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DEVICE FOR COATING ARTICLES WITH GLASS, ENAMEL, QUARTZ, AND METALS

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Inventor:

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Producing coatings by means of a metallic powder is generally carried out by forcing a mixture of compressed air and a metallic powder through a concentric oxyhydrogen flame, whereby the metallic particles are heated and fused. With substances with a high melting point such as glass, quartz, platinum, tungsten and the like it has proved advantageous to avoid heating the nitrogen contained in the compressed air that serves as conveying agent to the metallic particles and to use instead of compressed air a compressed gas which burns or sustains the combustion intensively and heats the article to which the coating is to be applied during the coating process. That is to say I use gas substantially free from nitrogen. By this method which forms the subject matter of the present invention it is attained that the particles reach the article to be coated in a plastic or liquid state, thereby rendering it possible to produce a well adhering and cohesive coating. The current of compressed gas utilized for conveying the material is controlled by means of a regulating screw 5 being screwed into the nipple 6. The gas current passes through the opening 7 provided in the regulating screw 5 and enters the chamber 9 by means of four apertures 8; it is then forced from the chamber 9 through the annular gap 10 into the receptacle 1. The width of the gap 10 may be adjusted by turning the regulating screw 5, whereby the intensity of the gas current can be regulated at will.

In order to attain a uniform supply of the material for producing the coating to the nozzle 4 which material can also be in a liquid state instead of being pulverulent, a sieve 11 is arranged inside the receptacle 1. 12 denotes a casting made for instance of aluminium, in which a stop cock 13 is arranged. The casting 12 and the stop cock 13 are provided with three bores for the passage of gases, oxygen being supplied by means of conduit or hose 14 from a container 20, a combustible gas, for instance acetylene, illuminating-gas or hydrogen by hose 15 from a container 27 and a combustible gas being supplied by hose 16 from a container 28. The gases supplied by the hoses 14 and 15 are conducted into the mixing chamber 17, from where the mixture of gas passes through the annular channel 18 in order to burn at the end of said channel 18 in the shape of a concentric, very hot flame. The channel 18 is formed by the nozzles 4 and 19. The combustible gas supplied between the hose 16 passes through the annular channel 20 which is formed between the nozzles 19 and 21. For sake of clearness the section illustrating the connection between the hose 16 and the annular channel 20 in the casting 12 (Fig. 1) is not a vertical section but a radial section turned into the vertical. The two nozzles 21 and 19 are provided with flanges 24 and 25 respectively, a thowover nut 22 coacting with said flanges secures the nozzles 19 and 21 to the nozzle carrier 23. The pulverulent copper conveyed by the current of compressed gas into the nozzle 4 and from there into the flame is intensively heated in said flame and projected against the surface to be coated. The article to be coated is thereby continuously heated so that its surface is preserved against any oxidation during the coating. An effective pre-heating of the article to be coated is generally advantageous and is necessary when producing coatings of glass.
quartz and enamel. The pre-heating of the article can be easily effected by means of the device illustrated.

By using a current of gas directed upwardly through the body of pulverulent material I obtain the novel result of carrying in the gas stream only the finer particles of the pulverulent material, and effect a thorough stirring of the materials to break up the loosely adhering lumps so that these lumps are separated by gravity and not carried to the outlet valves to clog them.

I claim:

In a device for coating articles, particularly with glass, enamel, quartz, metals and the like, a receptacle for the pulverulent coating material, adjustable means arranged at the bottom of said receptacle for admitting a stream of compressed combustible gas, nozzle means, means for supplying oxygen and two combustible gases to said nozzle means for producing a blow-pipe flame, means connected to the top of said receptacle for conveying the stream of gas and the material suspended therein to said nozzle means for projecting the material, the particles of which are heated to a high temperature by the combustion of the conveying agent, to the article to be coated, and baffle means provided above the body of material in said receptacle for attaining a uniform suspension.

In testimony whereof I affix my signature.  

MAX ULRICH SCHOOP.