Oct. 20, 1931. R. C. MAHON 1,828,609

SPRAY BOOTH

Filed Sept. 21, 1928 3 Sheets-Sheet 1

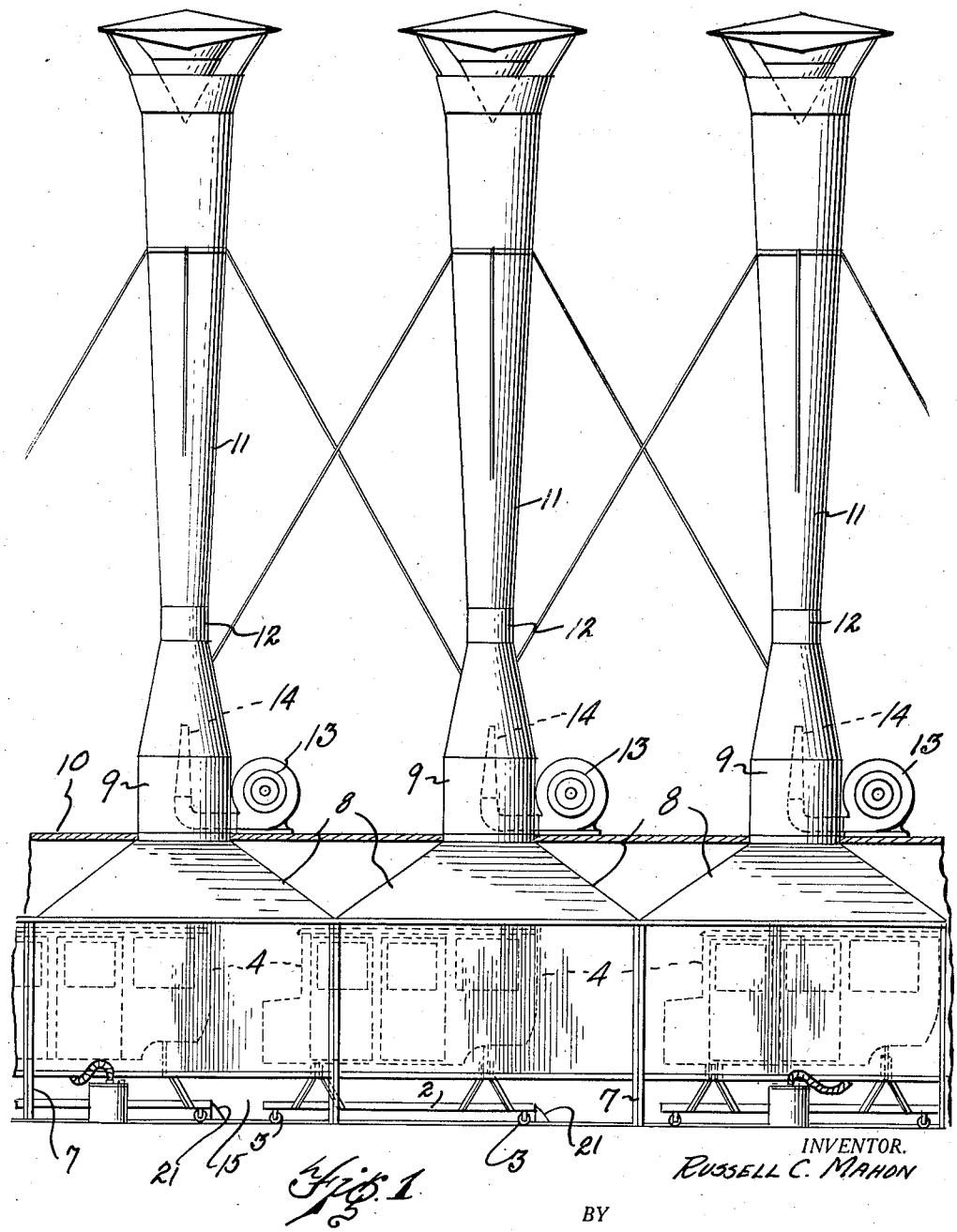


Fig. 1

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SPRAY BOOTH

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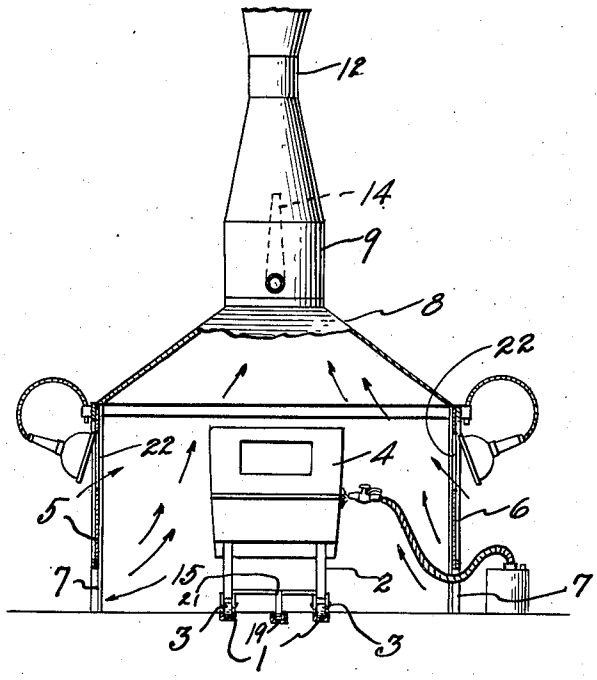


Fig. 2

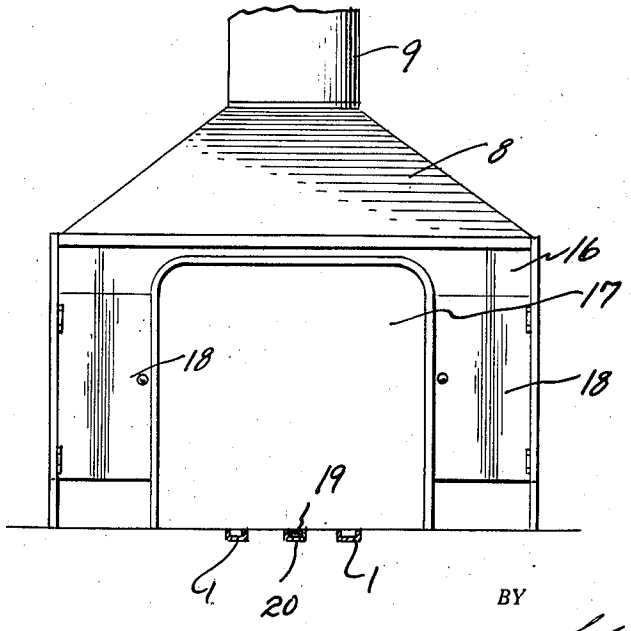


Fig. 3

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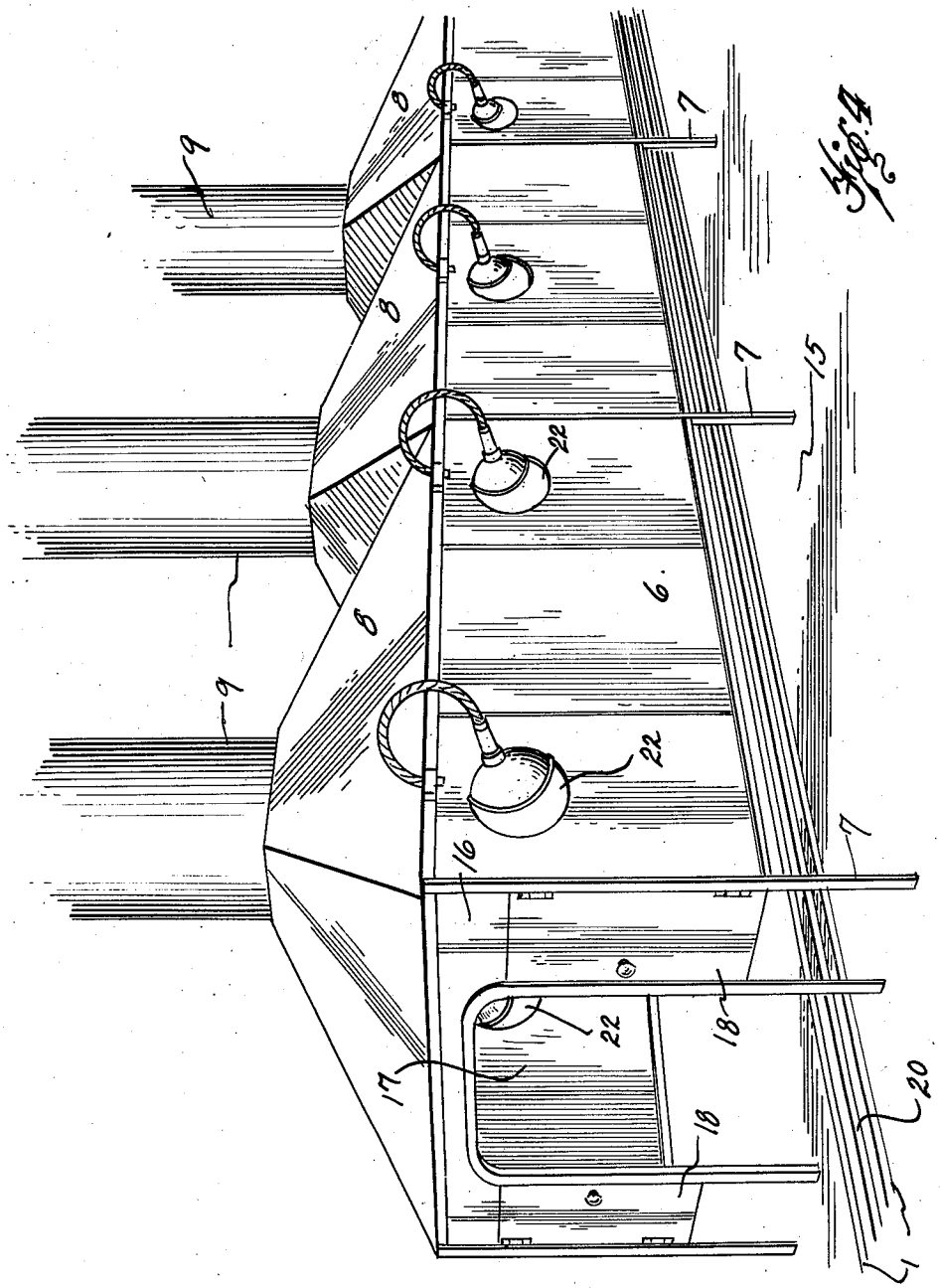
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SPRAY BOOTH

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UNITED STATES PATENT OFFICE

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SPRAY BOOTH

Application filed September 21, 1928. Serial No. 307,485.

This invention relates to spray booths and the object of the invention is to provide a paint spray booth of the tunnel type so designed as to be absolutely free of paint fumes at all times regardless of how many spray guns are in operation.

Another object of the invention is to provide a spray booth through which a conveyor line extends, the spray paint operators being able to work on both sides of the conveyor line within the booth with absolutely no danger of being overcome by paint fumes.

Another object of the invention is to provide a tunnel type spray booth particularly adapted for use on automobile body production lines and in which the operators may spray paint on opposite sides of the bodies simultaneously without danger of the paint and varnish laden air coming in contact with any of the operators.

A further object of the invention is to provide a tunnel type spray booth having a space at the lower edge through which fresh air is drawn by means of a forced ventilating system located above the spray booth.

Another object of the invention is to provide a forced draft ventilating system in which the blower fan and electric motor therefor are positioned outside of the booth so that the paint and varnish laden air never comes in contact with the motor, thus reducing the fire hazard from motor sparks and preventing the fan and motor from becoming gummed up with paint and reducing their efficiency.

These objects and the several novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction by which these objects are attained is shown in the accompanying drawings in which—

Fig. 1 is a side elevation of a tunnel type spray booth embodying my invention.

Fig. 2 is a cross section therethrough.

Fig. 3 is an end view of the spray booth.

Fig. 4 is a perspective view thereof.

The spray booth is used over a conveyor line in which rails 1 are provided on which trucks 2 are movable on the rollers 3 along the rails. The trucks 2 each carry an automobile body 4 shown in Figs. 1 and 2 and the spray booth is formed from opposite side members 5 and 6 supported above the floor at spaced intervals on the legs 7. The top of the spray booth is formed by a series of hoods 8 each terminating at its apex in a discharge conduit 9. These discharge conduits 9 preferably open through the roof 10 of a building in which the spray booth is provided and an evase stack 11 is secured to each discharge conduit. Each evase stack is in the form of a Venturi tube having a reduced portion 12 and a motor driven fan 13 for each evase stack is mounted on the roof 10 and is provided with a nozzle 14 discharging toward the restricted point 12 of the stack in the direction of flow therethrough.

The air discharged from the nozzles 14 through the restricted part 12 of each evase stack causes a high velocity through the point of restriction. This flow of air upwardly through the evase stacks draws air inwardly and upwardly through the spaces 15 beneath the side walls of the tunnel type spray booth in the direction of the arrows shown in Fig. 2. It will be noted that this produces an ascending current of air on each side of the conveyor line so that two operators may work on opposite sides of an automobile body simultaneously without being affected by the spray gun operation on the opposite side or by the operators own spray gun. In mounting the fan and motor on the roof as shown the fan is located out of the exhaust line as an aid to fan efficiency and achieves this result by eliminating any danger of the fan assembly or electric motor becoming clogged or gummed from paint and acid fumes or from dust and dirt in the exhaust air. With the fan and motor thus situated no moving parts from which fire by friction or motor sparks could originate remain within the installation. This promotes fire safety and at the same time protects the workers.

At each end as shown in Fig. 3 the end of the booth is partially closed by a partition 16 having an opening 17 through which the car bodies move into the spray booth and the partition 16 is provided with two doors 18 through which operators may enter the booth

on opposite sides of the conveyor line. A travelling conveyor chain 19 is usually provided at the floor level in a channel 20 between the rails 1 and the conveyor chain is usually provided with blocks 21 shown in Fig. 1 which engage the body trucks 2 and move the bodies longitudinally of the said rails through the tunnel spray booth. The operators work on opposite sides of the bodies passing along the conveyor line and the spray hose is brought into the spray booth through the space 15 between the side walls and the floor. As the spray hose is flexible and as the space 15 is of considerable length the operators may move around the bodies being painted and may move along with the bodies as they travel on the conveyor.

It is to be noted particularly from Figs. 2 and 4 that the side walls 5 and 6 are provided with a series of apertures 22 near the top and an artificial light of the reflector type is mounted on the exterior of the spray booth in spaced relation with each aperture 22 and is adjustable to direct light beams through the openings 23 onto the bodies being spray painted. As these lights are spaced from the openings 23 the exhaust system draws air inwardly through these openings across the face of the lights and prevents paint spray from accumulating on the glass fronts of the lights and reducing their illuminating properties. These lights are mounted on flexible supports as shown and are arranged lengthwise of the spray booth to brightly illuminate all of the bodies on the conveyor.

From the foregoing description it becomes evident that the device is very simple and efficient in operation, provides a means for removing all fumes during the process of paint spraying, affords maximum protection from fire and provides a device which accomplishes the objects described.

Having thus fully described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is—

1. A tunnel type spray booth consisting of a pair of spaced substantially parallel side walls, a series of hoods arranged in succession and connecting the side walls at the top, a discharge stack for each hood, the said side walls being each spaced from the floor line providing for ingress of air on opposite sides inwardly and upwardly through the discharge stacks, a track way for articles extending through the tunnel thus formed substantially equi-distantly between the side walls and providing a space for operators each side of the track way wherein the operator is positioned in the air current, each side wall being provided with a series of apertures near the top, and an artificial light mounted exteriorly of the spray booth and arranged in such relation with each aperture as to illuminate the articles on the track way.

2. A tunnel type spray booth consisting of a pair of spaced substantially parallel side walls, a series of hoods arranged in succession and connecting the side walls at the top, a discharge stack for each hood, the said side walls being each spaced from the floor line providing for ingress of air on opposite sides inwardly and upwardly through the discharge stacks, a track way extending through the tunnel thus formed equi-distantly between the side walls and providing a space for operators each side of the trackway wherein the operator is positioned in the air current, an end wall for each end of the tunnel having a central opening through which the track way extends and through which articles may be moved on the track way, and a door through the end wall at each side of the side opening providing an entrance for operators on opposite sides of the track way.

3. A spray booth consisting of a tunnel like structure formed of spaced substantially parallel side walls, a top covering consisting of a series of hoods arranged in succession, a discharge stack centrally disposed relative to each of said hoods, a blower mounted exteriorly of each stack and having a discharge nozzle extending into each stack and adapted to produce an upward current of air therein, the said side walls each being spaced from the floor line providing for ingress of air upon opposite sides inwardly and upwardly through the central discharge stacks, and a track way extending through the tunnel thus formed substantially equi-distantly between the side walls the space between the trackway and the side walls providing a work space for the operators wherein they stand in the air current.

4. A spray booth consisting of a tunnel like structure formed of spaced substantially parallel side walls, a series of hoods arranged in succession and connecting the side walls, a discharge stack centrally disposed relative to each of said hoods, the said side walls each being spaced from the floor line providing for ingress of air on opposite sides inwardly and upwardly through the central discharge stacks, a track way extending through the tunnel thus formed equi-distantly between the side walls and providing a space for operatives between each side of the track way and the respective side wall over which the air current flows.

5. A spray booth consisting of a tunnel like structure formed of spaced substantially parallel side walls, a top covering consisting of a series of hood like members arranged in succession, a discharge stack centrally disposed relative to each of the hood members, said side walls each being spaced from the floor line providing for an ingress

of air upon opposite sides inwardly and upwardly toward the central discharge stacks, and a track way extending through the tunnel thus formed arranged practically equidistantly between the side walls to provide a space for operators within the air current.

6. In a paint spray booth, a pair of vertical side walls supported in spaced relation above a floor, a series of hoods connecting the side walls and forming a continuous top for the spray booth, a discharge stack for each hood in the form of a venturi, a blower mounted exteriorly of the stack and having a nozzle within the stack directing a forced current of air from atmosphere through the point of greatest restriction of the stack, and a conveyor extending along the floor longitudinally of the spray booth the parts being arranged to provide a working space for operations adjacent the conveyor whereby air flowing from the exterior of the booth to the stack and blower is caused to envelop the operator and to convey the paint vapors away therefrom.

7. A spray booth consisting of a tunnel like structure formed of spaced substantially parallel side walls, a cover member connecting the side walls at the top and having upwardly sloping sides, a series of discharge stacks opening centrally through the cover member, the said side walls being each spaced above the floor line providing for ingress of air at the bottom of the booth on opposite sides inwardly and upwardly through the discharge stacks.

8. In a spray booth, a pair of vertical side walls supported a short distance above the floor on spaced supports, the said walls extending in spaced parallel relation, a series of hoods connecting the side walls and forming a continuous top for the booth, a discharge stack positioned substantially centrally of each hood and having a point of restriction and an air blower discharging through the point of restriction.

9. In a spray booth, a pair of vertical side walls supported in vertical spaced relation with a floor, the said walls extending in spaced parallel relation, a series of hoods connecting the side walls and forming a continuous top for the spray booth, a conveyor extending longitudinally of the spray booth, a vertical discharge stack positioned centrally of each hood, and a blower having a discharge nozzle for discharging air from atmosphere into the stack at a point above its point of connection with the hood.

10. In a spray booth, a pair of opposite side walls arranged vertically in spaced parallel relation and spaced from the floor, a series of hoods forming a top for the booth, a discharge stack positioned centrally of each hood, and means for producing an ascending current of air through each discharge stack, comprising a means taking air from atmosphere and discharging the same into the stack above its point of connection with the hood.

11. In a spray booth, a pair of vertical side walls spaced a short distance above a floor on spaced supports, a series of hoods connecting the side walls at the top and a discharge stack positioned centrally of each hood.

12. A paint spray booth having one of its walls space a short distance above the floor line, a hood forming a top therefor, a discharge stack for the hood, a conveyor spaced a distance from the said wall providing a space for an operator, the spacing of the wall from the floor providing for ingress of air to the booth to flow inwardly over the said space to thereby envelop the operator in the fresh air current and carry the paint vapors from the booth.

In testimony whereof I sign this specification.

RUSSELL C. MAHON.