Dec. 23, 1924. 1,520,267

F. WALTZ

PAINT SPRAYING CABINET

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Fig. 1.

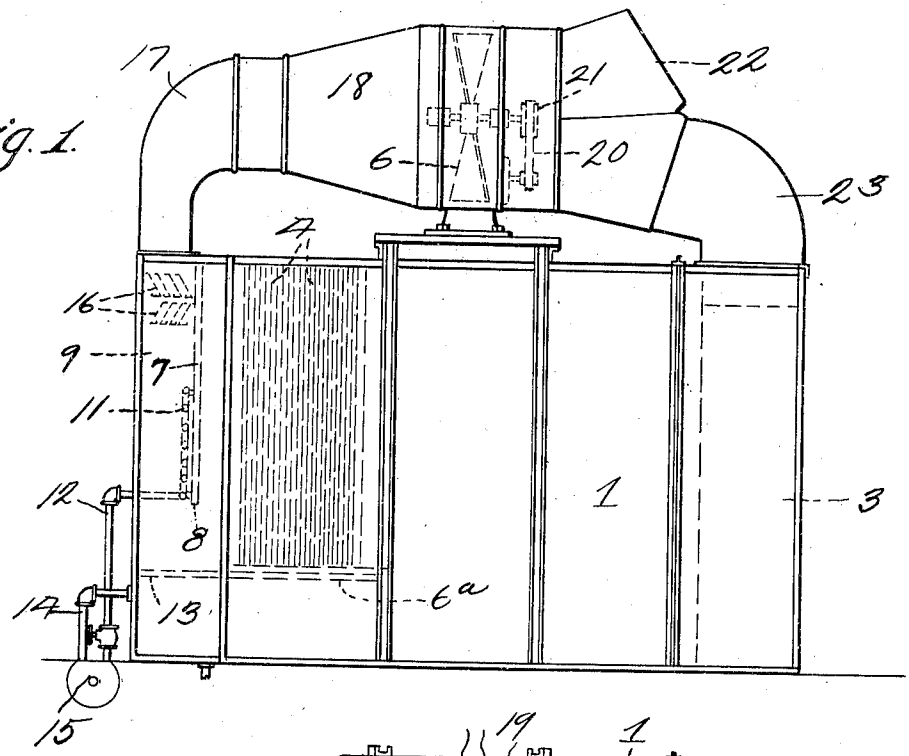
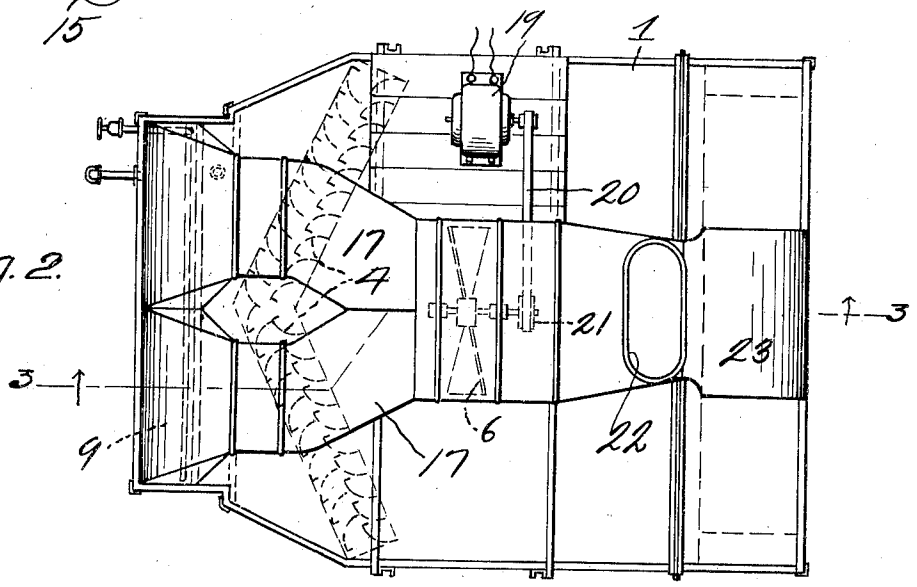


Fig. 2.



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PAINT SPRAYING CABINET

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Fig. 3.

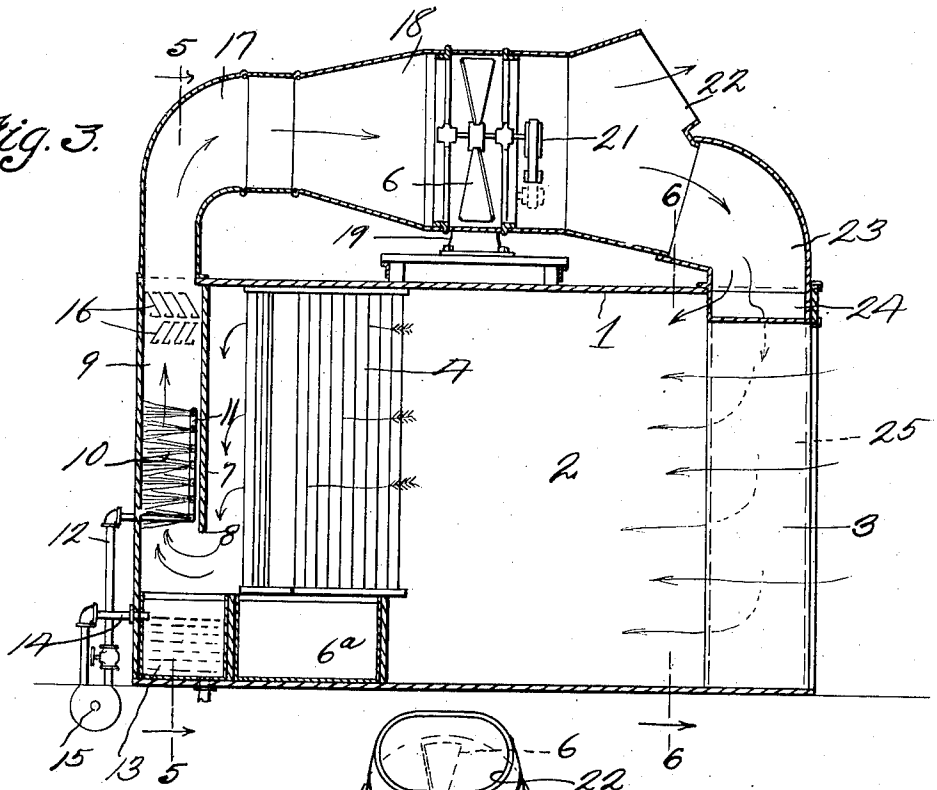
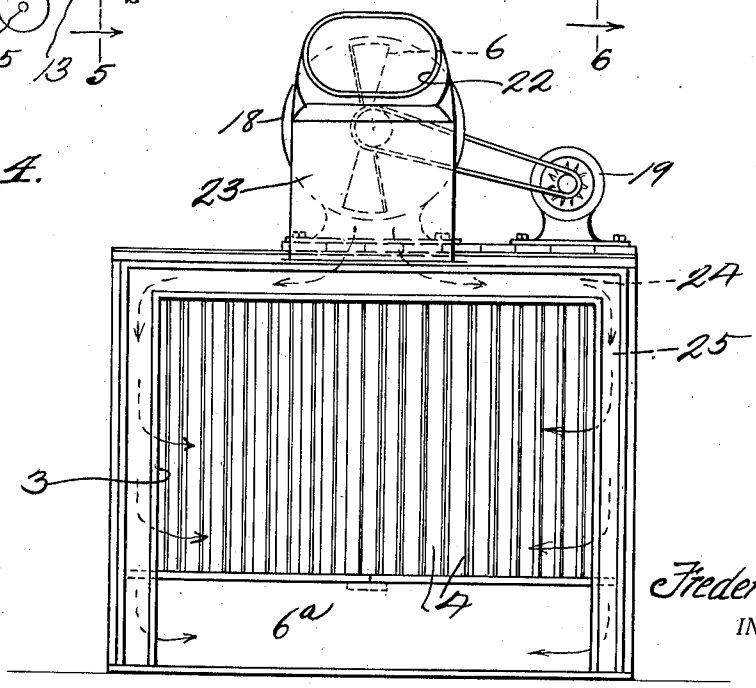


Fig. 4.



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PAINT SPRAYING CABINET

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Fig. 5.

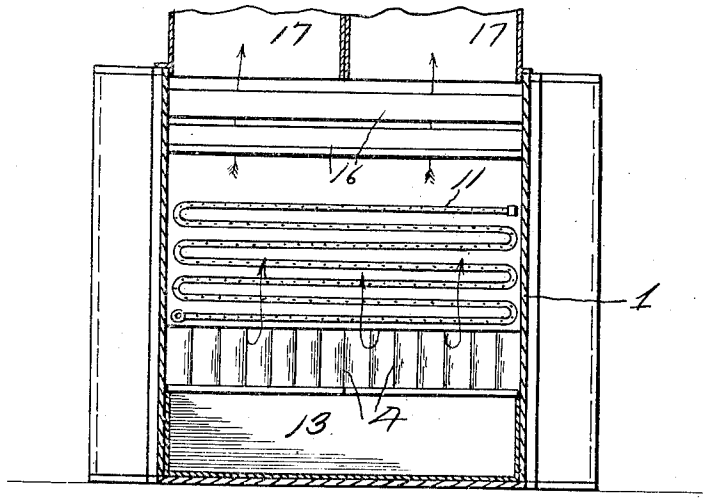


Fig. 6.

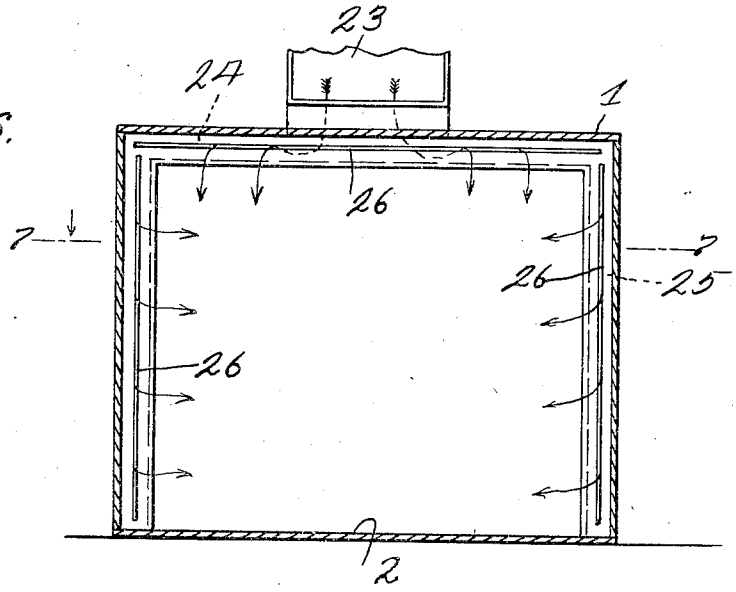
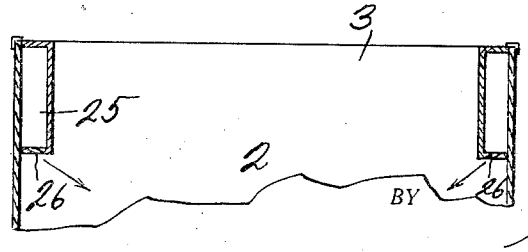


Fig. 7.



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Dec. 23, 1924. 1,520,267

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PAINT SPRAYING CABINET

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Fig. 8.

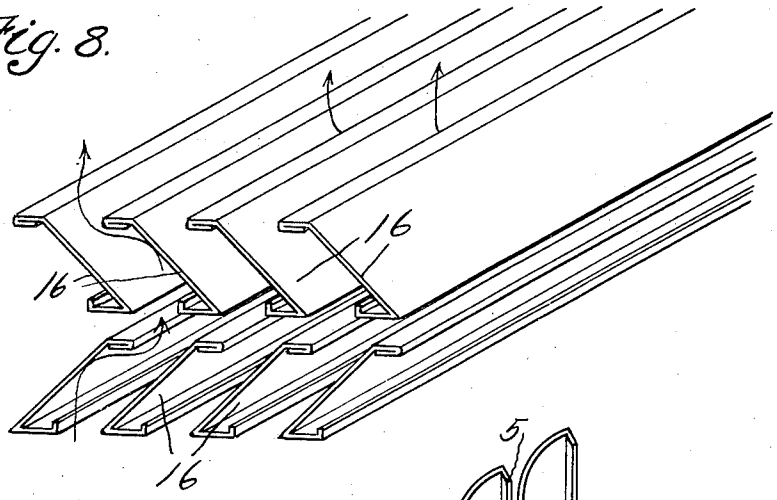
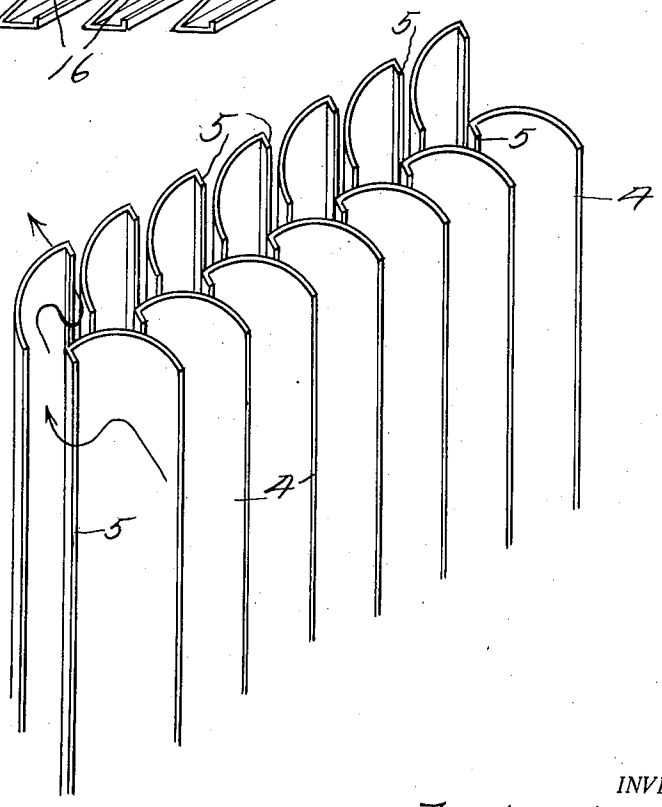


Fig. 9.



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Patented Dec. 23, 1924. 1,520,267

UNITED STATES PATENT OFFICE.

FREDERICK WALTZ, OF SOUTH BEND, INDIANA.

PAINT-SPRAYING CABINET.

Application filed September 4, 1923. Serial No. 660,753.

To all whom it may concern:

Be it known that I, FREDERICK WALTZ, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Paint-Spraying Cabinets, of which the following is a specification.

The invention relates to paint spraying cabinets and has for its object to provide a device of this character particularly adapted for use while applying paint to automobile bodies, furniture and the like by the use of an air brush. It has been found that while spraying paint, the fine spray or mist permeates the air with fumes of turpentine, benzine and other paint mixing oils, so that, without the use of a cabinet, the workmen will not be able to withstand for any considerable period the inhalation of such fumes, therefore it is a primary object of the invention to provide a spraying cabinet wherein a continuous circulation of air is maintained, in a direction whereby the fumes will be taken away from the workmen, the air renovated during its circulation, and part of the air discharged into the room, and fresh air added to the recirculating air, thereby obviating the present practice of discharging air from cabinets of this character to the outside of the building, and consequently rendering it difficult to maintain the room in which the cabinet is disposed, heated.

A further object is to provide a paint spraying cabinet comprising a casing having a chamber therein for the reception of an article to be sprayed, the front end of which chamber is open and to provide fan means for causing a recirculation of air through the chamber. The paint and fume laden air during its recirculation passes into engagement with baffle plates on which the paint particles are impinged and from which said particles drop into a drip tank. After the baffling operation the fume laden air passes upwardly through a water spray, which serves to absorb and carry off the turpentine and benzine fumes and thence passes upwardly through baffle members on which the moisture collects and finally is partially discharged into the room after being cleansed and angularly into the chamber of the cabinet, and recirculated.

A further object is to provide a water drip tank below the water spray, in which water from the spray will collect, and in which paint pigments not completely extracted by the baffle plates will accumulate.

A further object is to provide a paint spraying cabinet wherein air is recirculated and cleansed during its recirculation, thereby obviating the necessity of discharging air to the atmosphere outside the building.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawings, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:—

Figure 1 is a side elevation of the spraying cabinet.

Figure 2 is a top plan view of the spraying cabinet.

Figure 3 is a vertical longitudinal sectional view taken on line 3—3 of Figure 2.

Figure 4 is a front elevation of the cabinet.

Figure 5 is a vertical transverse sectional view taken on line 5—5 of Figure 3.

Figure 6 is a vertical transverse sectional view taken on line 6—6 of Figure 3.

Figure 7 is a horizontal sectional view taken on line 7—7 of Figure 6.

Figure 8 is an assembly view in perspective of a portion of the moisture removing baffle plates.

Figure 9 is an assembly view in perspective of a portion of the paint removing baffle plates.

Referring to the drawings, the numeral 1 designates a substantially rectangular shaped casing, and 2 the spraying chamber therein. Articles to be sprayed, such for instance as automobile bodies and furniture are placed in the chamber 2, and the operator stands adjacent the open end 3 of the cabinet while spraying an article in the chamber. Heretofore cabinets have been used wherein air within the cabinet is sucked therefrom during the spraying operation and the fumes from the turpentine and benzine discharged outside the building, however in factories where a number of cabinets are used, it is obvious that it will be extremely hard to maintain the factory room heated as the heated air is discharged from the building, consequently it entails great expense to heat

the factory room and maintain the same at a working temperature. Disposed in the rear end of the chamber 2 is a plurality of vertically disposed baffle plates 4, which baffle plates are semicircular shaped in horizontal cross section and are provided with vertically disposed forwardly extending flanges 5, through which baffle plates the paint and fume laden air is sucked by the suction fan 6 and the flanges 5 retard the paint and fume laden air sufficiently for the paint particles to collect thereon, and from which baffle plates 4, the paint separated from the air drifts into the drip tank 6a, from which it may be removed for further use. The baffle plates 4 are out of registration with each other as shown in Figure 9, therefore it will be seen that the paint laden air will be forced to take circuitous courses between the baffle plates, consequently the paint laden air will be forced to come into contact with a plurality of plates. Baffle plates 4 are arranged in V-shaped formation above the paint tank 6a, therefore it will be seen that the main current of air will pass through the remote baffle plates above the rear side of the tank 6a, thereby allowing the paint particles, where the volume is greatest to come into engagement with the baffle plates, after they have to a certain extent, lost their momentum. Disposed rearwardly of the baffle plates 4 is a vertically disposed partition 7, under the lower end of which the fume laden air passes and is sucked by the suction fan 6. The fume laden air then passes upwardly through the vertically disposed passage 9 through a water spray 10, disposed in the passage 9 and sprayed by the spraying members 11, which spraying members have connected thereto a water supply pipe 12. As the fume laden air passes through the water spray 10, the turpentine and benzine fumes are absorbed and the sprayed water dropped into the drip tank 13, which water drip tank is provided with an overflow pipe 14 spaced from the bottom thereof, so that the precipitated paint pigments not completely extracted by the baffle plates 4 will accumulate on the bottom of the tank 13, from which it may be removed for reuse for certain purposes. If so desired the overflow pipe 14 may be connected to a pump 15, which pump is connected to the spray supplying pipe 12, therefore the water can be continuously used for a considerable period. After the fume laden air passes through the spray 10, it has excess humidity, and to prevent the excess humidity a plurality of horizontally disposed baffle plates 16 are provided in the chamber 9 above the spray 10, and through which baffle plates the cleansed air passes in circuitous courses thereby depositing moisture in the air on said plates, and from which plates the moisture drops downwardly into the water drip tank 13. As the air stream passes upwardly beyond the moisture eliminating plates 16, it passes through branch pipes 17 into the fan pipe 18 and is forced past the suction fan 6, which suction fan is driven by a motor 19 disposed on the upper side of the casing 1. The motor 19 has a belt connection 20 with a pulley 21 carried by the suction fan, and rapidly rotates the fan. As the cleansed air passes forwardly beyond the suction fan 6 a part of the air is discharged through the discharge port 22 to the factory room, and the balance is conducted downwardly through the pipe 23 at the forward end of the casing 1 and is discharged into the horizontal portion 24 of a U-shaped air duct 25, at the forward end of the casing 1, and is discharged angularly inwardly towards the center of the chamber 2 through the angular slots 26 in the inner side of the air duct 25, thereby supplying renovated air to the chamber 2 and removing the fumes from adjacent the operator in the open end 3 of the chamber. During the circulating and recirculating of the air through the cabinet, additional fresh air enters the open end 3 of the cabinet from the factory room, thereby replacing air discharged through the port 22, consequently fresh air is added to the recirculating air during the spraying operation around the operator, thereby insuring a fresh air supply at all times to the operator. It will be noted that it will not be necessary to discharge air to the outside of the building and consequently the cost of maintaining a factory heated for working conditions under spraying operations is reduced to a minimum.

From the above it will be seen that a paint spraying cabinet is provided, wherein paint and fume laden air is cleansed and recirculated and that fresh air is added to the recirculating air at a point adjacent the position of the operator, thereby allowing a workman to withstand the air in the cabinet for a considerable period of time without being affected by the fumes, and also the same air is used over and over with additional fresh air, consequently the necessity of discharging air to the outside atmosphere of a building is obviated.

The invention having been set forth what is claimed as new and useful is:—

1. A paint spraying cabinet comprising a casing having a spraying chamber therein, said cabinet being disposed in a room, means for recirculating air through said chamber and cleansing the air in its recirculation, means for discharging a portion of the recirculating air into the room, and means for admitting fresh air to the recirculating air from the room.

2. A paint spraying cabinet comprising a casing having a spraying chamber therein, said cabinet being disposed within a room,

means for recirculating air through said chamber and cleansing the air in its recirculation, and means for discharging part of the recirculating air into the room after the cleaning operation.

3. A paint spraying cabinet comprising a casing having a chamber therein, the front end of which is open, baffle plates adjacent the rear end of the chamber, a paint receiving tank beneath said baffle plates, spraying nozzles disposed in a passage rearwardly of the baffle plates, a tank dispose beneath said spraying nozzles, moisture eliminating baffle plates in the passage above the spraying nozzles, a pipe connecting said passage and a duct around the open end of the chamber, a suction fan in said pipe, said duct having passages of communication with the forward end of the chamber.

4. The combination with a paint spraying cabinet having a spraying chamber therein, one end of which chamber is open, air renovating means disposed adjacent the rear end of said chamber, a U-shaped duct surrounding the open end of the chamber and having discharge ports in communication with the forward end of the chamber, a pipe connecting the rear end of the chamber and said duct, a suction fan disposed in said pipe, and means for discharging air from the pipe between the suction fan and the duct.

5. A paint spraying cabinet comprising a casing having a chamber therein, one end of which is open, a pipe connecting the rear end of said chamber and a duct extending around the open end of the chamber, a suction fan in said pipe, air cleansing elements in said chamber, angularly disposed ports discharging from the duct into the chamber towards the center of the chamber, and means for discharging recirculating air from the pipe between the fan and the duct.

6. A paint spraying cabinet comprising a casing having a spraying chamber therein one end of which is open, an air duct adjacent the open end of the chamber, means for recirculating air through the chamber and cleansing the air, means for discharging a portion of the recirculating air, and means for discharging air from the duct into the forward end of the chamber angularly inwardly.

7. A paint spraying cabinet having a spraying chamber therein and its forward end open, baffle plates adjacent the rear end of said chamber, a spraying element in a passage at the rear end of the chamber, moisture elminating plates above the spraying element, a water tank below the spraying element, a paint collecting tank below the first mentioned baffle plates, and means for recirculating air through said chamber, baffle plates and spraying element.

8. A paint spraying cabinet having a spraying chamber therein, the forward end of which is open, means for recirculating air through said chamber and cleansing the same during its recirculation, means for collecting the separated material as it is separated from the recirculating air, means for discharging a portion of the recirculating air, and means whereby fresh air will be added to the recirculating air through the open end of the chamber.

In testimony whereof I affix my signature.

FREDERICK WALTZ.