April 17, 1934. J. ADLER ET AL 1,955,572

ART OF METAL COATING BODIES

Filed Aug. 6, 1932

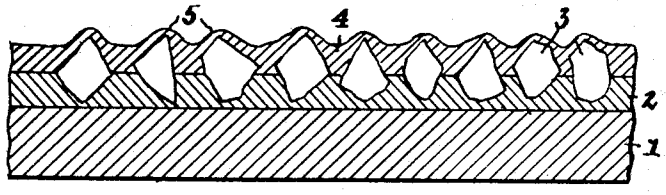

Fig. 1.

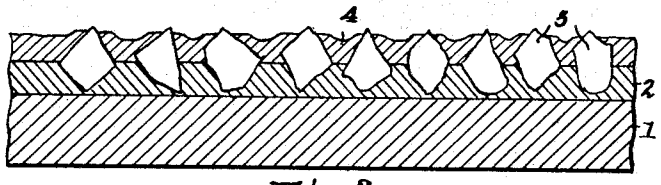

Fig. 2.

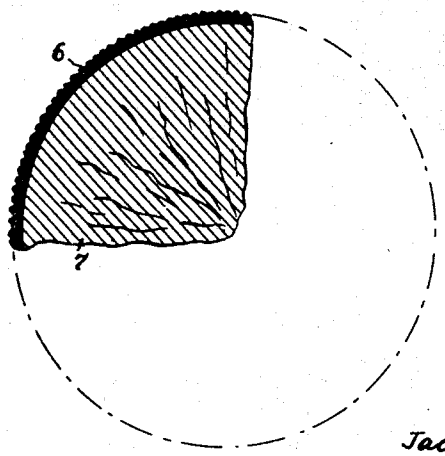

Fig. 3

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ART OF METAL COATING BODIES

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2 Claims. (Cl. 91—70.1)

Our invention relates to rough-surfaced bodies and it has for its object to provide a rough-surfaced body which may be used as an abrasive, for which purpose it is intended that the body shall have greater durability than ordinary sand paper, emery cloth and the like and shall be capable of being readily cleaned after each use, and which may also be used where an effective grip is required but injury to the material gripped is to be avoided, it being known that the sanded periphery of a sand-roller for looms, for example, frequently cuts the fabric as it draws it along.

In the drawing,

Fig. 1 is a section of a body formed in accordance with this invention and of course magnified;

Fig. 2 a section of such a body after, having been used as an abrasive medium, its metal coating has somewhat worn away and also magnified; and

Fig. 3 shows a roller having a gripping periphery formed in accordance with this invention.

Having a backing, here taken as including a paper support 1 and glue or equivalent cement-coating 2 thereon, to which sand, emery or other sharp particles 3 adhere or are at any rate present in distributed state, we blast a spray of fused metal against that side of the backing on which the particles are present and so as to form a layer 4 whose thickness at most does not exceed that in which the portions which overlie or cap the particles will be left as nodules 5.

If the product is to be used for a sand roller or equivalent element having a rough gripping surface it serves the purpose excellently and without any cutting of a fabric in contact therewith because each nodule, while effective to grip the fabric, sheathes any sharpness that may characterize the bare particles. Paper or equivalent flexible sheet material being used at 1, the product 6 may be wrapped around the roller core 7 and then cemented or in any way secured thereto, as in Fig. 3.

If the product is to be used as an abrasive medium it is easily cleaned, as pointed out and as seen by the undulatory form of the exposed surface of the layer 4 and the absence of overhangs or the like which would retain accumulations of abraded matter.

In any event, the particles remain very strongly bonded to the backing by the mentioned fusible substance when it cools and hardens, even if the coating by abrasion is worn away and the layer of said substance only covers the particles more or less, as in Fig. 2. Said substance on hardening on the backing to which it is applied will form a bond therewith practically regardless of the material of which such surface is composed especially if it is porous, but if glue or equivalent 2 is used it will of course be a factor in the bond and protect the material, as paper or the like, from the destructive influence of the heat of said substance while still in the fused state.

Various metals may be used as the fused substance, whether high or low in ductility, and the thinness of the layer formed thereby, as is evident from the fact that the nodules are left on its surface due to the presence of the sand, emery or the like fine particles, is such that the product when in sheet form can be sharply bent, that is, actually creased, without any apparent injury to the coating, and even if said layer cracks along the line of the crease it remains substantially without fragments thereof breaking away, so that when the sheet is returned to its normal or flat form it is in as good condition, even at the line of creasing, as before the creasing.

When certain fused substances, such as metals, are blasted onto the backing they arrive in the form of a spray, each fused element or minute mass thereof adhering to the surface and there hardening, so that there is a piling-up of the layer element by element. The consequence is that the resulting layer forms without voids, as might be the case if the fused substance arrived in a continuous stream, and this accounts largely for the tenacious grip which the layer has on the backing and also on each particle of sand or equivalent,—a factor largely responsible for the great durability of our product when used as an abrasive.

Having thus fully described our invention what we claim is:

1. The herein described rough-surfaced body comprising a backing having an adhesive thereon and a coating on the backing including a spread of sharp abrasive particles directly adhering to the said adhesive and an integral layer of sprayed molten metal also directly adhering to said adhesive and having said particles embodied therein, said coating at its exposed surface presenting numerous projections respectively coinciding with the particles.

2. The method of forming a rough-surfaced body comprising applying a fusible adhesive to the surface of a backing material, partially embedding a spread of sharp particles in said adhesive, said particles being applied in a distributed state to leave spaces therebetween, exposing the underlying adhesive layer, and spraying molten metal on the particles and underlying exposed adhesive.

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