

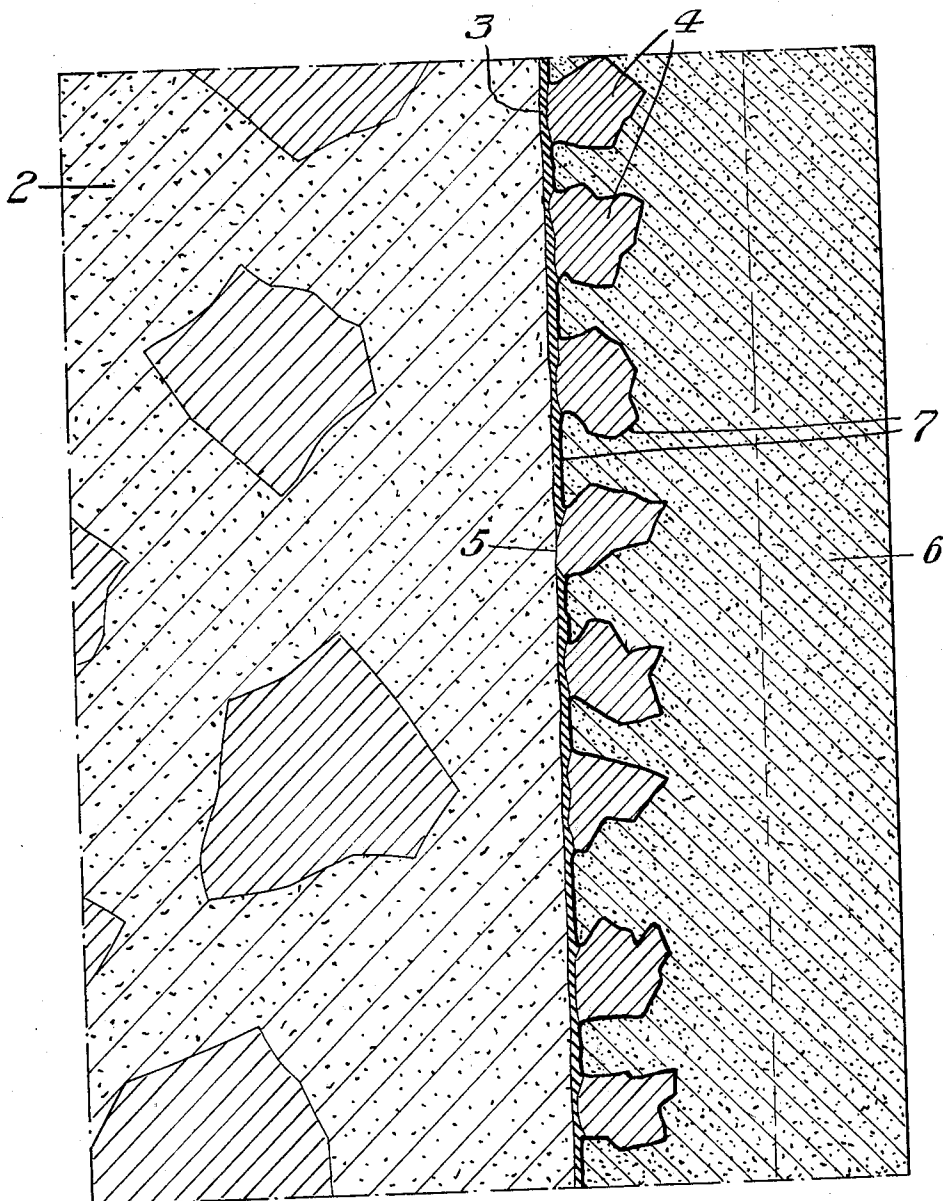
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BUILDING STRUCTURE

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UNITED STATES PATENT OFFICE

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BUILDING STRUCTURE

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My invention relates to wall structures and more particularly to water-proofed wall structures and methods of making the same.

In making walls, such as concrete walls to which a finishing coating, such as plaster, cement or the like is applied, it has heretofore been customary to cover the surface of the base with a layer of mastic material of a water-proof nature, such as a mixture of asphaltum and oil by spraying the base surface. After the mastic coating is applied, a mechanical bonding layer is built up by applying fine stones, grit or the like to the mastic coating by a spraying or sprinkling operation. Usually the spraying or sprinkling is done by an air gun which imparts considerable velocity to the grit and stone particles. The particles of grit and stone impinge against the mastic surface with sufficient force to embed themselves therein and form an adhering surface. Some of the particles strike the mastic coating with sufficient force to penetrate the mastic coating and directly engage the base material, thereby forming openings in the mastic coating through which moisture may thereafter pass. After the mechanical bonding layer is applied a finishing coating of plaster, cement or the like is applied to the bonding material and mastic coating.

Where openings exist in the mastic coating, moisture moves from the finishing coating to the wall base through the openings formed by the application of the mechanical bond. Moisture traversing such openings causes the deterioration of the base material adjacent the openings with the result that the mastic coating separates from the base material for considerable areas around the punctures in the mastic coating which results in the formation of blisters together with cracking and spalling of the finishing surface. The drying out of the finishing material due to the absorption of moisture by the wall base causes the formation of dry spots which tend to crack.

I provide a water-proofed wall in which a wall base such as a concrete or the like base, is covered with a layer of mastic material of a water-proofing nature. After the mechani-

cal bonding layer is applied to the mastic coating layer, the surface of the mechanical bonding layer is covered with a thin layer of water-proofing material which completely coats the surfaces of the mechanical bond, acts to more firmly anchor the binding material and at the same time fills in any cracks or blisters in the coating of mastic material which may have been caused by the application of the mechanical bonding layer.

The coating layer is preferably applied by spraying with an air gun or the like. A mixture of asphaltum and oil or similar water-proofing compositions many of which are on the market, are suitable for application to the mechanical bonding layer. Thereafter the finishing layer of cement, plaster or the like is applied over the mechanical bonding layer. The presence of the water-proofing layer or skin on the bonding material does not interfere with the adhesion of the finishing layer to the bonding layer. With this construction a completely water-tight joint is obtained between the finishing layer and the base of the wall.

The single figure of the accompanying drawing is an enlarged cross sectional view of a wall constructed in accordance with my invention.

Referring to the drawing, a wall base 2 such as a body of concrete or the like is covered by a layer 3 of mastic coating material of a water-proofing nature, such as a mixture of asphaltum and oil. The thickness of the layer of mastic coating varies but for many purposes a thickness of 1/64 inch is suitable. The mastic coating layer is preferably applied by spraying, as with an air gun.

After the layer 3 is in place a mechanical bond layer 4 constituted by small particles of grit, broken rock and the like is applied to the coating layer. The layer 4 is usually applied by shooting the material onto the layer 3 by an air gun or other device which imparts considerable velocity to the particles constituting the layer. The particles may be of from 1/8th to 3/8th inch in their maximum dimension. As a result the particles strike the layer 3 with considerable velocity and impinge themselves therein sufficiently to

firmly adhere thereto. As a result the depth of the mastic material between the base 2 and the particles constituting the layer 4 varies. In some cases, as illustrated by the reference numeral 5, the particles completely puncture the layer 3 and directly engage the base material 2.

Heretofore it has been customary to apply a finishing layer 6 of plaster, cement, or the like directly to the bonding layer 4. Consequently the moisture in the finishing layer has passed through the openings made in the mastic coating layer 3 by the application of the particles. This results in the peeling away of the layer 3 from the base 2 for considerable areas around each opening. The finishing surface adjacent to the opening dries out and cracking and spalling results.

By applying a thin coating layer or skin 7 to the surfaces of the mechanical bonding layer 4 if the latter is in place, the openings in the layer 3 made by the application of the particles constituting a layer 4 are closed by the layer 7. The thickness of the layer 7 may vary from a thickness of 4/1000th to 4/100th of an inch as desired. The layer 7 may be formed of a mixture of asphaltum and oil or of any one of a number of water-proofing compounds on the market. The presence of the layer 7 does not interfere with the application of the finishing layer 6 of plaster, cement or the like which is thereafter applied to the layer 4.

I have also found that cork makes an excellent binder in the place of stone grit. There appears to be a firmer bond between the mastic base and also the superficial layer or waterproof coating. This is due to the fact that the cork is to a certain extent provided with a rough granular face and is more or less porous so that the waterproof material finds a firm purchase upon the cork. This cork may be a raw granulated or what is commercially termed regranulated cork, and the gauge or size of the particles thereof may be comparable with that of the grit or of any suitable size. The cork may also be more extensively applied to the base because of its insulating properties, without in any way lessening its effect as a mechanical bond, for the reason that finer particles of the cork serve to insulate the spaces intermediate the larger particles, and because of the greater bond between the particles of cork and the mastic or waterproof coatings. The cork may be applied in the same manner as the grit is applied.

It is to be understood that the several dimensions given are by way of illustration and are not limitations of the invention as the invention contemplates the use of layers of different thicknesses and grits of different size as well as the use of different materials for the "grits" or mechanical binding agent and the use of different materials for con-

stituting the several layers and coating surfaces.

While I have illustrated and described the present preferred embodiment of the invention, it is to be understood that it may be otherwise embodied and practiced without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. A wall comprising a base, a waterproofing layer applied thereto, a mechanical bonding layer applied to the water-proofing layer, a water-proofing coating for the bonding layer and a finishing layer applied thereto.

2. A wall comprising a base, a body of water-proofing mastic material applied to the base, a layer of grit applied to the coating layer, a waterproofing layer applied to the coating layer and the grit, and a finishing layer applied thereto.

3. A structure comprising a concrete support, an elastic supporting layer adhering to said support, a plurality of rough surfaced lumps of material embedded in said supporting layer and projecting therefrom, an elastic waterproof coating covering said lumps and supporting layer, and a finishing layer covering said elastic coating and firmly adhering to said lumps.

4. A building structure comprising a concrete support, a support layer consisting of elastic asphaltic material, said supporting layer being applied to said support, a plurality of relatively small cork lumps embedded in said supporting layer and projecting outwardly therefrom, a relatively thin waterproof coating of elastic asphaltic material covering the projecting portions of said lumps and the exposed portions of said supporting layer, and a finishing layer of plastic material covering said lumps and supporting layer and securely anchored to said lumps.

5. A building structure comprising a concrete support, an elastic supporting layer consisting of a mixture of asphaltum and oil, said supporting layer being applied to said support, a plurality of relatively small rough surfaced stone lumps embedded in said supporting layer and projecting outwardly therefrom, a relatively thin waterproof coating of elastic asphaltic material covering the projecting portions of said lumps and the exposed portions of said supporting layer, and a finishing layer of plastic material covering said lumps and supporting layer and securely anchored to said lumps.

In testimony whereof I affix my signature.
AARON C. HORN.