Nov. 15, 1932. A. S. PEIPER 1,887,847

METHOD OF PERMANENTLY SECURING LINOLEUM TO NORMALLY DAMP CONCRETE SURFACES

Filed Feb. 25, 1932

Fig. 1.

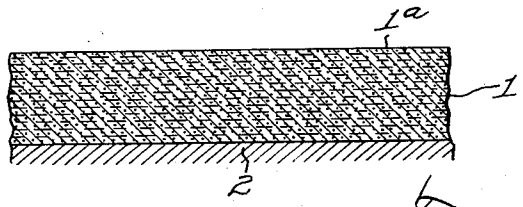


Fig. 2.

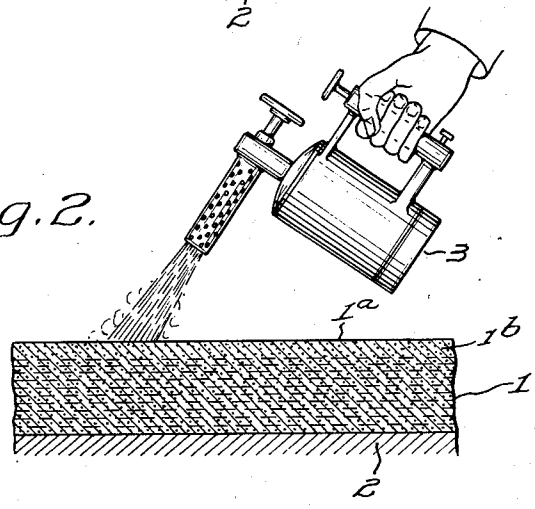


Fig. 3.

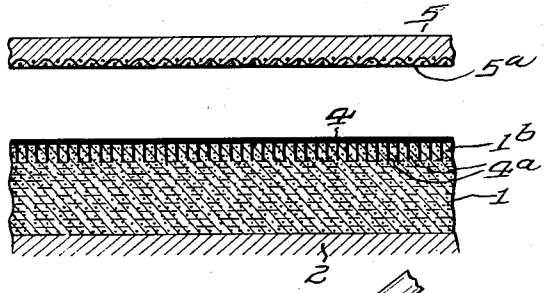
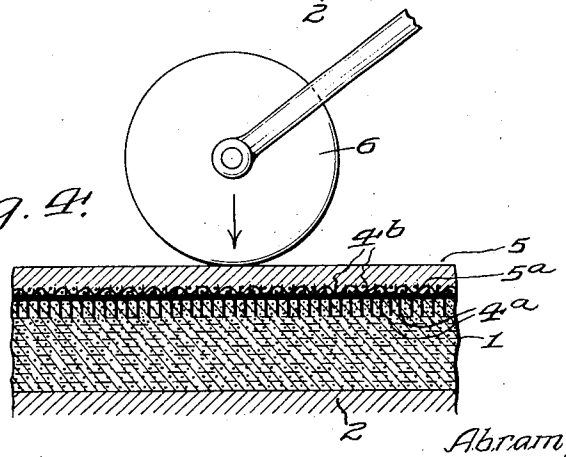


Fig. 4.



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UNITED STATES PATENT OFFICE

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METHOD OF PERMANENTLY SECURING LINOLEUM TO NORMALLY DAMP CONCRETE SURFACES

Application filed February 25, 1932. Serial No. 595,118.

My invention relates to the art of gluing or cementing floor coverings and the like to concrete and/or plaster floors and walls, and more particularly to the securing of a permanent bond between such coverings and a cement wall or floor which is so placed, that is to say always or frequently in contact with water and to such a degree that the water penetrates the wall from the back side or underside thereof and keeps the concrete continually damp, or frequently dampens it.

The results which ensue from an attempt to glue or cement a linoleum floor covering to a damp wall or flooring are generally failures. In a short time the linoleum separates from the concrete due to the action of the water on the glue or cement. The linoleum separates from the concrete due to the seepage of water through the concrete to the surface thereof and the entry of the water between the cement and the linoleum.

It has also been attempted to overcome the difficulty by applying a bituminous cement to the normally damp concrete, using that as a glue with which to attach the sheet of linoleum to the concrete, but the bond between the bituminous cement and the wet concrete is not sufficient to prevent the penetration of the water through the concrete to the surface of the wall or floor and thence to penetrate into and to saturate and injure the linoleum itself.

It is the object of the present invention to provide a method of securing a firm rigid bond between a normally wet or damp wall of concrete or plaster or the like and a sheet of floor covering such as linoleum or the like, or similar flexible materials.

Other objects will appear in the specification and claims below.

In the drawing forming a part of this specification and in which the same reference characters are employed throughout the various views to designate the same parts, I have illustrated, in a diagrammatic manner, the steps which are followed in the practice of my invention.

Fig. 1 is a vertical section through a horizontal wall or floor of cement and in which it is diagrammatically indicated by horizontal lines that the interstices of the wall are saturated with water;

Fig. 2 is illustrative of one way in which such a wall shown in Fig. 1 is heated in order to expel the moisture from the interstices and pores at and adjacent the upper surface thereof, and the absence of water near the surface is indicated by a lowering of the level of the water in the cement below the plane of the upper surface of the concrete.

Fig. 3 shows a coating of bituminous cement or other adhesive applied to the top hot dry surface of the wall or floor and a definite penetration of the cement into that portion of the course from which the water has been expelled, is diagrammatically indicated. Spaced above this is shown diagrammatically a vertical section through a piece of linoleum provided with the usual integral backing of burlap or similar material, the same being ready for application to the cement covered floor or wall.

Fig. 4 shows the linoleum lying on the floor and being pressed down into the coating of adhesive into contact with the upper surface of the wall, at the completion of the process, fine short vertical lines indicating a substantial penetration of the cement into the fabric forming the back of the linoleum.

In carrying out my invention, I first heat the upper surface 1^a of the floor or wall 1, the wall being one which is normally damp due to the seepage of water thereinto from the foundation 2 on which it is laid. The water content is indicated by the horizontal broken lines. The heating may be done in any desired manner, but I prefer to use a blow torch 3 of suitable size for by it I am able to progressively heat relatively large surfaces of floor sufficiently to expel water from the interstices and pores at and adjacent the upper surface thereof. I prefer to raise the temperature of the portion of the floor under treatment to a point higher than 212° F. in order to completely expel the water to a slight distance below the surface. But care should be taken that the heat be not high enough and be not applied to one spot long enough to cause any substantial calcination or to pro-

duce any other deleterious effect on the structural value of the floor so heated.

In Fig. 2 I have shown the heating as substantially completed and the course of concrete or floor as provided with a thin upper section 1^b wherein the water has been expelled and the pores and interstices are open.

In the practice of my improved method, after the operation has been well begun, a suitable area of the floor will be hot, that is to say, an area much larger than that of the piece of linoleum being laid at the instant, and I utilize the heated floor in advance of the linoleum laying operation to warm the linoleum sufficiently to prevent it from chilling the cement when the linoleum is finally put in place upon it.

After I have sufficiently heated the area of the floor upon which the strip of linoleum is to be placed, the next step is to apply a layer or coating of adhesive or cement. I preferably use a bituminous cement, such as melted asphalt. Such asphaltic cement should be one which is solid and rigid at room temperatures and which must be melted for application to the floor or wall.

After the cement has been melted and while it is hot and quite fluid and before the water in the cement below the dried surface has had an opportunity to refill the interstices and pores at the surface from which the water has been driven out by the heat, I apply the coating 4 of bituminous cement which should be fluid enough to substantially fill the pores or interstices at and adjacent the surface and from which the water has been expelled. In Fig. 3 I have indicated, by the short vertical thick lines 4^a extending downwardly therefrom that the cement has penetrated and filled said pores and interstices. While the cement 4 is still hot and fluid I next apply and lay on the coated concrete the strip of linoleum 5 which is preferably heated and warm as previously described, and I then press or roll it hard down against the concrete floor. I have indicated the pressing step of the process as being performed with a heavy roller 6, but any suitable means may be used for the purpose.

The sheet of linoleum 5 is indicated diagrammatically in Figs. 3 and 4 as having a backing 5^a of burlap or similar fabric, as it is usually manufactured, because that type or kind of linoleum is particularly adapted to my process, for the fluid coating of asphaltic cement 4 penetrates somewhat into the fabric of burlap 5^a as indicated by the fine vertical lines 4^b, and thereby also makes a firm bond therewith.

Having laid one strip of linoleum in the manner above described, the next adjacent and now heated section of flooring is likewise covered with a coating of melted asphalt and I lay therein the next strip or piece of linoleum in the same way as the first was laid, pressing the sheet firmly against the concrete floor.

The hot bituminous cement thus applied to the heated floor is mobile and fluent and enters and fills the pores and interstices at the surface of the concrete flooring from which the water has been expelled and when the floor has cooled to room temperatures, this cement is hard and solid and it is keyed or interlocked with the concrete so firmly that it is very difficult to remove it therefrom or to break the bond due to the penetration 4^a of the asphalt. The cement similarly by its pentration 4^b into the burlap or other fabric backing of the linoleum forms a strong bond therewith.

But I attribute the success of my process to the fact that the surface pores of the concrete are filled with the cement 4^a which, now hard and firmly retained therein, is operative to prevent the water from again penetrating through the concrete to the upper surface thereof. The water cannot penetrate through the pores filled with asphalt 4^a or weaken the bond between the cement and the concrete or between the cement and the linoleum, and the linoleum is thus firmly bound to the concrete and the section 1^b of the course is therefore always dry.

In the practice of my invention I prefer to use a hard bitumen, such as hard asphalt, as the cement, but I do not wish to be limited thereto, for I may use any good cement, such as rubber cements and cements composed of resins, gums and pitches or mixtures of the same, or the cements commonly used for laying linoleum and which are not water soluble, and which are solid at room temperatures. When the concrete has been heated sufficiently to expel the moisture from the pores at and near the upper surface of the course and the said pores and interstices have been filled with such cement before the water has time to refill the said pores and the cement has hardened and solidified, the seepage of water through the concrete to the surface of the course or floor is absolutely checked and stopped and a firm permanent bond between the linoleum and the concrete is insured.

The concrete walls and floors, which are normally damp and are not impervious to water, are basement and other sub-surface floors and walls, tunnel walls, cistern and tank walls, reservoir walls and the like. It is to such walls that it has been heretofore most difficult to permanently adhesively secure a sheet of covering material, particularly linoleum, and to which my invention has particular application.

Since the floor and the ceiling of a room or compartment are respectively the bottom and top walls of the enclosure, and I have herein employed the word "wall" as definitive of all of them irrespective of the location of the wall. Of course, it is unusual to apply a sheet

of linoleum to anything but the floors, but it is sometimes applied to the vertical walls of a room, at least for a short distance upwardly from the plane of the floor. But I do not regard my invention as limited strictly to the use of linoleum, because it may be desirable to provide normally damp or wet concrete walls with other coverings, such as congoleum, or oil cloth and tarred paper or similar sheets of pliable materials, and when such walls are located where the surface can be heated, and the water expelled, and a melted cement can be used, such covering material can be permanently secured thereto by the practice of my invention.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States is:

1. The method of covering the surface of a concrete or plaster wall, which is not impervious to moisture and which is normally damp, which consists in heating the surface of said wall to a temperature preferably substantially above 212° F. to expel the water from the interstices and pores at and adjacent said surface without effecting any deleterious result in the structural value of the wall so heated, then before said pores can refill with water, coating said surface while hot with a hot melted adhesive, which is a solid at atmospheric temperatures and is sufficiently fluid, when hot, to penetrate into and substantially fill the said pores and interstices and while the wall and adhesive are still hot, pressing a pliable sheet of covering material into firm contact with the adhesive-covered surface of said wall.

2. The method of covering the surface of a concrete or plaster wall, which is not impervious to moisture and which is normally damp, which consists in heating the surface of said wall to a temperature preferably substantially above 212° F. to expel the water from the interstices and pores at and adjacent said surface without effecting any deleterious result in the structural value of the wall so heated, then before said pores can refill with water, coating said surface while hot with a hot melted asphaltic cement which is a solid at atmospheric temperatures and is sufficiently fluid when hot to penetrate into and fill said pores and interstices, and while said wall is still hot and the asphalt is fluid pressing a warm pliable sheet of covering material into firm contact with said asphalt covered surface of said wall.

3. The method of adhesively securing linoleum to the surface of a concrete or plaster wall, which is not impervious to moisture and which is normally damp, which consists in heating the surface of said wall to a temperature preferably substantially above 212° F. to expel water from the interstices and pores at and adjacent said surface without effecting any deleterious result in the structural value of the wall so heated, then, before said pores refill with water, coating said surface while hot with a hot melted asphaltic cement which is a solid at atmospheric temperatures, and is sufficiently fluid, when melted to penetrate into and to fill said pores and interstices, and then, while said wall is still hot and said asphalt is fluid, pressing a warm sheet of linoleum into firm contact with said asphalt covered surface of said wall.

In witness whereof, I have hereunto set my hand this 23d day of February, 1932.

ABRAM S. PEIPER.