Feb. 27, 1934. E. WEIL 1,949,342

INSERT FOR MASONRY STRUCTURES

Filed Sept. 22, 1932

Fig. 1.

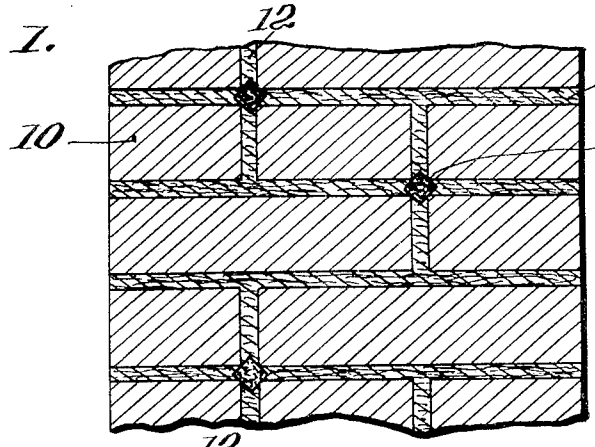


Fig. 2.

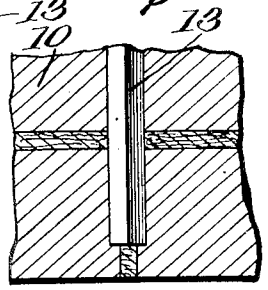


Fig. 4.

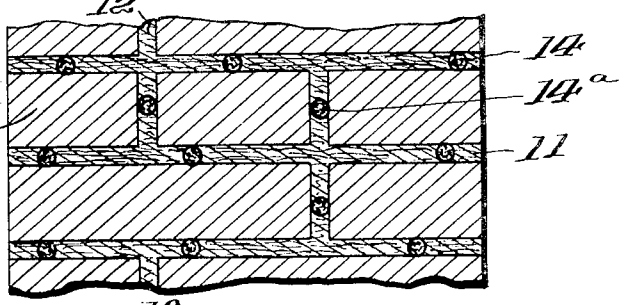


Fig. 6.

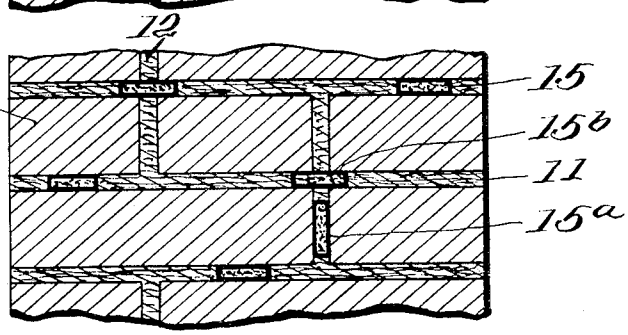


Fig. 3.

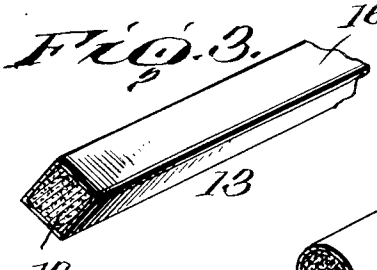


Fig. 5.

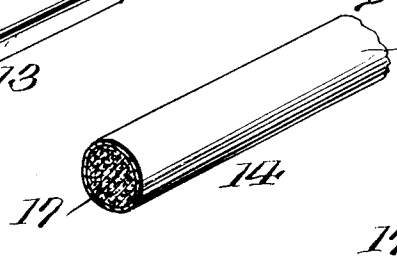
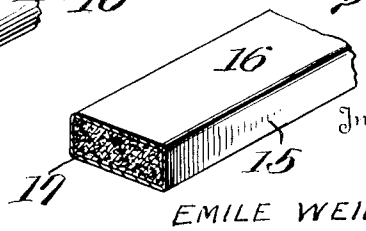


Fig. 7.



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INSERT FOR MASONRY STRUCTURES

Emile Weil, New Orleans, La.

Application September 22, 1932
Serial No. 634,395

17 Claims. (Cl. 72—127)

The present invention relates to improvements in masonry, brick or similar structures, and more particularly the invention aims to provide an improved protective insert adapted for use in connection with said structures.

There frequently occur, in masonry walls, or other structures, certain voids, irregularities, or other defects, which may be the result of faulty workmanship during the construction of the particular structure, or which may result from shrinkage of the wall or some other cause occurring after the completion of the structure. These defects are harmful for many reasons, but they are most harmful in that water and dampness are permitted to penetrate through the pores of the structure. This moisture penetration, particularly in the joints, weakens the structure and usually results in serious damage thereto.

It is the principal object of this invention to prevent the penetration of dampness and water through the structure by rendering the said structure waterproof.

The invention aims to provide, for a masonry wall or similar structure, a protective insert adapted to be placed in position during the construction of the wall or similar structure, and comprising a diffusible material having waterproofing qualities whereby, upon diffusion of the material, the wall is rendered water-repellant.

A further object of the invention is the provision, for a masonry or similar structure, of a protective insert wherein a diffusible waterproofing material is enclosed within an envelope or covering of a material, the composition or texture of which is adapted to permit the diffusion or spreading of the waterproofing material throughout the structure.

A still further object of the invention is the provision, for a masonry or similar structure, of a protective insert wherein a moisture-diffusible waterproofing material having a covering is permitted to spread throughout the structure after moisture has passed through the covering or caused the same to be decomposed sufficiently to permit the moisture to contact with the waterproofing material.

A further object of the invention is the provision, for a masonry or similar structure, of a protective insert wherein a moisture-diffusible insert having waterproofing qualities is enclosed within a covering or envelope of a material which will readily break down upon exposure to moisture and thus permit the spreading or dispersion of the enclosed waterproofing material.

The invention further aims to provide, for a masonry wall or like structure, a protective insert which is conveniently handled and easily placed in position during the building of the particular structure and which may be made of such lengths and sizes as are required in any particular structure.

These and other objects will in part be obvious and will be hereinafter more fully described.

In the drawing:—

Figure 1 is a vertical view of a part of the end of a wall in section, showing one form of insert applied in the joints thereof.

Fig. 2 is a plan view of the same in section, showing the position of the insert.

Fig. 3 is a perspective view of the insert shown in Figs. 1 and 2 with the end thereof in section.

Fig. 4 is a view, similar to Fig. 1, showing another form of insert.

Fig. 5 is a view, similar to Fig. 3, showing the form of insert used in Fig. 4.

Fig. 6 is a view, similar to Fig. 4, showing still another form of insert.

Fig. 7 is a view, similar to Fig. 5, showing the form of insert used in Fig. 6.

In general, the present invention provides a convenient and efficient method of waterproofing a wall or other structure by placing protective inserts in the plastic or mortar joints of the wall during the construction thereof. Each insert comprises a diffusible waterproofing agent which is enclosed within a covering or envelope of some material or substance, the texture or composition of which is adapted to readily break down, decay, or to otherwise permit the diffusion, flowing, dispersion, or spreading of the waterproofing material throughout any voids in the adjacent area of the structure and thus prevent the penetration of water or dampness through said structure. In the present embodiment of the invention, the breaking down of the covering and the consequent diffusion of the waterproofing material are caused by action of moisture which penetrates to the protective insert before the waterproofing material is released. So it is apparent, that the waterproofing action will not ordinarily start until there is present, in the structure, an amount of moisture, which is sufficient to break down or pass through the covering and cause the diffusion of the waterprofing material.

In the drawing, by way of illustration, the insert is shown in connection with a wall, but it may, of course, be employed in connection with the construction of pavements and other structures. In Figs. 1, 2, 4 and 6, the wall is shown as

comprising a plurality of building units 10, which may be brick, tile, marble, or other structural material. These building units are laid in courses and are held together by mortar or other plastic sealing substance which is employed in horizontal joints 11 and vertical joints 12. The particular form of structure is immaterial since the inserts 13, 14, 15 may be used in the joints of any masonry structure. The inserts are completely enclosed within the joints of the wall, as shown in Fig. 2, and extend lengthwise of the wall, but they may, of course, be placed so as to extend across the width of the wall. These inserts are shown in three forms (Figs. 3, 5 and 7) but they may, of course, be of any desired form or size, depending upon the position in which they are to be placed, the thickness of the joint or structure and other considerations.

Each of the inserts 13, 14, 15 have a covering or envelope 16 within which is completely enclosed a waterproofing material 17. The covering 16 may be made of plain or treated paper which will readily decay upon exposure to moisture or which will permit the passage of moisture therethrough. The rapidity with which the texture of the paper will break down may be varied by using different grades of paper, or by treating the paper in such ways as to render it more or less resistant to moisture as the circumstances of each particular enterprise may require. If the covering material simply permits the passage of moisture therethrough or if the decomposition is not complete, the expansion of the material enclosed therein due to its contact with the moisture will break the said covering and thus the waterproofing material will continue to diffuse and fill any voids in the adjacent structures.

The waterproofing agent 17 may be of any material, or combination of materials, having moisture excluding properties and the ability to diffuse, expand and spread to fill any voids in the wall when permitted to contact with moisture or some other cause when the covering has become sufficiently weakened. The materials preferably used are a powdered mixture of zinc stearate, sand, and common lime (CaO). The zinc stearate acts as the waterproofing agent and the lime acts as the diffusing agent when exposed to moisture, while the sand in combination will act as a setting up agent completing the mortar content. The waterproofing qualities of zinc stearate are well known. Likewise, it is common knowledge, that lime (CaO) has great affinity for water and that the lime expands in bulk three or four times when mixed with water. Thus, the moisture, which penetrates to the insert, and through the covering therefor, is absorbed by the lime which expands in the form of hydrated lime ($CaCoH_2$) and carries the waterproofing material therewith. The hydrated lime reacts with carbon dioxide in the atmosphere and forms the practically insoluble calcium carbonate which, in addition to depositing the waterproofing material, forms with the sand a mortar compound to greatly strengthen the structure. The expansion or spreading of the protective material leaves a cavity in the wall. This cavity, the sides of which are thoroughly waterproofed by the action of the protective material, forms a pocket for the reception of any further moisture which may enter the wall and thus the pressure of the entering moisture will be reduced and the moisture will more easily evaporate.

Some of the other materials which may be used, either alone, or in combination, as the protective material within the covering of the insert, are the water insoluble soaps, such as the stearates, oleates or palmitates of lime, magnesia, zinc or the like, cement, sand, lime putty, hydrated lime and asphaltic, petroleum or coal tar products. As has been mentioned above, these materials are preferably used in a powdered state but is not, of course, necessary.

In Figs. 1, 4 and 6 three different forms of the inserts 13, 14, 15 are shown as applied to a wall or the like. The insert 13, in Fig. 1, has a square cross-section and is placed in position at the corners of the building units 10 and at the intersection of the horizontal and vertical sealing joints. The insert 14, in Fig. 4, has a circular cross-section and is applied along the horizontal joints 11 and a similar insert 14^a is shown in position along the vertical joints 12. In Fig. 6 the insert 15, having a rectangular cross-section, is shown in position along the horizontal joints 11 and a similar insert 15^a is shown as applied to the vertical joints 12. Another similar insert 15^b may also be placed at the intersection between a vertical and a horizontal joint.

The degree of waterproofing desired, will of course, determine the number of inserts to be used in any particular structure. The workman or other operator may place the inserts in the plastic joints during the construction at those places which will later prove most advantageous. Thus, near the foundation or near the top of a wall, it may be desirable to have many more inserts than are necessary in the intermediate courses thereof. Each course of brick, tile, or the like may be laid in the usual manner and during the application of mortar or other plastic substance thereto, the inserts should be placed in proper position so that the next course or layer of building units will fit perfectly thereon.

In the present embodiment of the invention, the moisture which penetrates through the wall to the insert is relied upon as the means for causing the expansion and diffusion of the waterproofing material. As pointed out heretofore, this moisture may either pass through the covering or it may cause the same to deteriorate sufficiently to allow the moisture to contact with the enclosed material which is thus caused to spread and seal any voids in the structure. It is to be understood, however, that other means may be provided for causing the weakening or deterioration of the covering and the subsequent diffusion of the waterproofing material. For instance, the covering may be made of some material or composition which will, of itself, decompose and cause or permit the diffusion of the enclosed material, or the decomposition of the covering may be caused by a reaction with the mortar or other plastic sealing material used in the joints.

From the foregoing description, it will be apparent that novel and efficient means are provided for preventing the penetration of moisture through a masonry structure or the like. It is to be understood that minor details and changes may be made without departing from the scope of the appended claims. It is to be further understood that, as heretofore pointed out, the insert, which forms the subject matter of the present invention, may be employed in other structures, such as cement, concrete, or the like, and, in fact, in any building construction wherein there is employed a bonding material such as cement or the like.

Having thus fully described my invention, what

I claim as new and desire to secure by Letters Patent, is:—

1. In a masonry structure, the combination with a plurality of building units and an interposed binder; of protective inserts embedded in the binder, said inserts including a diffusible material having waterproofing properties whereby, upon diffusion of said material, to render the adjacent structure watertight.

2. In a masonry structure, the combination with a plurality of building units and an interposed binder; of protective inserts embedded in the binder, said inserts including a moisture-diffusible material having waterproofing qualities, whereby upon diffusion of said material, to render the adjacent structure watertight.

3. In a masonry structure, the combination with a plurality of building units and an interposed binder; of protective inserts embedded in the binder, said inserts including an envelope and a protective material enclosed therein, said protective material being adapted to diffuse throughout the adjacent structure upon contact with moisture therein, whereby a pocket is formed in the wall, said pocket being adapted to receive moisture and permit the same to accumulate and evaporate.

4. In a masonry structure, the combination with a plurality of building units and an interposed binder, of protective inserts embedded in the binder, said inserts comprising a diffusible protective material and covering means therefor, said covering means being adapted to permit the diffusion of said protective material throughout the adjacent structure after a period of time.

5. In a masonry structure, the combination with a plurality of building units and an interposed binder, of protective inserts embedded in the binder, said inserts including a diffusible mixture including a cementitious ingredient, whereby upon diffusion of said mixture the adjacent structure will be strengthened.

6. In a masonry structure, the combination with a plurality of binding units and an interposed binder, of protective inserts embedded in the binder, said inserts including covering means adapted to readily deteriorate and a protective mixture enclosed therein, said mixture being adapted to diffuse throughout the adjacent structure upon contact with moisture and including waterproofing and cementitious ingredients.

7. In a masonry structure, the combination with a plurality of building units and an interposed binder of protective inserts embedded in the binder, said inserts comprising covering means and a moisture-diffusible protective material enclosed therein, said covering means being adapted to permit the contact of moisture with the enclosed protective material after a period of time whereby to cause the diffusion of said material throughout the adjacent structure.

8. As an article of manufacture, an insert adapted to be placed in the joints of a masonry or like structure comprising a diffusible protective material and covering means therefor, said covering means being adapted to readily permit the diffusion of said protective material throughout the adjacent structure.

9. As an article of manufacture, an insert adapted to be placed in the joints of a masonry or like structure comprising a moisture-diffusible protective material and covering means therefor, said covering means being adapted to readily deteriorate in order to permit moisture to contact with the enclosed protective material whereby to cause the diffusion thereof throughout the adjacent structure.

10. As an article of manufacture, an insert adapted to be placed in the joints of a masonry or like structure comprising a diffusible protective material including a waterproofing ingredient and covering means therefor, said covering means being adapted to readily deteriorate to permit the diffusion of said protective material whereby to render the adjacent structure watertight.

11. As an article of manufacture, an insert adapted to be placed in the joints of a masonry or like structure comprising a moisture-diffusible protective material and a covering therefor, said protective material including waterproofing and cementitious ingredients, said covering being adapted to readily deteriorate to permit moisture to contact with said protective material whereby to cause the diffusion thereof throughout the adjacent structure to strengthen the same and render it watertight.

12. As an article of manufacture, an insert adapted to be placed in the joints of a masonry or like structure comprising a mixture-diffusible protective material and a covering therefor, said protective material being normally inactive but capable of diffusion throughout the adjacent structure upon the deterioration of said covering whereby moisture is permitted to contact with said material and cause the diffusion thereof.

13. As an article of manufacture, an insert adapted to be placed in the joints of a masonry or like structure comprising a moisture-diffusible protective material and covering means therefor, said covering means being adapted to readily deteriorate when moisture penetrates the structure whereby to permit the moisture contained in the structure to cause the diffusion of said protective material throughout the adjacent structure.

14. In a wall or other structure employing a bonding material, the combination of inserts embedded in said material, said inserts including covering means and a diffusible protective mixture enclosed therein, said mixture comprising a waterproofing ingredient and a cementitious ingredient.

15. In a wall or other structure employing a bonding material, the combination of inserts embedded in said material, said inserts including covering means adapted to become weakened, and a protective mixture enclosed therein, said mixture comprising a waterproofing ingredient, a diffusible cementitious ingredient and a setting-up agent.

16. In a wall or other structure employing a bonding material, the combination of inserts embedded in said material, said inserts including a diffusible protective material and covering means therefor, said covering means being adapted to readily permit the diffusion of said protective material which includes waterproofing and cementitious ingredients.

17. In a wall or other structure employing a bonding material, the combination of protective inserts embedded in bonding material, said inserts comprising a diffusible mixture and covering means therefor, said covering means being adapted to readily deteriorate to permit the diffusion of said mixture, and said mixture including as a waterproofing ingredient, a water insoluble soap in powdered form, and, as a diffusing agent and setting-up agent, a cementitious mixture.

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