

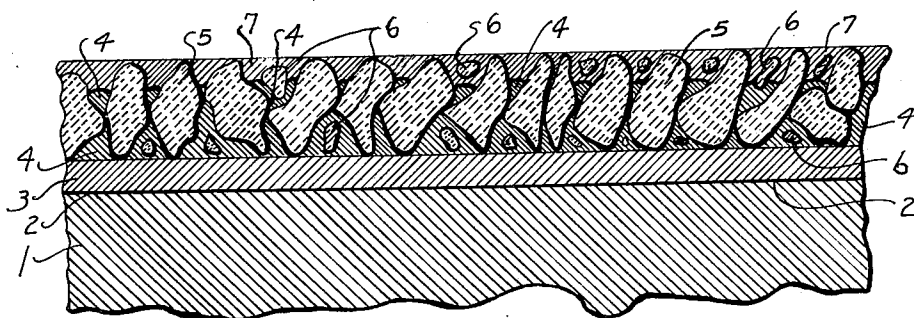
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ABRASION RESISTANT COATING

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ABRASION RESISTANT COATING

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5 Claims. (Cl. 117—29)

My invention relates to an abrasion resisting coating for surfaces subject to heavy wear, such as platforms, floorings, steps and the like, and to methods of applying the same.

My invention is applicable to the coating of such surfaces regardless of the material of which they are composed, but is particularly useful for coating hard surfaces, such as those of steel, concrete and the like, the coatings of which are especially subject to wear.

The wear and corrosion of steel surfaces, in particular, when coated in the usual manner, present a very serious problem, not heretofore satisfactorily solved. For instance, in public structures, such as grandstands and the like, constructed of steel, it is found that the front aisles and stairways in particular are subjected to considerable wear. Steel floors of warehouses, platforms and the like are subject to similar wear. This wear results in corrosion which endangers the structure through reduction of thickness of the steel and also results in increased maintenance costs and unsightly appearance. Scratches through the usual paint coat permit oxidation of the steel, which in a short period of time will form rust blisters of appreciable diameter, which detract seriously from the appearance of the structure and render difficult the application of a new protecting coat. By my invention, I have produced a protecting painted surface which is highly resistant to the abrasive or scuffing action of shoes and the like, preventing injury to the protective coat itself and the rusting of the steel surface resulting therefrom.

My invention has the further advantage that it provides an effective non-skid surface especially useful on steel, thus preventing accidents and injury, even when wet, whereas smooth painted surfaces are slippery, particularly when wet.

In the practice of my invention, I apply say, by way of example, to a steel surface, properly prepared and primed to receive it, a coat of deck paint, preferably by means of a brush, and over its surface I spray or otherwise distribute a layer of abrasive grains, e. g., sand, carborundum, or the like, to a depth somewhat greater than the size of the average grains. After the paint coat has set hard throughout its thickness, I remove the surplus abrasive grains which have not become embedded in the paint film.

While a surface so prepared affords distinctly more protection than a paint surface alone, I have further found it highly desirable to apply, after the first surface has dried sufficiently, a second coat of deck paint, sufficient to cover the grains of abrasive, except perhaps the extreme points of some of the larger ones, so as to provide a substantially smooth surface. This second coating so firmly anchors the grains to the steel

surface that the scuffing or abrasive action of shoes, or the like, will not loosen them or cause them to move, thereby injuring the paint film.

Other novel features and advantages of my invention will hereinafter appear.

The accompanying drawing shows, for purpose of exemplification but without limiting my invention or claims thereto, a preferred embodiment of my invention.

The figure is a magnified cross-sectional view of a floor, step or like structure having a surface provided with my protecting abrasion resisting coating.

Referring to said figure, the structure whose surface is to be coated is shown at 1 and its surface at 2.

In the practice of my invention, I first clean said surface and apply thereon a prime coat 3, by spraying or other suitable method. After this has dried, I apply a heavy coat of deck paint 4, preferably by brushing, over the prime coat. This coat of deck paint must be thick enough to cement together, preferably to approximately their mid points, a coat of abrasive grains 5, preferably one layer thick and with all grains in the layer preferably in close contact with each other and with the primed surface. This result is accomplished by using the correct amount of paint and a surplus of abrasive grains. The abrasive grains may be applied in any convenient manner, but spraying at a low air pressure is found to produce very satisfactory results in spreading them evenly over the painted surfaces. If desired, the abrasive grains may be broadcast by hand provided that all the surfaces are covered sufficiently. The abrasive grains are bound together by the paint, its capillary action and surface tension being rendered most effective by contact of points of adjacent grains of the abrasive with each other. The paint when hardened, together with small grains 6, if present, form anchors between the arches formed by the lower halves of the adjacent large grains. The first coat of paint also sticks the abrasive grains to the prime coat on the steel or other surface. After the first coat is sufficiently dry, the excess grains of the abrasive are removed by sweeping, blowing or similar expedient, and then a second coat of deck paint 7, is preferably applied, as by spraying in sufficient quantity to fill in the voids and bind the grains firmly together at their tops, in much the same manner as the first coat binds them at their bottoms, to prevent them from tearing loose under the scuffing of shoes, or the like. Enough paint should be applied on the abrasive layer to form a uniform wet surface, which indicates that the paint film extends between the grains of the abrasive. The second coat of deck paint need not be the same as the first but may be chosen for special characteris-

tics, such as surface hardness and resistance to wear, etc., whereas the first coat may be chosen for other desired characteristics, such as resiliency, durability, etc.

It is apparent that a single coat of deck paint sufficiently thick to cover both the bottoms and the tops of the abrasive grains and the spaces therebetween might be used. I have found, however, that if a single heavy coat is used, grit particles having a specific gravity of the order of sand are floated so that they are not in close contact with each other or with the prime coat. The most durable surface in this case will be produced if only enough deck paint is applied in the first coat to fill the spaces between the grains approximately up to their mid height, so that the surface tension of the paint film will draw the grains together and tightly to the prime coat, the capillary attraction raising the level of the paint film as the particles are drawn together.

The abrasive grains should be clean, hard and sharp and uniform in grain size. I have found that best results are secured with grains of a size passing a sieve with less than 50 but retained on one with 80 or more meshes to the inch. A small proportion of the finer particles may advantageously be employed, provided they are not present in sufficient volume to cause the larger grains to be separated so that they are not in contact with each other. Coarser grains than the above are more difficult to make secure in the paint film and require an excessive amount of paint.

While the use of more than a single layer of abrasive is within the scope of my invention, if two layers of the large contacting grains of abrasive are used, there is a tendency for the upper layer, under pressure of the load, to settle down between the grains of the first layer and loosen them.

It is essential that the paint employed possess the characteristic of drying and hardening throughout,—as, for example, by the evaporation of solvent from a synthetic resin type of deck paint,—rather than drying on its surface as for example the drying of a film of linseed oil paint which dries by oxidation of the oil at the surface which produces a skin which only gradually increases in thickness. It should also be of a character that does not soften when subjected to the heat of the sun or other source of heat of intensity to be expected in the life of the structure.

Tests have been shown that a two coat abrasive surface has sufficient resistance to prevent steel from corroding and that it lasts two to five times longer when subjected to wear and corrosion than the same amount of paint without the abrasive. Abrasive surfaces will not blister. They give an attractive suede finish to the steel or other surface.

While I have illustrated and described certain preferred forms of my invention, it will be understood that changes may be made in the forms disclosed without departing from the spirit of my invention, and that certain features may sometimes be used to advantage without a corresponding use of other features, and it is my intention to cover in the appended claims all of the novelty possessed by my invention over the prior art.

I claim:

1. The method of applying an abrasion resist-

ing coating to a surface subject to heavy wear, such as those of steel, concrete and other floorings, which method comprises applying to said surface a prime coat, applying to said prime coat a coat of paint which hardens throughout and whose hardness is substantially unaffected by atmospheric temperatures, uniformly spreading over said coat before it hardens grains of an abrasive, substantially uniform in size and of greater height than the thickness of said coat and in quantity sufficient to form a continuous layer of grains contacting each other at adjacent points, causing said layer of grains to settle into substantial contact with said prime coat, permitting said coat of paint to harden, removing the excess grains of abrasive, and applying over said layer of grains a second coat of paint which hardens throughout and whose hardness is unaffected by atmospheric temperatures, said second coat being of a thickness to approximately cover the tops of said layer of grains and fill the spaces therebetween.

2. The method of applying an abrasion resisting coating to a surface subject to heavy wear, such as those of steel, concrete and other floorings, which method comprises applying to said surface, a coat of paint which hardens throughout and whose hardness is substantially unaffected by atmospheric temperatures, uniformly spreading over said coat before it hardens grains of an abrasive of substantially uniform size and in quantity sufficient to form a continuous layer of grains contacting each other at adjacent points, causing said layer of grains to settle into substantial contact with said steel surface permitting said coat of paint to harden, and removing the excess grains of abrasive.

3. A flat base subject to heavy wear, such as steel, concrete and other floorings, provided on its flat surface with a prime coat, a coat of paint thereon hardened throughout and of a character whose hardness is substantially unaffected by changes in atmospheric temperature, grains of abrasive of substantially uniform size and of substantially a greater height than the thickness of said coat, embedded therein to the depth of said prime coat and contacting each other at adjacent points to form a continuous layer, and a second coat of paint hardened throughout, and of a character whose hardness is unaffected by changes in temperature, located between the upper portions of said abrasive grains substantially to the tops thereof.

4. A flat base provided on its flat surface with a coat of paint hardened throughout and of a character whose hardness is substantially unaffected by changes in atmospheric temperature, grains of abrasive embedded therein to the depth of said flat surface and contacting each other at adjacent points to form a continuous layer, and a second coat of paint hardened throughout, and of a character whose hardness is unaffected by changes in temperature, located between the upper portions of said abrasive grains.

5. A flat base provided on its flat surface with a coat of paint hardened throughout and of a character whose hardness is substantially unaffected by changes in atmospheric temperature, grains of abrasive embedded therein, contacting each other at adjacent points to form a continuous layer and extending to the surface of said base.

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CERTIFICATE OF CORRECTION.

Patent No. 2,330,365.

September 28, 1943.

JAMES O. JACKSON.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 35, claim 2, after "surface" insert a comma; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of December, A. D. 1943.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)