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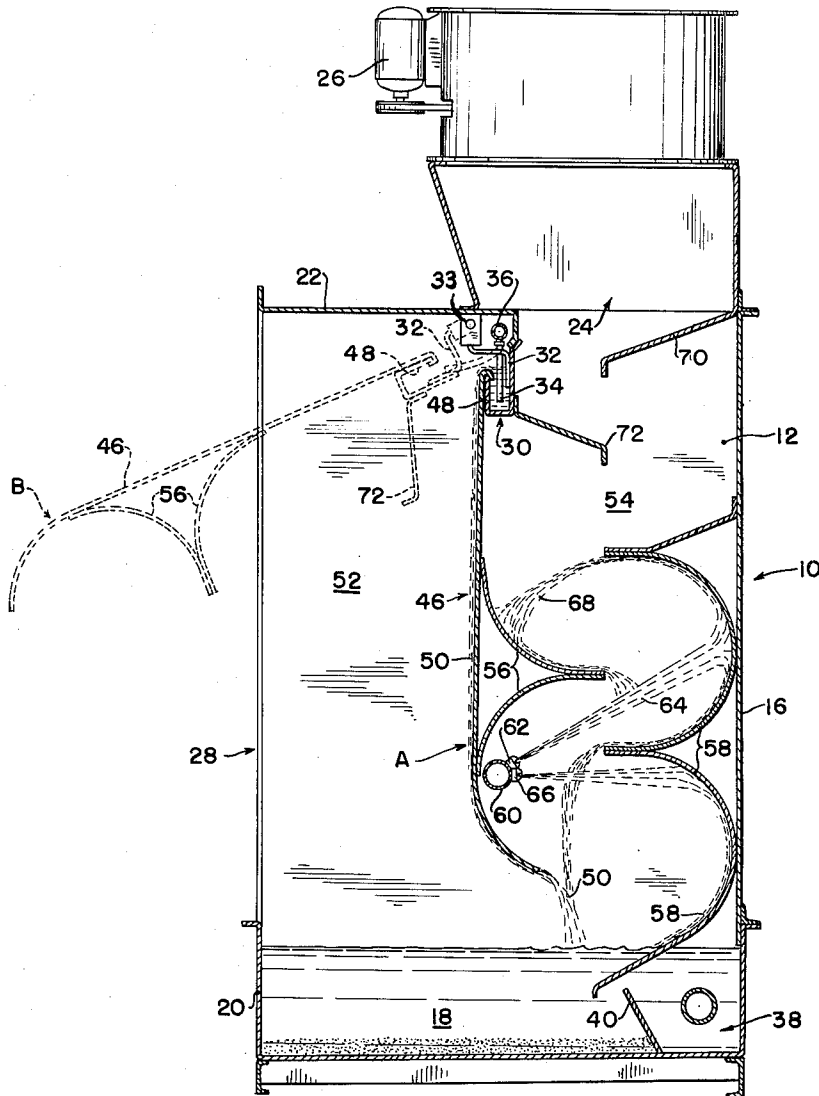
H. J. STANLY
SPRAYING BOOTH

3,018,847

Filed July 1, 1959

3 Sheets-Sheet 1

FIG. 1



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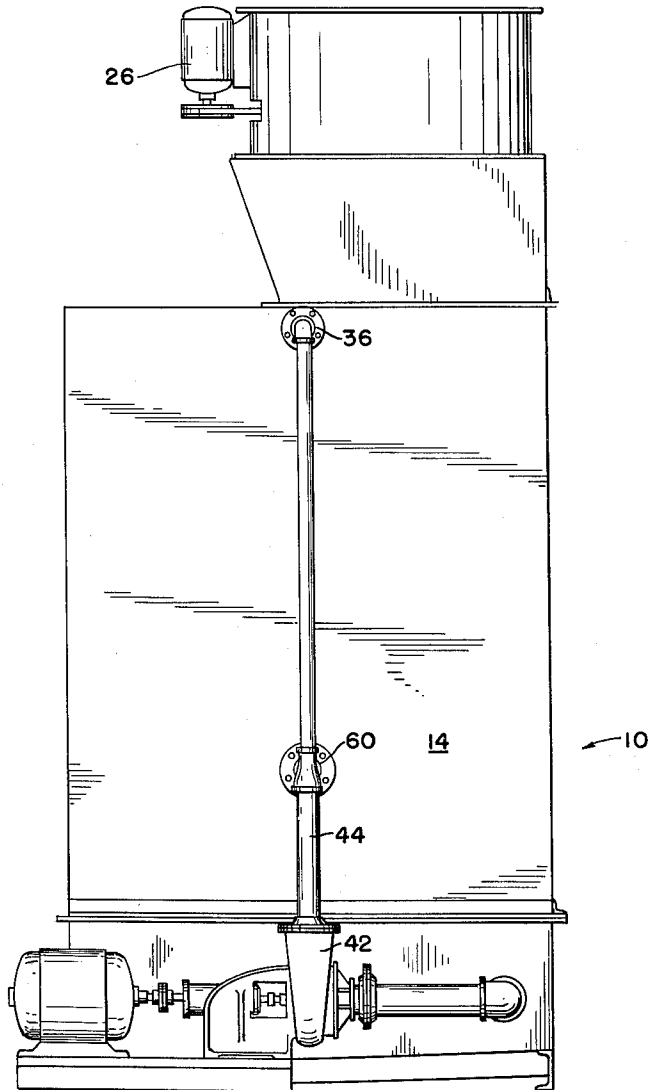
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FIG. 2



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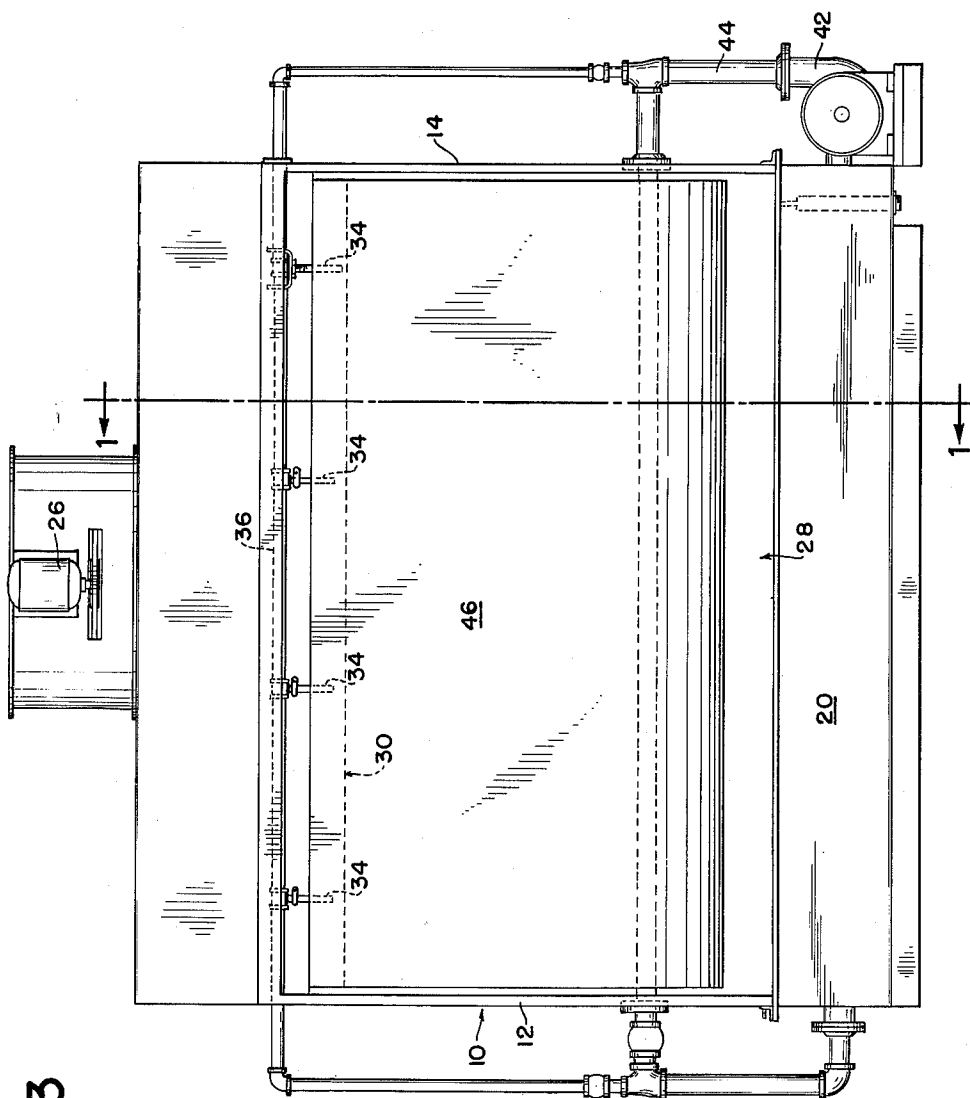


FIG. 3

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SPRAYING BOOTH

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Filed July 1, 1959, Ser. No. 824,312
5 Claims. (Cl. 183—22)

This invention relates in general to spraying booths and in particular to a new and useful spraying booth including a water wall member which forms the front wall of an air cleaning chamber and including means to direct water in a sheet over the wall to collect the materials being sprayed in the booth and wherein the wall is pivotally mounted to permit it to be swung outwardly for cleaning and removal purposes.

The present invention is an improvement over previous devices of this character particularly in the mounting of the water wall apron on a pivotal bracket which permits the wall to be swung outwardly for cleaning and removal purposes. The arrangement includes a trough or reservoir portion at the upper end of the apron which is mounted on a pivotal bracket member and over the forward lip of which the apron water wall member is suspended. When the apron water wall is positioned within the booth it is spaced from a rear wall of the booth and defines with this rear wall an air cleaning chamber having liquid sprays directed thereacross to thoroughly clean air which is drawn upwardly through a vent in the booth. Water is continuously supplied to the trough at the top of the apron and it overflows onto the apron and forms a water curtain extending completely across the air cleaning chamber. When it is desired to gain access to the cleaning chamber, it is a simple matter to swing the water wall apron member outwardly on its pivotal supporting bracket in order to permit clear access to the interior of the spray booth at the location of the air cleaning chamber. The water wall apron may be hung onto the forward edge of the trough and may be removed entirely if desired.

Accordingly, it is an object of this invention to provide a spray booth having a water wall apron member which is spaced forwardly of a rear wall in the booth and including means to direct water in a sheet over the face of the apron and wherein the apron is pivotally mounted so that it may be swung outwardly for access to the space between the apron and the rear wall of the booth.

A further object of the invention is to provide a spray booth including an air cleaning chamber defined between a rear wall of the booth and a pivotally mounted water wall apron member.

A further object of the invention is to provide a spray booth which is simple in design, rugged in construction and economical to manufacture.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described a preferred embodiment of the invention.

In the drawings:

FIG. 1 is a transverse section of a spray booth constructed in accordance with the invention;

FIG. 2 is a fragmentary right end elevation of the spray booth indicated in FIG. 1; and

FIG. 3 is a front elevation of the spray booth indicated in FIG. 1.

Referring to the drawings in particular the invention embodied therein includes a rectangular spray booth generally designated 10 having side walls 12 and 14 and a rear wall 16. The spray booth 10 includes a tank 18

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formed at the bottom end between the lower portion of the rear wall 16 and a short front wall 20. A top wall 22 includes a vent passage 24 in which is positioned a bladed fan (not shown) which is rotated by a motor 26 to induce air and gas flow outwardly through the passage 24. The front of the booth 10 is provided with a large rectangular opening 28 to permit articles to be sprayed to be positioned within the opening and within the spray booth.

In accordance with the invention, a rectangular trough generally designated 30 is suspended from the top 22 on bracket members 32 which are pivotally mounted to the top wall at a location adjacent the front end of the passage 24 defined therein. The bracket members 32 are adjustably fitted into pivot mounts 33. The trough 30 is supplied with clear liquid through a plurality of laterally spaced hoses 34 which are fed from a manifold pipe 36. Clear liquid is continuously circulated from a tank portion 38 which is separated from the tank portion 18 by an upstanding baffle 40. A pump 42 takes suction from the tank portion 38 and discharges through a riser 44 and through the manifold pipe 36 to maintain a continuous supply of liquid to the trough 30. The liquid is permitted to flow over the front edge of the trough onto a rectangular apron member generally designated 46 which is hooked onto the upper end of the trough 30. The water wall apron 46 is bent into a U-shape at its upper end so that it may be hooked onto the front wall 48 of the trough 30. If desired, the connection may be made permanent by welding this apron onto the trough 30. The trough 30 may be leveled by adjustment of the bracket members 32 in the pivot mounts 33.

The bottom end of the water wall apron 46 is curved so that a curtain of liquid 50 is continuously directed downwardly therefrom into the tank 18. The level of the liquid in the tank 18 is maintained sufficiently high to form a continuous liquid wall between a front portion 52 of the spray booth and an air cleaning chamber portion 54 defined between the apron 46 and the rear wall 16.

The rear face of the water wall apron 46 is provided with semi-cylindrical baffling plates 56 which are arranged in offset opposed relationship to semi-cylindrical baffling plates 58 formed as inward extensions of the rear wall 16. The pump 42 is also arranged to discharge from the riser 44 to a manifold 60 which extends across the air cleaning chamber 54 at the location of the bottom baffle plate 56. The manifold 60 is provided with a plurality of laterally spaced nozzles, including an upper set 62 arranged to direct a stream of liquid 64 upwardly against the upper baffle plate 58 on the rear wall 16. Another nozzle set 66 is arranged to direct a stream of liquid across the chamber 54 against the lower baffle 58. Air which is drawn out from the spray booth through the passage 24 by the fan therein is pulled through the water wall 50 and upwardly around the baffling through the streams of liquid exiting from the nozzles 62 and 66. The upper portion of the baffling 58 is curved so that a stream of liquid 68 is directed across the upper reaches of the chamber 54. Air must travel through a tortuous path and through the various liquid streams and hence is thoroughly cleaned before it is drawn upwardly through the opening 24. Baffle plates 70 and 72 extend inwardly in the air cleaning chamber 54 at the upper end thereof to define a tortuous air path to trap any remaining solids entrained in the air so that the air which eventually exits through the opening is thoroughly clean.

A feature of the present invention is the mounting of the water wall apron 46 which permits it to be swung from the solid line position indicated at A in FIG. 1 to the dotted line position indicated at B in FIG. 1. Since the trough 30 is mounted on a swinging bracket 32 it also may be swung outwardly with the water wall apron.

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If desired, the water wall apron 46 may be removed from the trough by unhooking the top end from the forward wall 48 of the trough.

When it is desired to spray an article it is positioned in the booth in the portion 52 and the spray is directed against the article. Any portions of the spray which do not strike the article impinge on the water flowing downwardly over the water wall apron 46. Large quantities of the spray material are directed downwardly into the liquid tank 18 where it settles at the bottom and may be recovered later. The baffling 58 extends downwardly in the tank 18 and it cooperates with the upwardly extending baffle 40 to maintain the tank portion 38 full of substantially clear liquid. This liquid is continuously circulated by means of the pump 42 both to the manifold 36 and to the manifold 60. Any spray material which is retained in the gases and air which surround the booth are drawn upwardly through the water curtain 50 and through the other water sheets and sprays located in the air cleaning passage where the remaining air entrained spray material is recovered in one or more of the liquid streams.

Thus the invention provides a spray booth including improved liquid spraying and water wall means which is arranged to thoroughly clean the atmosphere in the location of the spraying. A feature of the invention is the provision of a water wall apron which is arranged to receive a continuous overflow sheet of water from a trough at the upper end thereof and which defines an air cleaning chamber between its rear face and the rear of the spray booth. Both the trough and the water wall apron are mounted so that they may be swung outwardly for easy access into the air cleaning chamber or for removal of the water wall apron if desired.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. In a spray booth of the type having a lower tank portion, a rear wall, a top wall, a vent opening defined in said top wall, a trough connected to said top wall and arranged to depend therefrom, a liquid supply pipe arranged above said trough having discharge apertures therein, a water wall apron connected to said trough and arranged to substantially divide said spray booth into a forward portion and a rear air cleaning portion, said forward portion communicating with said air cleaning portion at the bottom of said apron and above said tank, and means to circulate liquid from said tank to said supply pipe; the improvement comprising a pivotal mounting for said trough and water wall apron, said mounting including a plurality of vertically disposed bracket members secured at their lower portions to the

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rear wall of said trough and pivotally connected at their upper ends to said top wall over said forward portion of said spray booth, flexible hose means extending from the discharge apertures in said supply pipe into the lower portion of said trough, and sealing means formed by the abutment of the upper rear edge of said trough with a portion of said top wall.

2. A spray booth according to claim 1, wherein said trough and apron may be adjustably positioned along their pivotal connection to said top wall, whereby said trough may be leveled.

3. A spray booth according to claim 2, wherein the upper horizontal edge of said water wall apron is formed in a U-shaped lip and is in hanging removable engagement with the top edge of the forward wall of said trough.

4. A spray booth according to claim 1, further including baffle means defined on the rear of said apron and on the inside of the rear wall of said spray booth, said baffle means including a pair of connected semi-cylindrical trough-like baffles extending substantially horizontally along said rear wall, joined substantially horizontal partial cylindrical baffles attached to the rear of said apron in staggered vertical relationship with respect to said baffles upon said rear wall and spray means to direct liquid against said baffles.

5. In a spray booth of the type having a lower tank portion, a rear wall, a top wall, a vent opening defined in said top wall, a trough connected to said top wall and arranged to depend therefrom, a liquid supply pipe arranged above said trough having discharge apertures therein, a water wall apron connected to said trough and arranged to substantially divide said spray booth into a forward portion and a rear air cleaning portion, said forward portion communicating with said air cleaning portion at the bottom of said apron and above said tank, and means to circulate liquid from said tank to said supply pipe; the improvement comprising, baffle means within said air cleaning portion, said baffle means including a pair of connected semi-cylindrical baffles, extending substantially horizontally on the inside of said rear wall, joined substantially horizontal partially cylindrical baffles attached to the rear of said apron in staggered vertical relationship with respect to said baffles upon said rear wall and spray means to direct liquid against said baffles.

References Cited in the file of this patent

UNITED STATES PATENTS

1,132,677	Murray et al. -----	Mar. 23, 1915
2,243,839	Dalton -----	June 3, 1941
2,316,491	Teichner -----	Apr. 13, 1943
2,883,170	Trittipoe -----	Apr. 21, 1959
2,906,511	Umbricht et al. -----	Sept. 29, 1959

FOREIGN PATENTS

416,337	Great Britain -----	Sept. 11, 1934
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