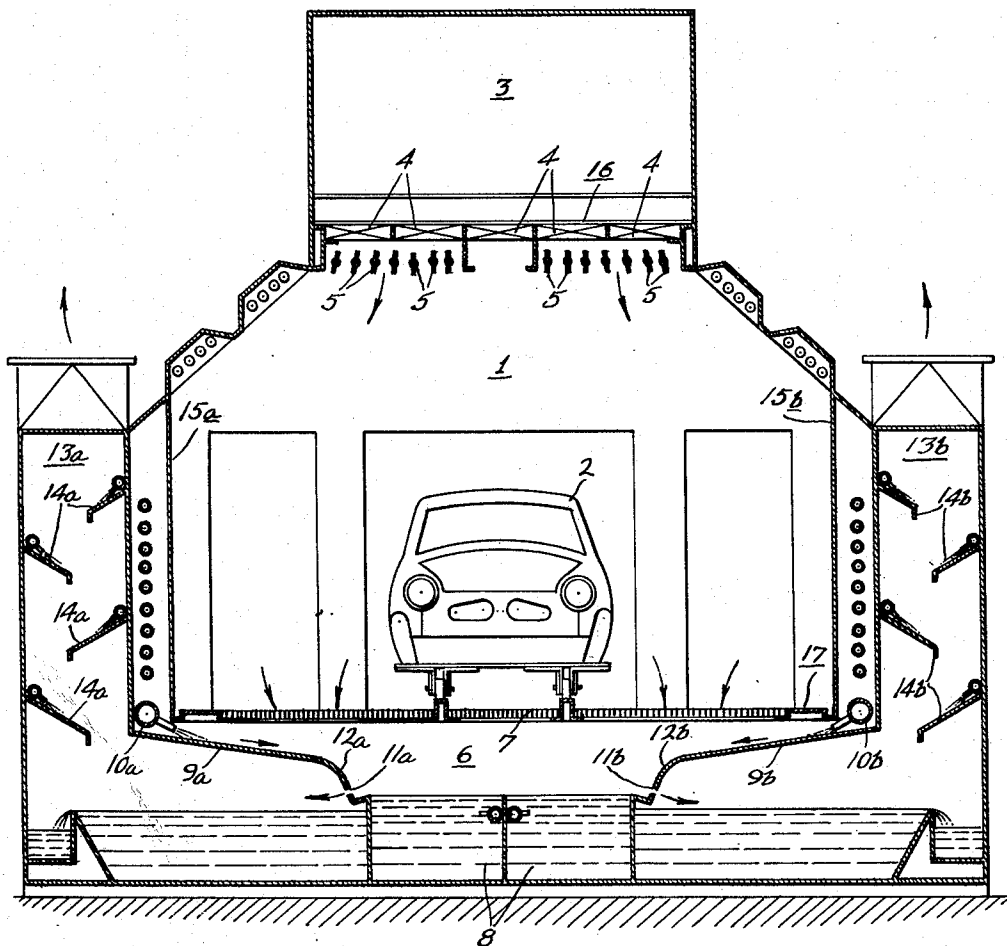


Feb. 23, 1965

E. KRANTZ ETAL
SPRAY-PAINTING BOOTHS

3,170,384

Filed May 14, 1962



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3,170,384

SPRAY-PAINTING BOOTHS

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Filed May 14, 1962, Ser. No. 194,630

Claims priority, application Sweden, May 16, 1961, 5,155/61

4 Claims. (Cl. 98—30)

The present invention relates to an arrangement in booths for spray-painting intermittently or continuously conveyed objects, which booths are ventilated by means of air supplied at the ceiling of a channel and exhausted at the channel floor.

To eliminate the risk of paint build up in such structures the booth is usually, as is more fully described in U.S. patent application Serial No. 109,297, now Patent No. 3,138,087, made with a V-shaped bottom portion having water-covered side walls and provided with a longitudinal slot for the escaping ventilation air. The slot discharges into an inlet passage of a drop separator, in which the ventilation air is directed for cleaning before its discharge to the surrounding atmosphere by suitable exhaust means. It has become apparent, however, that when operating in this manner, with this performance considerable amounts of supplied washing liquid is required to insure that the side walls of the bottom portion be kept covered by the protecting film of water. Further, the above-described booth also requires a building height which often is not available.

In view of the above, a principal object of the invention is to eliminate the afore-mentioned drawbacks and to provide a considerably simplified and less expensive spray-painting booth. The spray-painting structure is characterized in that a chamber is arranged below the channel and communicating therewith through a grill which extends the entire width of the channel. The chamber also has a liquid basin, which is located under the grill, and is provided with water-covered side walls, each having a longitudinal slot for the discharge of the ventilating air to vertical shafts equipped with obliquely arranged deflector plates which may be water covered if desired. The slots are formed, in the present instance, in tapered bulges in the side walls adjacent the liquid chamber and dimensioned to give the outflowing air a speed which will be sufficient to atomize the ejected liquid from the liquid basin and the liquid film of the wall while giving the air stream the desired direction.

The invention will now be more fully described with reference to the accompanying drawing which shows a cross-section through a spray-painting channel made in accordance with the invention.

In the drawing 1 indicates a closed channel having a pair of spaced side walls 15a and 15b, a top wall 16, and a bottom wall 17, through which are conveyed the objects 2 to be spray-painted. From means (not shown) heated ventilation air is distributed uniformly over the entire horizontal cross-section of the channel by ventilating air inlet means comprising a duct 3 and a filter 4, located in the top wall 16 of the channel, and air directional means 5.

In accordance with the invention a chamber 6 is located below the channel, said chamber communicating with the channel through a grill 7 having a width corresponding

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substantially with the width of the channel. The chamber 6 has a liquid basin 8 arranged under the grill and a pair of depending, inwardly sloping, divided side walls 9a and 9b, the upper portions of which are continuously coated with a film of washing liquid supplied by means of washing liquid supply means 10a and 10b which are attached along the upper part of the side walls 9a and 9b. The ventilation air is discharged from the chamber 6 through longitudinal slots 11a and 11b formed in the chamber walls 9a and 9b, and serves to divide the walls into upper and lower portions, the lower portion confining the liquid basin 8. The slots, which are formed in the present instance in tapered bulges 12a and 12b in the side walls, are positioned and dimensioned to provide an orifice-like action whereby the outflowing air achieves a velocity sufficient to atomize the liquid ejected both from the liquid basin and the liquid film of the side walls flowing toward the slots. It should be noted that the construction of the chamber, with the liquid level in the basin 8 closely adjacent the slot, provides in conjunction with the slot a venturi-like construction which aids in the ejection of the liquid.

During the movement of the ventilation air to the side walls toward the slots and its contact with the liquid surface in the basin 8, the accompanying larger paint particles are directly precipitated into the liquid basin. Further, by repeated collision with the liquid particles as they flow through the slots 11a and 11b, the remaining paint particles will be agglomerated so that they may be effectively separated at the discharge of the air through vertical shafts 13a and 13b located respectively on either side of the channel. Separation of the agglomerated particles is obtained by repeated deflection of the outflowing ventilation air by means of diagonal screen walls or deflector plates 14a and 14b, arranged in the shafts. The shafts may, if desired, be provided with separate liquid supply means for the supply of washing liquid for rinsing the deflector plates.

Although the invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be made without departing from the spirit and the scope of the invention as hereinafter claimed.

What is claimed is:

1. A spray-painting booth for objects being painted as they are conveyed therethrough, comprising a channel having a pair of spaced longitudinal side walls, a floor and a ceiling, said ceiling having ventilating air inlet means to distribute air to objects being painted within said channel, a grill coextensive with said floor for permitting ventilating air to be discharged from said channel, a chamber disposed beneath said grill, said chamber having a pair of inwardly sloping, downwardly extending longitudinal side walls connected on either side of said grill, means defining a longitudinal slot dividing each of said downwardly extending side walls into an upper and a lower portion, and a liquid basin confined between the lower portions of said downwardly extending side walls for carrying a liquid at a level closely adjacent said slot, washing liquid supply means positioned adjacent said grill along the upper portion of each of said downwardly extending side walls and adapted to coat said upper portions with a film of washing liquid flowing toward said slots, said slot means dimensioned to increase the velocity

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of the outflowing air sufficient to eject and atomize liquid both from the liquid basin and the liquid film flowing toward the slots whereby paint particles carried by said outflowing air are agglomerated.

2. A spray-painting booth in accordance with claim 1 5 wherein said inwardly sloping side walls include inwardly projecting, tapered bulges, and wherein said slots are positioned in said bulges.

3. A spray-painting booth in accordance with claim 2 10 including a vertical shaft positioned on either side of said channel and in communication therewith, each of said shafts having a plurality of deflector plates for causing separation of said agglomerated particles from said air and liquid mixture.

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4. A spray-painting booth in accordance with claim 3 wherein said deflector plates have separate liquid supply means to rinse said plates of agglomerated paint particles.

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