Aug. 26, 1930. E. G. WHITMORE 1,774,072

SPRAY COATING EXHAUST SYSTEM

Filed Oct. 15, 1928

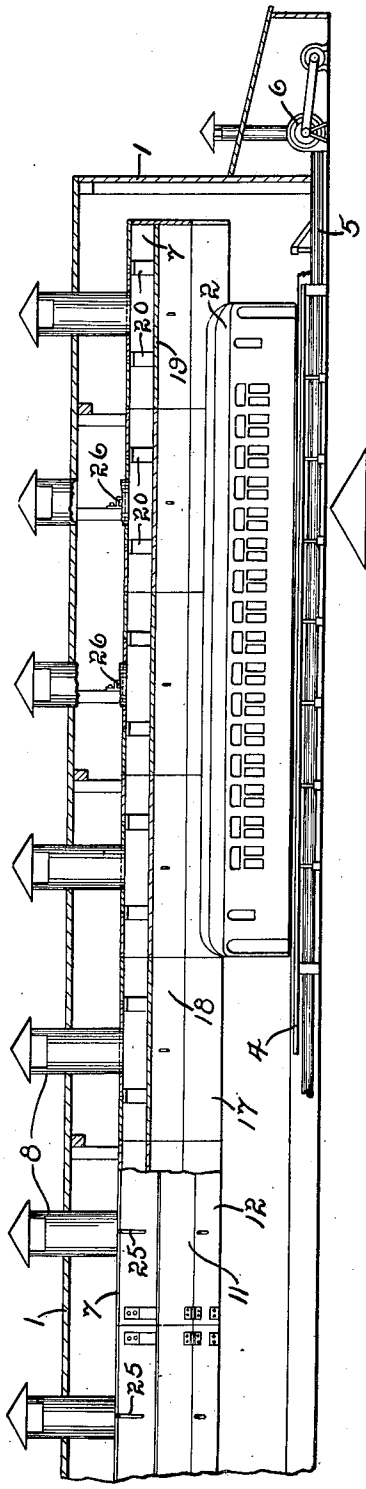


Fig. 1.

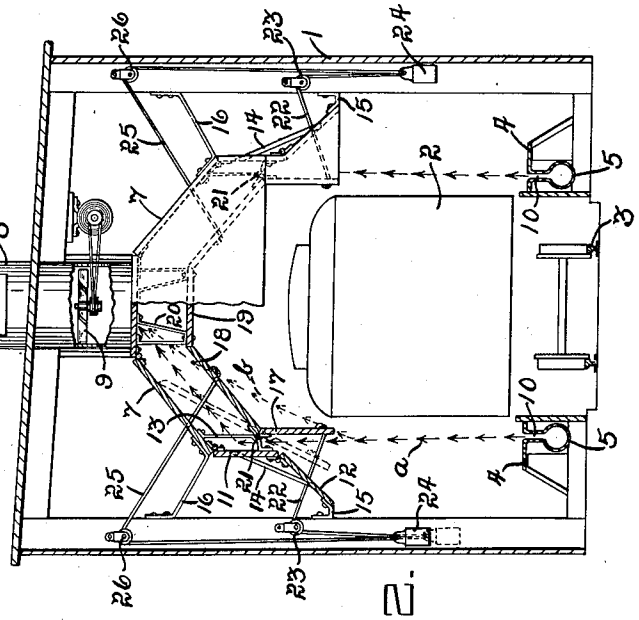


Fig. 2.

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Patented Aug. 26, 1930

1,774,072

UNITED STATES PATENT OFFICE

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SPRAY-COATING EXHAUST SYSTEM

Application filed October 15, 1928. Serial No. 312,466.

This invention relates to an exhaust system particularly adapted for use in the application of a surface coating to portable objects by the spraying method. In such operations, particularly where the work is performed indoors, it is important to make provision for protecting the operator from the spray dust and fumes arising from the spraying operation, which would otherwise be inhaled to a greater or less extent, depending upon the particular job and the character of the material being sprayed. These conditions are overcome in some cases by the operator wearing a mask somewhat similar to a gas mask, and with small portable work the spraying is usually done in a booth through which an induced draft is set up to carry away the fumes and spray dust. Such practice is not practicable, however, in the spraying of large objects, such, for instance, as railroad cars.

The object of this invention is to provide an improved device for creating a draft in such a manner as to protect the operator from the fumes and spray dust resulting from the spray coating of objects of the nature described, with particular reference to its selective adaptation to various portions of the surface thereof.

The invention will be more particularly described with specific reference to the accompanying drawings, illustrating one embodiment thereof.

In the drawings:

Figure 1 is a longitudinal section through a structure arranged according to the invention for spray coating a railway car.

Figure 2 is a transverse section of the same.

Referring in detail to the drawings, 1 designates a shed or housing which may be of a length to receive one or more cars 2, or other objects to be spray coated. The car, in the present instance, is run in on a track 3 disposed longitudinally within the shed or housing and in spaced relation to both sides thereof. At each side of the car 2 there is a platform 4 on which the operator may stand while spray coating the adjacent side of the car. Beneath this platform there is a longitudinally extending manifold or conduit 5 having communication at one end with a source of air pressure, as for example, a fan 6, whereby an induced draft may be set up through the conduit. This conduit is arranged to discharge compressed air in the form of a protecting curtain upwardly along the side of the car 2, but preferably in slightly spaced relation to such side, such air current entering a hood 7 above the car and passing thence through one or more outlet flues 8. The flow of air is facilitated by providing each outlet flue with a fan 9 or the like. In the present instance, the air is shown as being discharged from the conduits 5 through upwardly disposed slots 10 which open through the platforms 4.

The hood 7 is preferably provided with skirt portions 11 and 12 which are arranged in accordance with the shape and size of the object to be coated, in such a manner that the air current will be directed toward the outlet flues 8 with the least possible interruption to the flow by eddy currents or other obstructions. When the hood has been arranged in the desired form the various parts thereof are secured to each other and to the sides of the shed by suitable braces or brackets, as indicated at 13, 14, 15 and 16.

The normal paths of the air currents, when the side walls of the car are being coated, are indicated by the arrows "*a*". In order that these currents may flow smoothly underneath the hood, without being drawn above the top of the car, it is desirable to provide at each side of the car a partition or wall just within the normal current flow "*a*". The upper edges of these partitions 17 are connected with inclined extensions 18 which are normally parallel to the inclined upper portions of the hood 7, their upper edges resting against a horizontal plate 19 which is supported in fixed relation to the crown of the hood by suitable brackets 20. The two portions 17 and 18 of each partition are hinged at 21 to the brackets 13, so that one or both of them may be swung upwardly as shown in dotted lines in Figure 2 and thus permit the air curtain to be shifted, as indicated by the arrows "*b*", when the top of the car is being coated.

The means herein shown for swinging the portion 17 of the partition upwardly comprises a cable 22, which is secured at one end to the lower edge of the partition and extends about a sheave 23 mounted at the side of the shed and is connected at its other end to a counterweight 24. Similarly each portion 18 of the partition is connected to a cable 25 which passes about a sheave 26 at the side of the shed and is connected to the same or a similar counterweight 24.

In the use of this device for protecting the operator from the spray dust and fumes arising from the spraying operation, the operator stands outside of the protecting air curtain and discharges the spray stream therethrough against the surface to be coated, or preferably extends the spray nozzle substantially through the curtain of air so that the spray stream emitted from the nozzle is not materially affected by the current of air passing between the operator and the object being coated. The air curtain is substantially parallel to the surface being coated or at an angle to the direction of the discharge of the spraying material, so that any fumes or spray dust arising from the material being sprayed or rebounding from the surface of the object against which it strikes is picked up by the moving curtain of air and carried away from the operator. The partitions 17, 18 together with the outer walls of the hood guide the air currents directly to the outlet flues while the sides of the car are being coated. Similarly, when the top of the car is being coated the partions 17, 18, by proper adjustment, may be arranged so that the top of the car will be easily accessible to the operator, and at the same time the air currents will be deflected inwardly and directly to the outlet flues and will protect the operator in substantially the same manner as when the sides are being coated.

While I have shown and described in detail the specific construction of the invention in its preferred form, it is to be understood that the same may be modified to a considerable extent without departing from the scope of the invention as claimed.

What I claim is:

1. A device for protecting operators when an object is being spray coated, comprising means for creating a continuously flowing pneumatic curtain along the side of the object, and means for guiding the flow, said guiding means being selectively adjustable to guide the flow directly upwardly from said side or to deflect the flow over the top of the object.

2. A device for protecting operators when an object is being spray coated, comprising means for creating a continuously flowing fluid curtain upward along the side of the object, said means including spaced fluid discharging and fluid receiving members, and means for guiding the flow between said members, said guiding means being selectively adjustable to deflect the upward flow above the object at various angles.

3. A device for protecting operators when an object is being spray coated, comprising means for creating a continuously flowing fluid curtain along the side of the object, said means including spaced fluid discharging and fluid receiving members, one of said members comprising a hood, and a partition wall spaced from the wall of the hood, said partition wall being angularly adjustably to vary the course of the flow.

4. A device for protecting operators when an object is being spray coated, comprising means for discharging a fluid curtain to flow upwardly adjacent the side of the object to be coated, means above said object to receive the fluid and conduct it away, and means selectively adjustable to direct the fluid from the side of the object directly upwardly to said receiving means or to deflect it over the top of the object and thence to the receiving means.

5. A device for protecting operators when an object is being spray coated, comprising means for discharging a fluid curtain to flow upwardly adjacent the side of the object to be coated, a hood above said object to receive the fluid and conduct it away, and a partition wall pivotally mounted beneath the hood and adjustable to change the course of the flow.

6. A device for protecting operators when an object is being spray coated, comprising means for discharging a fluid curtain upwardly adjacent the side of the object being coated, said means including a manifold with a slot in its upper side, a hood above said object for receiving the fluid discharged, and a wall selectively adjustable to guide the flow into the hood in the direction of its discharge or to deflect the same over the top of said object.

7. A device for protecting operators when an object is being spray coated, comprising means for discharging a fluid curtain upwardly adjacent the side of the object being coated, a hood above said object for receiving the fluid discharged, and a partition wall for guiding the flow into the hood, said wall having wings selectively adjustable to guide the flow in the plane of its discharge from the side of said object to the wall of the hood or to deflect the flow over the top of said object.

In testimony whereof I have hereunto signed my name to this specification.

EDSON G. WHITMORE.