14 and an opposite wall under the casing 11, thus permitting a considerable body of mortar to be placed in the recess and locked therein by the cooperation of the grooves in the bottom of the recess. Preferably the edge of the wall 9 has shallow grooves $13^a$ as shown in Figure 2 arranged substantially parallel with the grooves 13 but somewhat smaller in size because of lack of space and positioned to receive the plaster or mortar that is used to fill the recess in the face of the box wall. These grooves are all shown with preferably parallel side walls but they may be made to converge or taper, if preferred, and their width may of course be varied depending upon the amount of mortar that is desired to have in the grooves and the size of the tongue to be formed in the mortar by the grooves. The wall 9 has an outer face provided with a series of grooves 13′ corresponding to those in the wall 7 and, as shown in Fig. 1, these grooves are preferably carried across the frame in the upper surface of the head plate or wall 15 thereof so that when the brick work or masonry is laid up to these walls the mortar $13^b$ will enter the grooves and be locked therein and whenever shrinkage and drawing away of the mortar from the wall occurs there will, nevertheless, be a sufficient projection of the ribs in the mortar into the grooves to interrupt or prevent the flow of air currents between the brick work or masonry and the frame. This, of course, will be true as regards the top or head of the frame as well as the outer side walls of the box.

Referring now to Figure 3, the wall 10 of the box is shown provided with vertical recesses 16 over which the inside finish or trim, not shown, may be placed, and between the recesses shallow grooves $16^a$ may be provided in the wall, and a series of these grooves corresponding to those indicated by numeral 13 in Figure 2 are also provided in the face of the wall and adapted when the plaster is applied to form a union or joint between the plaster and the wall of the box. I have shown in Figure 3 a corner of the inside wall of the building indicated by numeral 17 with metal lath 18 carried around this corner and covered by the plaster 19. The provision of the grooves 13 in the wall of the box allows the formation of ribs in the mortar or plaster and thereby a union is effected between the plaster and the wall of the box, and while it may not be necessary to do so, I may if preferred, extend the end of the metal lath into one of these grooves so that it will be securely locked as shown in Figure 3. This extension of the lath, however, I do not think will be necessary as it may terminate outside of the groove and a suitable and effective union be formed between the plaster and the wall of the window box. This interlocking of the plaster with the wall of the box will of course interrupt the flow of air around the box and into the building and will serve to supplement the function of the plaster effectually preventing the entrance of air and in any event compelling it to fol-

low a tortuous passage to enter the structure around the window casing.

In a solid masonry wall the brick or tile 20 is laid opposite the wall 9 of the box with mortar 21 filling the grooves in the wall and effectually sealing the flow of currents of air between the masonry and the wall of the window box even after shrinkage has taken place in the mortar and it has pulled away slightly from the surface of the wall. All this I am able to accomplish without increasing the labor of installation or setting of the frame or the subsequent laying of the brick or masonry around the frame.

In a solid brick or masonry structure the brick 22 on the outside of the building is laid against the mortar or plaster 23 with which the space in the wall of the box is filled and a supply of insulating material such as oakum 24 is preferably interposed between the outside finish or casing 11 and the bottom of the recess in the adjacent wall. This oakum may be placed in position when the frame is assembled or if preferred the trim or casing may be loosened and the oakum inserted when the frame is set up in the job. The oakum is continued up on the outside wall of the box, thence across the head of the frame filling a groove 25 and also filling a recess 26 provided in the under side of the sill, making therefore a continuous insulating band extending on both sides and across the head of the frame and under the sill. Figure 4 of the drawings illustrates a vertical section of the frame showing the recess in the head for the insulating packing and also the recess in the under surface of the sill. In this figure I also show the head plate or wall 15 heretofore referred to provided with the series of shallow grooves 13′ to receive the mortar that is interposed between the head of the frame and the wall of the structure in which the frame is mounted. This wall may of course be of any suitable material, frame work, brick or masonry, or in some instances a metal plate may be extended across the frame above the head thereof with mortar or plaster of suitable depth interposed between it and the bottom of the grooves in the head plate. Figure 5 corresponds to Figure 2 except that the recess in Figure 5 is filled with mortar and brick which, as indicated by reference numeral 23, is set in place against the mortar or plaster and also abutting the edge of the outside trim.

I may also provide grooves 13ᵉ in the under side of the sill extending longitudinally thereof, corresponding in form substantially to those shown in the upper surface of the head of the frame. (See Fig. 4.)

In Figure 6 the invention is shown adapted for what is usually known as a frame of the plank type. That is, a sash or door frame without a box. In this case the jamb 27 is provided with a series of parallel grooves 28 in its outer face and plaster 29 fills these grooves and closes the gap or opening between the frame and a tile wall 30 such as is generally used in a solid brick or masonry structure.

In Figure 7, I have shown the invention applied to a brick veneer structure, that is, one where a wooden frame is employed and encased in brick or masonry. The sheathing is indicated by a numeral 31 with a space 31ᵃ between it and the outside brick or veneer 32. Mortar 33 is placed between this veneer brick and the wall of the box 34 in which a series of grooves are provided similar to those heretofore described and for the reception of the plastic mortar that is filled therein when the bricks are laid. The outside finish 35 cooperates with the plaster 33 to effectually close the joint around the frame and prevent the entrance of air between the casing 35 and the wall of the box. A suitable studding 36 is interposed between the sheathing 31 and the inside lath 37. This lath is of course covered with plaster 38 in the usual way.

In Figure 8, I have shown a slight modification of the structure of Figure 2 which consists in turning the strip 14 so that one face will be substantially flush with the ribs of the grooves 13 and 13ᵃ. This change in the position of the strip 14 adapts the frame for a narrower space than would be necessary when the strip is placed as indicated in Figures 2 and 3. In this Figure 8 as well as in Figure 2, the mortar and insulating packing are omitted from the recess in the frame to more clearly indicate the depth of the recess and the position of the grooves therein. In practice it will be understood that the outside wall is brought up to cover this recess and the mortar or plaster therein.

If the grooves forming the fluting in the outer surface of the box wall have parallel side walls instead of being tapered, the ribs of the mortar will contact with these walls when shrinkage occurs which might not be the case if the grooves were wedge-shaped in cross section or tapered. Hence, it is desirable to form these grooves in the manner shown in the drawings though I do not wish to confine myself to this shape.

By arranging these grooves on the inside wall of the box I am not only able to lock the edge of the metal lath therein as shown in Figure 3 but I may in the case of a thinner wall apply a comparatively thick coat of plaster over that part of the box and thereby be permitted to use a narrower trim or inside finish as shown in Figure 5. This insertion of the edge of the metal lath as in Figure 3 in the groove provides a better union between the inside plaster and the face of the box, as in the case of an inside plaster reveal where

the frame is used in a comparatively thick outside wall.

I claim as my invention:

1. A window frame having a wall provided with a plurality of grooves in its surface, a studding adjacent said grooved surface, a lath on said studding having an edge to fit into one of said grooves, and a plastic material covering said lath and abutting said grooved wall.

2. A window or door frame of wood having a sill, a head and side walls in planes at right angles to the finish or trim of the frame, a strip to space one of said walls from the masonry, mortar between the wall and masonry, said walls having a series of shallow grooves with vertical sides therein of substantially the same width from top to bottom and adapted to receive and interlock with the mortar of the brick or masonry in which the frame is set, whereby when the mortar shrinks from the bottom of the grooves it will lie close to the side walls within the grooves and prevent the passage of air between the mortar and walls.

3. A window or door frame adapted to be substantially surrounded by masonry, said frame having a wooden head and side walls each provided with a series of longitudinal grooves, the grooves of said head forming substantially a continuation of those of said side walls, an outer casing overlapping said grooves, said grooves being adapted to receive plaster or mortar of the brick work or masonry in which the frame is set and interlock with such plaster or mortar whereby when shrinkage occurs a barrier to the passage of air between said side wall and outer casing will be prevented.

4. A window or door frame adapted to be substantially surrounded by masonry, said frame having walls provided with a recess extending vertically in the side walls of the frame and lengthwise of the head thereof, a sill having a recess in its under side forming a continuation of the recess in said walls and head, an insulating packing material fitting within said recesses and substantially surrounding said frame, and a finish or trim adjacent to and concealing the packing in said side walls and head.

5. A window frame adapted to be substantially surrounded by masonry, said frame having a box at one side, the outer wall of said box being provided with a recess on its outer surface to receive mortar, the recess being bounded by walls formed on the frame and the masonry walls, to retain the mortar, and the bottom of said recess having a plurality of narrow grooves therein.

6. A window or door frame comprising a side wall and an outer casing for the frame, said side wall resting against said outer casing, the side wall being cut away to form a recess between the outer casing and said side wall and plastic material filling said recess, said side wall having grooves into which said plastic material extends to form ribs within said grooves to prevent the passage of air between the plastic material and the side wall.

7. A window or door frame having a wall provided with a longitudinal recess, a windproof material in plastic form in said recess, the bottom of said recess having a plurality of grooves running lengthwise therein wherein the plastic material may enter and form ribs within said grooves and prevent the passage of air between the plastic material and said wall when said material shrinks in hardening, said wall having a molding on one side of said recess forming a seat for the building wall and also forming a closure and abutment for one edge of the plastic material in said recess.

8. A window or door frame having an outer wall provided with a series of longitudinal grooves wherein material, temporarily plastic, may enter and form a series of ribs within said grooves and prevent the passage of air between said wall and the plastic material as it hardens and shrinks, masonry lapping said grooves and abutting the plastic material, and said wall having a finish molding abutting said masonry and lapping said grooves.

9. A window or door frame having an outer vertical wall provided with a series of longitudinal grooves wherein plastic material may enter and form a series of ribs within said grooves and prevent the passage of air between the plastic material and said wall, a second wall at right angles substantially to said first-named wall and having grooves therein to receive plastic material, masonry lapping said grooves and abutting the plastic material therein, and said first-named wall having a molding abutting said masonry and the plastic material on said first-named wall and the grooves in said second-named wall on one side.

10. A window or door frame having an outer vertical wall provided with a series of longitudinal grooves wherein plastic material may enter and form a series of ribs within said grooves and prevent the passage of air between the plastic material and said wall as said material hardens and shrinks, a second wall at an angle to said first-named wall and having a recess therein adapted to receive the plastic material, the bottom of said recess having a plurality of grooves therein wherein the plastic material may enter and form ribs within said grooves, masonry lapping said recess and abutting the plastic material therein and said first-named wall having a molding abutting said masonry and the plastic material on said first-named wall and closing one side of the recess in said second-named wall.

11. A window or door frame adapted to be encircled by a masonry wall and compris-

ing a sill and side and head jambs, the outer faces of said sill and jambs having a plurality of longitudinal grooves therein in which a material, in plastic form temporarily, may enter and form ribs within said grooves and prevent the passage of air between the frame, and the masonry when the plastic material shrinks in hardening, said jambs having closure members abutting the masonry and said jambs on one side and closing said grooves to the passage of air transversely therethrough.

In witness whereof, I have hereunto set my hand this 14th day of Feb. 1929.

FRED C. ANDERSEN.