

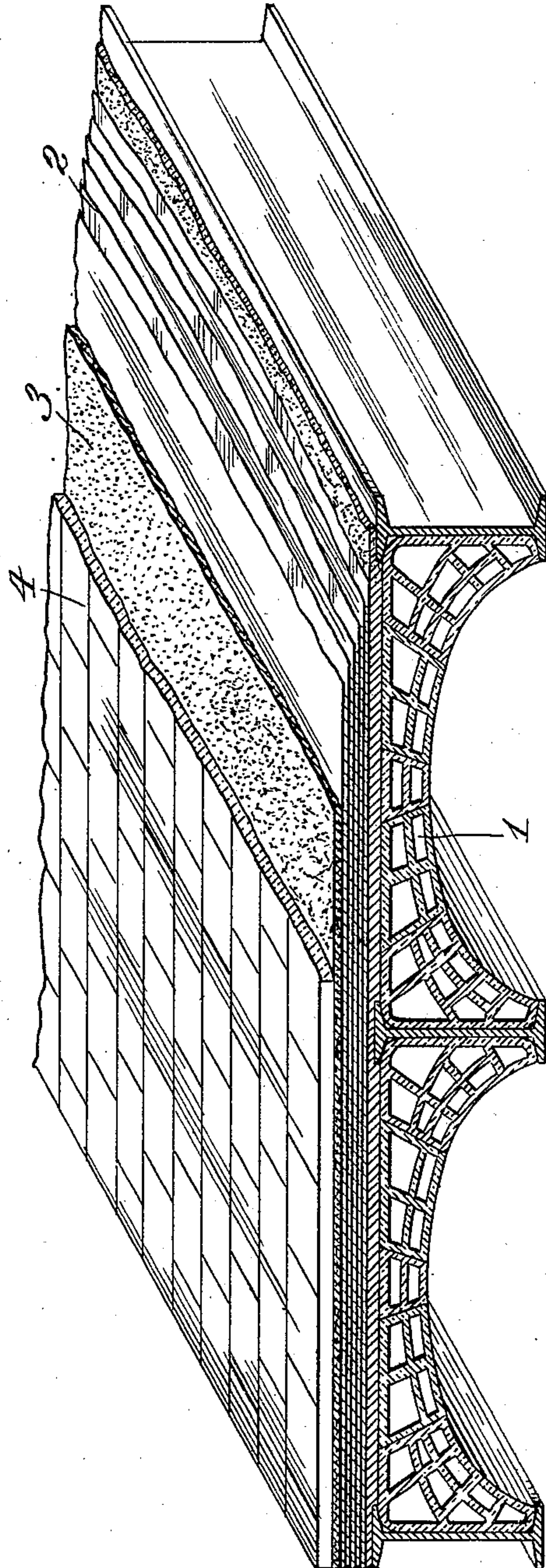
No. 712,308.

Patented Oct. 28, 1902.

F. L. KANE.
METHOD OF LAYING ROOFS.

(Application filed Mar. 7, 1902.)

(No Model.)



WITNESSES:

Sidney R. Perry
Emma H. Finlayson

INVENTOR

Frederick L. Kane

BY

Stewart & Stewart
ATTORNEYS

UNITED STATES PATENT OFFICE.

FREDERICK L. KANE, OF NEW YORK, N. Y.

METHOD OF LAYING ROOFS.

SPECIFICATION forming part of Letters Patent No. 712,308, dated October 28, 1902.

Application filed March 7, 1902. Serial No. 97,034. (No specimens.)

To all whom it may concern:

Be it known that I, FREDERICK L. KANE, a citizen of the United States of America, and a resident of New York city, county and State
5 of New York, have invented certain new and useful Improvements in Methods of Laying Roofs, of which the following is a specification.

My invention relates to certain new and useful improvements in the method of laying
10 roofs, and has for its object to produce a roof which has all the advantages of the ordinary form of an asphalt concrete roof, with none of its disadvantages.

The ordinary asphalt concrete roof as now
15 laid consists of a number of thicknesses of tarred paper or roofing-felt, which are cemented together by pitch or asphalt, the pitch or asphalt being melted and applied hot, and when this pitch or asphalt cools it hardens
20 and firmly binds the layers of paper or felt together. On top of layers of tarred paper is laid a course of asphalt, the same as is used for streets, walks, floors, &c., in a continuous sheet. This asphalt must be laid hot and
25 rolled or smoothed compact and level before it cools and hardens. This form of roof is very expensive to lay, it requiring a very high degree of skill to get the concrete level and smooth after it is applied, and it is impossible to prevent the thin layer of asphalt
30 concrete from cracking after it becomes hard. Another great objection to this form of roof is that the application of the hot concrete on top of the tarred paper or roofing-felt will
35 drive the pitch and tar out of the paper, and the heat will also cause the oils in the pitch and tar to penetrate into the concrete, causing blisters and soft spots in the concrete and preventing the same from becoming uni-
40 formly hard.

By my invention I am enabled to lay the concrete cold and form a concrete roof for a very small fraction of the cost of laying such a roof in the manner above described.

45 In carrying out my invention I make concrete tiles of suitable size from asphalt, pitch, or other bituminous material mixed with sand, gravel, or slag. These tiles may be formed in any desired way and of any desired
50 size. It is found in practice, however, that it is preferable to make the same about one-half an inch thick and of about eight by

twelve inches square, the tiles being made in an ordinary press or in any other way desired.

I prefer to lay the roof in the following
55 manner: I first put down a number of layers of tarred paper or roofing-felt and cement the same together by applying coatings of hot pitch or asphalt, above referred to, or any
60 other material or composition may be used, it only being necessary that a base be formed which is a bituminous one. Over the top layer of felt or tarred paper or other bitu-
65 minous base I place a thin coat of asphaltic cement consisting of a mixture of pitch, asphalt, or other bituminous material with a solvent volatile oil—such as naphtha, ben-
70 zin, ether, or similar substance—such mixture being of about the consistency of paint and is applied cold with a brush or any other
suitable way. I then lay the concrete tiles on top of this coating with their edges close
75 together. I have discovered that the asphalt or other bituminous material in the base and in the concrete tiles when so laid will be slightly
softened by the volatile solvent in the cement at the surface in contact with such cement
80 and that when the volatile solvent evaporates the tiles, cement, and base of tarred paper, felt, or other bituminous material make practically one solid mass. This union can be
best described as a kind of a "weld." In this
85 way a roof is produced which is exceedingly cheap to lay, which is not affected by atmospheric conditions—such as frost, &c.—and which is durable and absolutely water-tight.

Referring to the drawing, wherein I show a section of a roof laid in accordance with my invention, 1 designates the arches or trusses
90 on which the roof is supported. These trusses form no part of my invention and are merely shown for the sake of clearness.

2 designates the base, which preferably is formed of layers of tarred felt or paper, and,
95 as shown, these layers are cemented together by melted pitch or asphalt in the ordinary way; but the base may be formed in any other way that may be found desirable, it only being necessary that it be composed of
100 a bituminous material.

3 designates a thin layer of cement, which is applied on top of layers of paper or felt, and this cement is composed of a mixture of

pitch, asphalt, or other bituminous material and a solvent, preferably a volatile solvent oil—such as naphtha, benzin, ether, or other similar substances—it being entirely immaterial, so far as the invention is concerned, what solvent is used, so long as it is one which will dissolve or cut the asphalt or other bituminous material. The solvent oil and pitch or asphalt are mixed in such proportions as to produce a paint or cement, and this paint or cement is applied cold in any desired way. After the cement has been applied to the roof the concrete tiles are simply laid thereon cold. The solvent oil in the cement will immediately attack the surface of the tiles in contact therewith and slightly soften that part thereof, as above described. When the tiles are laid on the cement, which is before the volatile oils have had time to evaporate and is consequently soft, some of the cement oozes up between the joints, and in that way the adjacent faces of the tiles are slightly softened and made to adhere to each other, so that when the oil has all evaporated and the asphalt hardened the tiles form a practically continuous surface.

While I prefer to mix the solvent oil with a bituminous material, I do not intend to limit myself to such mixture, for I may use the solvent oil as the welding or solvent medium alone and without such bituminous mixture—that is to say, I may apply the solvent oil directly to the base or the tile, or to both, and lay the one on the other, and thus complete the union, as described—for it will be understood that I only employ the bituminous material in the paint described as a convenient means of carrying and applying the solvent and as a supplement to the amount of bituminous material desirable for the weld; but if the tile and base are sufficiently rich in bituminous material to be affected by the solvent oil to make the weld then the solvent oil will attack the bituminous material in the tile and base and sufficiently dissolve the same to cause the union; but in practice I have found that I obtain good results by using the solvent oil in combination with a suitable amount of bituminous material to make a paint-like substance, as described.

While I have stated in my specification that I apply my cement cold with a brush, I do not intend by such statement to be limited to any particular degree of temperature. I have used this expression only to distinguish my method of laying an asphalt roof from that which has heretofore been employed, wherein the asphalt has been applied in a hot and plastic condition. It will be understood, of course, that the solvent paint or solvent oil will take the temperature of the atmosphere. If the atmosphere is very cold, it may be desirable to heat the solvent volatile oil or mixture of solvent volatile oil and bituminous substance to about 100°. The degree of temperature is immaterial for the purposes of my invention, it being only necessary that the

solvent oil or the solvent oil and bituminous substance be in such a plastic condition that it could be readily applied as indicated. 70

By the use of asphalt tiles secured to a suitable base of bituminous material I am enabled to form a roof which has all the advantages of the ordinary form of asphalt roof which I have previously described, but at a much less cost. 75

Another one of the advantages of using a tile formed of asphalt concrete, as I have described, is that this tile at the ordinary temperature is somewhat pliable and will conform itself to any inequalities there may be in the roof due to the settling of the building or from any other cause. 80

I am aware that it is old to lay a roof composed of a base made up layers of felt or tarred paper cemented together by bituminous cement composed of asphalt or other cementing composition and to cover this with a layer of clay or pottery tiles, which are secured to the base by cement. This form of roof, however, has the objection that as the tiles are not pliable and will not conform to any inequality in the roof they will separate from the cement and become loose on the roof, thus destroying their efficiency. By the use of a tile made of bituminous material, such as I have described, I am able to prepare in advance the wearing-surface of the roof by the manufacture of the tiles described in a convenient form, in which they may be readily handled and applied. This I regard as of essential importance, rather than applying the wearing-surface in a plastic state, such as that heretofore described. Furthermore, by the interposition between the bituminous base and the bituminous tile of a bituminous cement I am able to create a homogeneous union which is obviously very different from that union which is brought about by laying a pottery tile on a bituminous base and securing the same thereto by cement. 85 90 95 100 105 110

As heretofore stated, I am aware that it is old to secure pottery tiles to a bituminous base by a cement; but I believe that it is new with me to make the whole structure one bituminous mass in the manner and form specified by me. 115

While I have designated my invention as pertaining to improvement in method of making roofs, I do not intend to be limited to the use of my invention for roofs alone, as it may be employed for the making of floors, area-ways, or other purposes to which it may obviously be applied. 120

While I have described what I believe to be the best form of my invention, I desire to be understood that I do not wish to be limited to the exact constituents and materials which I have described, as other constituents and materials might be substituted and other changes made without departing from my invention. 125 130

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

1. An improvement in the art of laying roofs or other coverings which consists in forming a base of bituminous material; then applying a layer of bituminous cement; and then applying a second layer of bituminous material in the form of independent elements previously shaped into definite and permanent form, the base and layer of bituminous material being united by the bituminous cement.

2. An improvement in the art of laying roofs or other coverings which consists in forming a base of bituminous material; then applying a layer of cement composed of bituminous material and a solvent oil; and then applying a second layer of bituminous material in the form of individual elements previously shaped into definite and permanent form, the base and second layer of bituminous material being united by the solvent cement.

3. An improvement in the art of laying roofs or other coverings which consists in first forming a base of bituminous material, then applying a layer of bituminous material in the form of individual elements previously shaped into definite and permanent form and uniting the two layers by the use of a solvent oil interposed between them.

4. An improvement in the art of laying roofs or other coverings which consists in first forming a base of layers of tarred paper or felt; then applying a layer of bituminous material in the form of individual elements pre-

viously shaped into definite and permanent form and uniting the base and the second layer by the use of a solvent oil interposed between them.

5. An improvement in the art of laying roofs or other coverings which consists in first forming a base of layers of tarred paper or felt; then applying a layer of bituminous material in the form of individual elements previously shaped into definite and permanent form and uniting the base and the layer of bituminous material by interposing between them a cement made of bituminous material and a solvent oil or substance.

6. An improvement in the art of laying roofs or other coverings which consists in first forming a base by laying down one or more layers of tarred paper or felt and uniting the same by a coating of, and coating the same with, a bituminous cement; then applying a second layer composed of bituminous material mixed with gravel in the form of individual elements previously shaped into definite and permanent form and uniting the second layer with the base by the use of a cement made of bituminous material and a solvent volatile oil.

Signed by me at New York city, county and State of New York, this 28th day of February, 1902.

FREDERICK L. KANE.

Witnesses:

SIDNEY R. PERRY,
EMMA W. FINLAYSON.