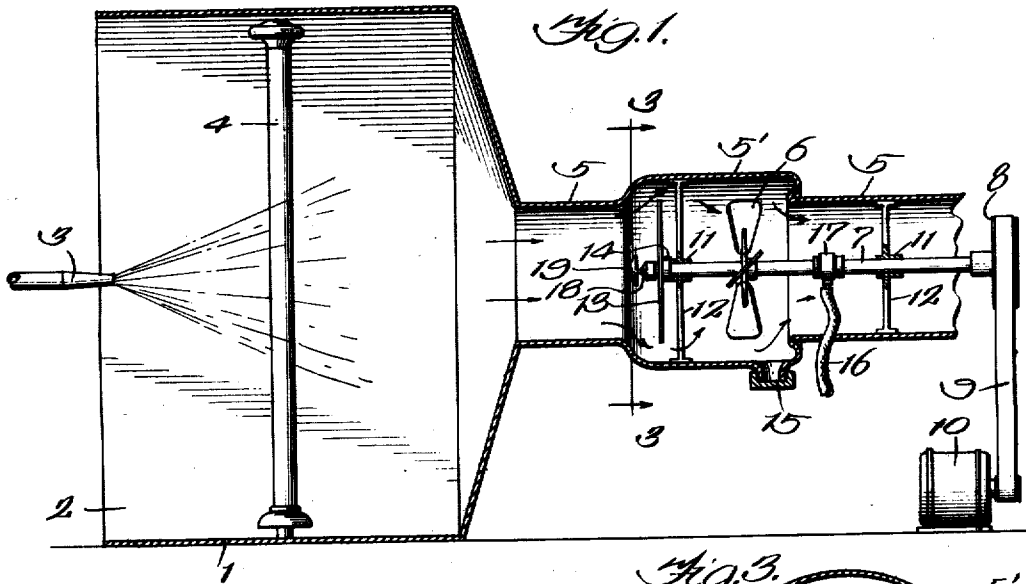
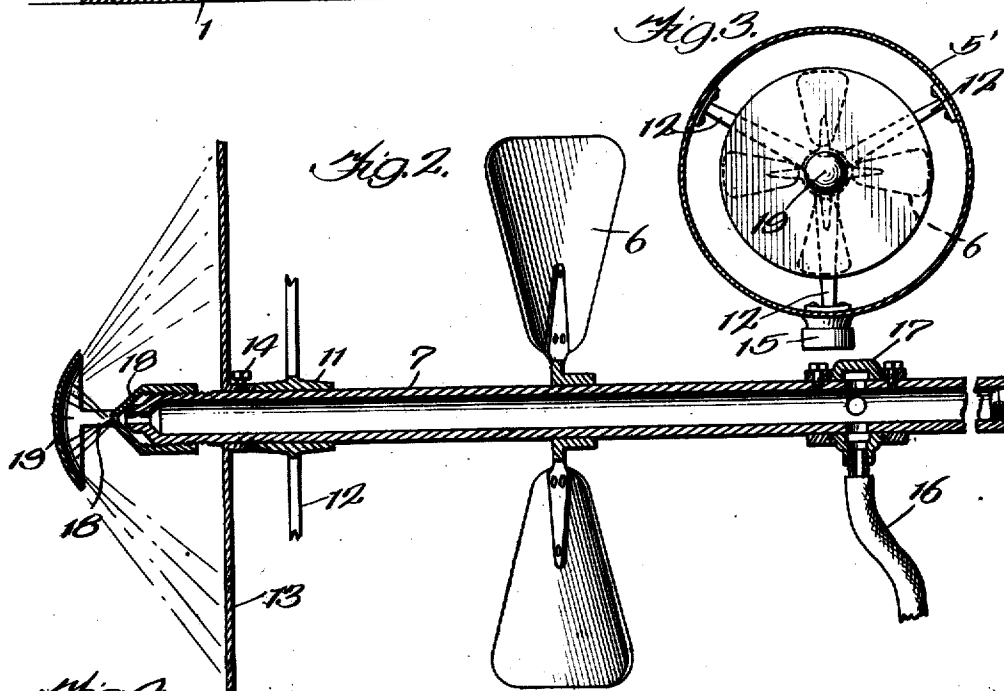
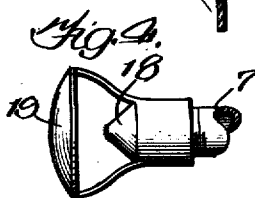


L. A. SAFFORD.
 APPARATUS FOR REMOVING PAINT FUMES.
 APPLICATION FILED JUNE 6, 1917.

1,316,745.

Patented Sept. 23, 1919.



Inventor:
 Lewis A. Safford.
By *A. L. Brown*
Att.

UNITED STATES PATENT OFFICE.

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APPARATUS FOR REMOVING PAINT FUMES.

1,316,745.

Specification of Letters Patent. Patented Sept. 23, 1919.

Application filed June 6, 1917. Serial No. 173,119.

To all whom it may concern:

Be it known that I, LEWIS A. SAFFORD, citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a certain new and useful Improvement in Apparatus for Removing Paint Fumes, of which the following is a full, clear, concise, and exact description.

My invention relates to apparatus employed in conjunction with paint spraying nozzles for the purpose of drawing fumes arising from the paint away from the manipulators of the nozzles. Such an apparatus includes means for effecting the forced passage of air in the direction in which the paint is being sprayed, this means being generally inclusive of a suction fan and piping in which the suction fan is included.

My invention has for one of its objects the provision of means for intercepting the paint that passes by the object being painted to prevent it from reaching the fan. The invention has for another of its objects the provision of means whereby water or other liquid having sufficient lack of affinity for the paint as to prevent it from sticking to the fan may be applied to the fan, such liquid being also desirably applied to the paint intercepting means also to prevent the paint from sticking thereto.

I will explain my invention more fully by reference to the accompanying drawing showing the preferred way of practising the same and in which drawing Figure 1 is a view in longitudinal sectional elevation illustrating apparatus equipped in accordance with my invention; Fig. 2 is a longitudinal sectional view of certain of the parts illustrated in Fig. 1 but on a larger scale; Fig. 3 is a view on line 3—3 of Fig. 1; and Fig. 4 is a view in elevation showing a part of the structure.

Like parts are indicated by similar characters of reference throughout the different figures.

It is usual to include in the apparatus to which my invention relates a cabinet 1 whose front end 2 is open to permit the operator to direct the paint spraying nozzle 3 toward any part of the cabinet interior. I have illustrated a bedstead portion 4 within the cabinet 1 which is in the act of being painted by paint forced through the nozzle 3 under pressure. The cabinet is

provided with a fume eduction pipe 5 for conveying paint fumes away from the manipulator of the paint nozzle 3, this pipe being open at its rear end for the escape of the fumes. The cabinet 1 virtually constitutes a forward continuation of the rearward pipe 5, being open at its front end to permit of the reception of the objects 4 that are to be coated. The piping 5 is desirably enlarged at 5¹, a suction fan 6 being disposed in the piping enlargement 5¹ and serving to effect the forced passage of the paint fumes inwardly away from the front end of the piping 1, 2 where the operator is manipulating the paint nozzle. In the embodiment of the invention illustrated the suction fan 6 is mounted upon an elongated shaft 7 driven by a pulley 8 that is located at a point suitably remote from the cabinet. The pulley 8 is shown as being driven by a belt 9 that in turn is shown as being caused to travel by an electric motor 10. Other motive means may, however, be employed for rotating the fan. The shaft 7 has suitable bearings 11 mounted by means of spiders 12 within the pipe 5, the bearings being preferably located to define an axis of rotation for the fan that is co-axial with the pipe 5. A baffle plate 13 is located between the front end of the cabinet 1 and the fan and serves to prevent much of the paint that passes into the pipe 5 from reaching the fan. The baffle plate, however, is of such a size or should be so formed as not to obstruct the rearward flow of air and paint fumes which the fan is effecting, on which account I desirably locate the baffle plate in the enlargement 5¹ of the pipe 5 and afford ample clearance between the periphery of the baffle plate and the surrounding portion of the pipe enlargement 5¹ for the rearward forced flow of air and paint fumes.

For convenience the baffle plate is carried by the shaft 7. If desired, the baffle plate may be fastened to the shaft 7 as by means of the set screw 14 whereby the baffle plate and shaft will turn together. The momentum imparted to the paint flowing in the pipe 5 toward the baffle plate 13 will cause most of this paint to impinge upon the baffle plate, this paint falling to the bottom of the pipe enlargement 5¹. The outlet 15 is provided through which the paint accumulating in the pipe enlargement 5¹ may be withdrawn. Some of the paint, however, will

pass with the fumes over the edge of the baffle plate toward the fan. In accordance with my invention I provide means for supplying the fan blades with a film or coating of liquid that is sufficiently lacking in affinity for the paint as to prevent the paint from adhering to the blades. A suitable liquid is water which is preferably supplied to the blades in the form of a vapor or mist that is mixed with the flowing paint fumes to enable the fan to draw this mist or vapor upon its blades while the fan is drawing the fumes. I do not limit myself, however, to this method of supplying the water or other selected liquid to the fan blades but when this method is employed I make use of an atomizing device. This atomizing device is desirably located in front of the baffle plate so that this baffle plate may also receive a coating or film of water or other selected liquid to prevent the paint intercepted thereby from lodging thereupon. The water is desirably furnished to the atomizer through the shaft 7 which is made hollow for the purpose, the water being supplied through a duct 16 that communicates with the interior of the hollow shaft 7 through the intermediation of the rotating coupling 17. The water, under suitable pressure, is forced to the forward end of the hollow shaft 7 where it finds passage through some suitable form of spraying nozzle 18. This nozzle may be adjustable to vary the size of the jet issuing from the shaft 7. An atomizing head 19 is mounted upon the nozzle structure 18 in position to be struck by the jet of water, this atomizing head serving to subdivide the water into a mist or vapor. As illustrated in Fig. 2, the atomizing head 19 is positioned to reflect the water upon the front face of baffle plate 13 whereby the front or paint receiving face of the baffle plate is not only coated with a film of water or moisture but also cooperates with the head 19 in further atomizing the water and in thoroughly diffusing the

vapor through the flowing paint fumes whereby the fan blades will also receive the film of moisture with which they are to be supplied. The paint which escapes the baffle plate 13 and passes to the fan 6 is prevented from lodging upon the fan blades and other structural parts of the fan due to the moisture carried to the fan blades and other fan parts with the flowing column of paint fumes, moisture carried to the fan separating from the paint fumes and forming a protective film upon the fan parts.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. Apparatus of the class described including a pipe structure open at its front end; a fan in a rearward portion of the pipe structure; a hollow shaft carrying said fan; means for rotating said shaft; a baffle plate within the pipe structure and in front of said fan; an atomizing head positioned to reflect liquid upon said baffle plate; and means for passing liquid under pressure through said hollow shaft which is open adjacent said atomizing head to direct the liquid thereon.

2. Apparatus of the class described including a pipe structure open at its front end; a fan in a rearward portion of the pipe structure and serving to draw air inwardly from the open front end of the pipe structure; a baffle plate within the pipe structure and in front of said fan; and an atomizing head positioned to reflect liquid upon the front face of said baffle plate.

In witness whereof, I hereunto subscribe my name this 22nd day of May, A. D., 1917.

LEWIS A. SAFFORD.