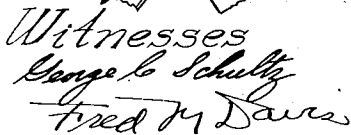


1,218,718.

5 SHEETS—SHEET 1.



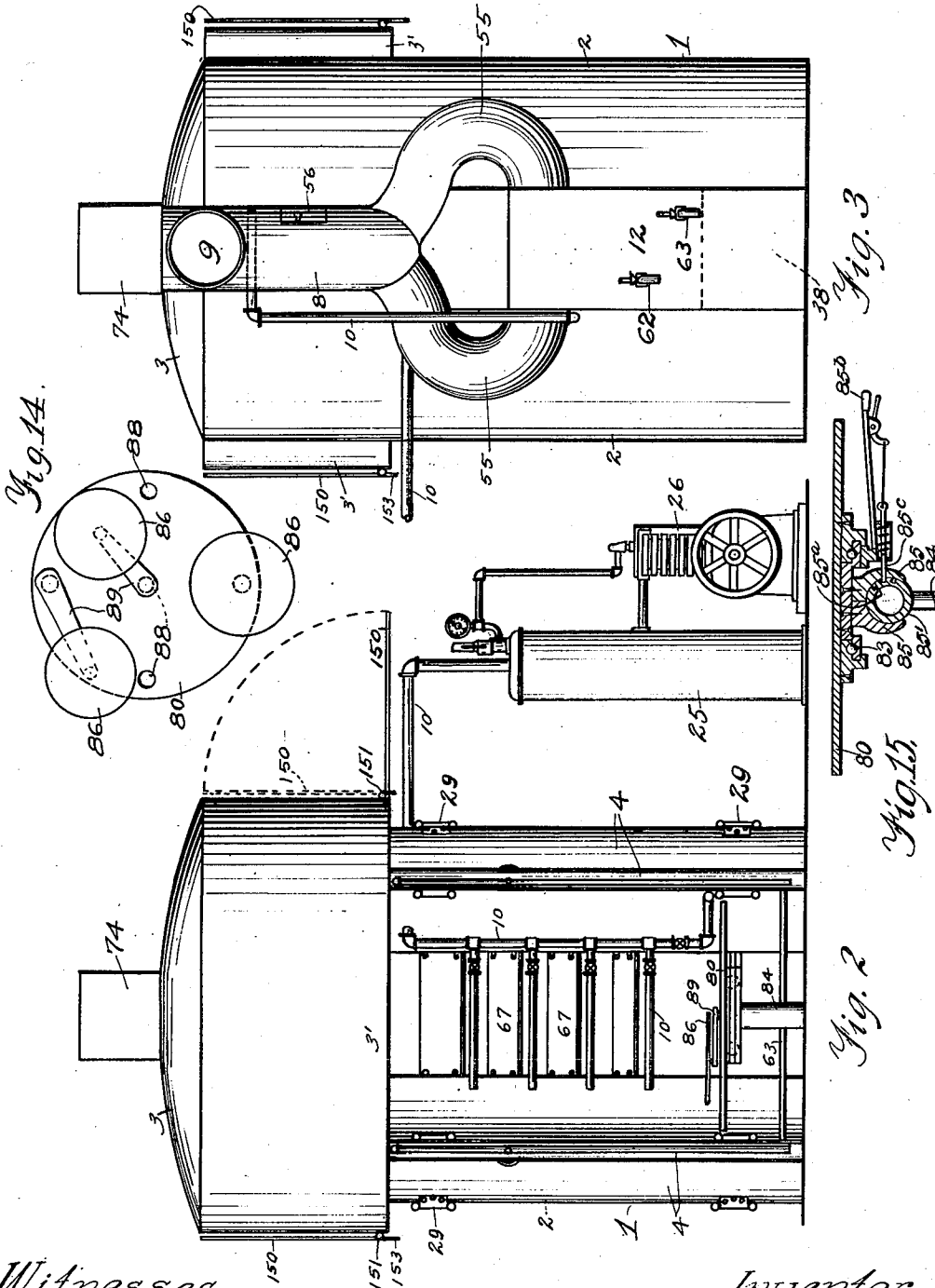
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C. G. THROOP.
 SPRAYING BOOTH.
 APPLICATION FILED SEPT. 25, 1916.

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Patented Mar. 13, 1917.

5 SHEETS—SHEET 2.



Witnesses
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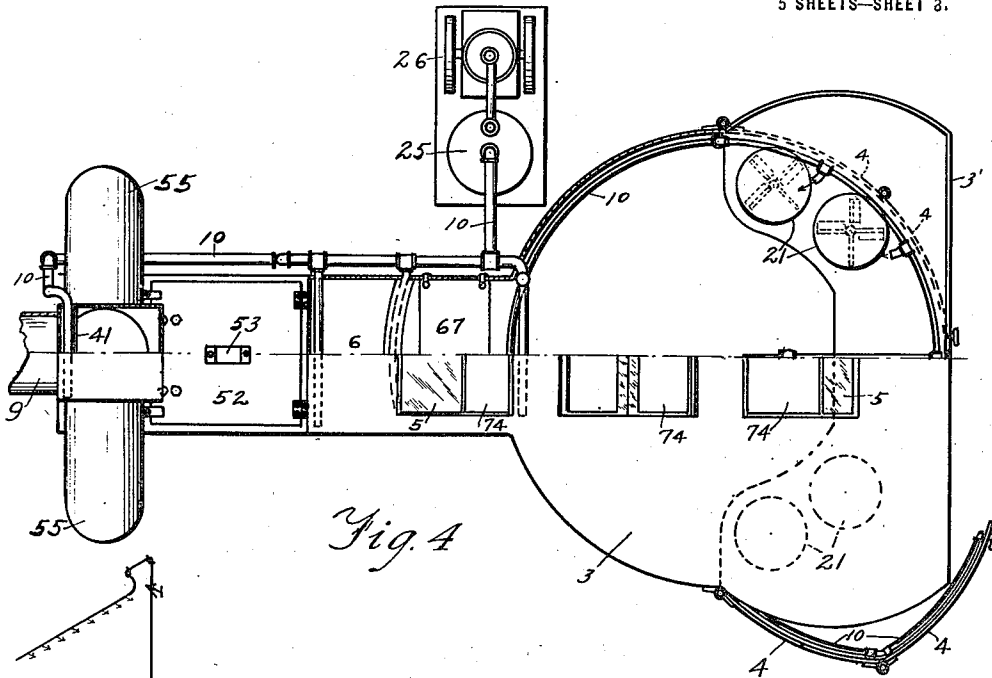


Fig. 4

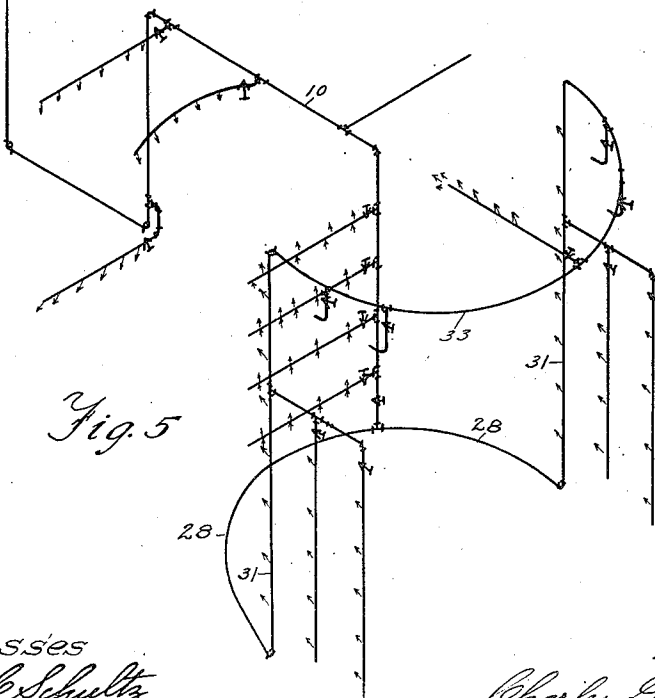


Fig. 5

Witnesses
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 F. M. Davis.

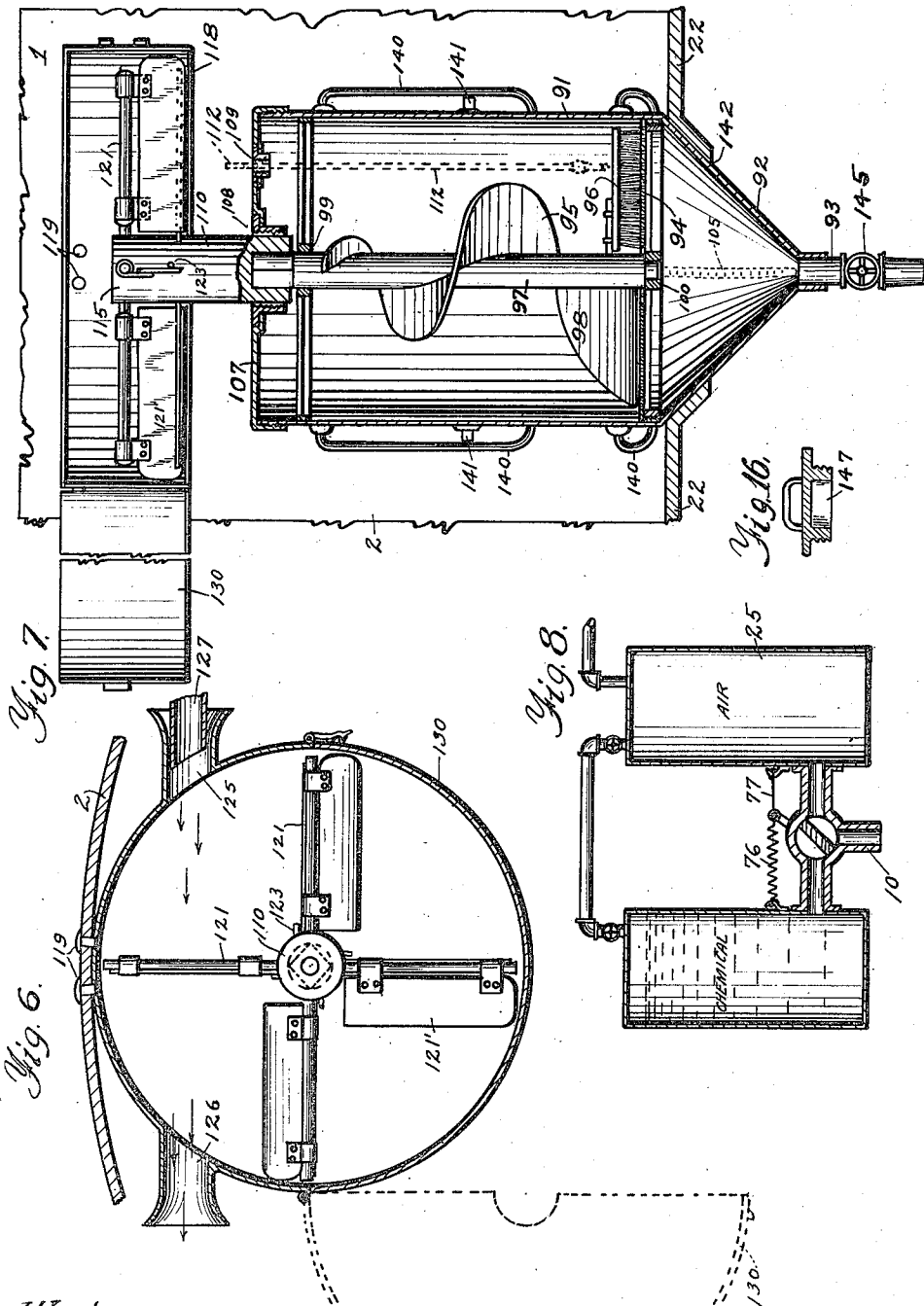
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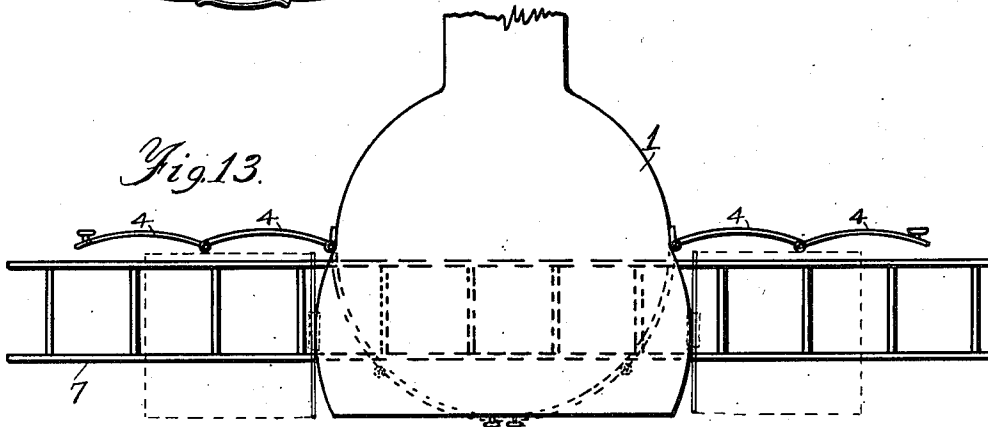
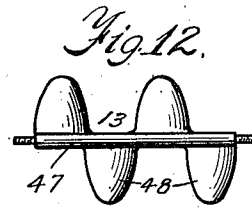
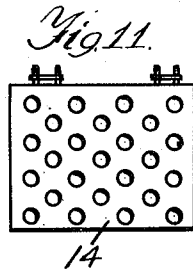
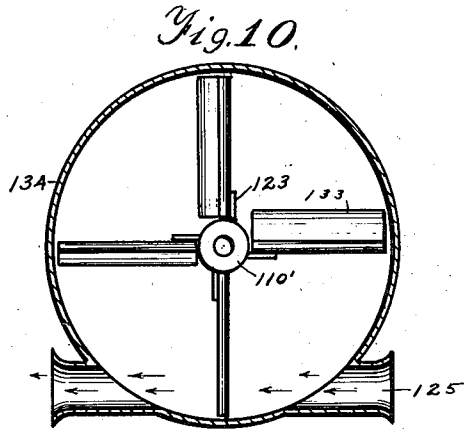
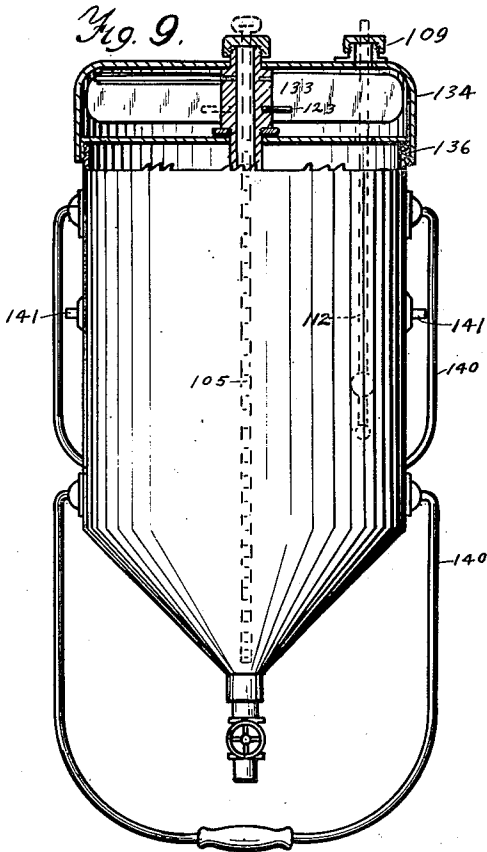
5 SHEETS—SHEET 4.



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1,218,718.

Patented Mar. 13, 1917.
 5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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SPRAYING-BOOTH.

1,218,718.

Specification of Letters Patent.

Patented Mar. 13, 1917.

Application filed September 25, 1916. Serial No. 122,018.

To all whom it may concern:

Be it known that I, CHARLES GRANT THROOP, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Spraying-Booths, of which the following is a specification.

This invention relates to spraying booths such as are adapted mainly for use in painting, varnishing, gilding, lacquering and the like, and especially to means for conserving the materials used and saving from waste such parts as ordinarily are discharged with the air or thrown against the walls and lost.

Heretofore, the apparatus used and the methods prevailing in paint shops have lacked efficiency respecting both labor and materials. The devices for storing and handling the paint and other supplies have been subject to such defects and inconveniences as result in loss of time and waste of material, especially in the matter of handling small quantities of paint, filling cans, mixing the paint, and straining the same, and keeping the spray brush and appurtenances in normal operating condition when in use. Too great a per cent. of the material is often lost in the straining process, and too much time is wasted by the operator in overcoming or remedying irregularities and interruptions in the operation of the brush and the flow of liquid, such as result from clogging of the strainer and brush by paint skins and other obstructions.

Spraying booths, as usually constructed, soon become encrusted with a thick coating of paint, varnish and other materials, usually representing a very substantial percentage of waste. Much time of the operator is also expended in unnecessary lifting and shifting of the objects to be treated and in changing the connection of the spray brush from one source of material to another.

As spray booths are usually formed, the windows and electric lamps or other sources of light soon become thickly coated with condensed spray material and dust, rendering them inefficient or useless.

A most serious defect commonly to be noted relates to the fire hazard, no reliable or adequate means being provided for quickly or automatically extinguishing fire and preventing the spread thereof.

Spray booths as usually operated discharge the waste vapor directly into the atmosphere, thus vitiating the same and producing a nuisance which at times is decidedly objectionable for a considerable distance.

Another defect commonly found in spray booths is that the construction and arrangement of the walls and doors is not adapted for a continuous process or series of operations, particularly when the objects to be sprayed are heavy or bulky and awkward to handle, in which case it is usually necessary to place the object in the booth several times successively or to move it about laboriously and inefficiently.

In order to make clear some of the defects prevailing heretofore a characteristic example may be cited. In treating, for instance, common house refrigerators in the old way, the paste filler having been applied to the top, front and sides independently of the spray brush and booth, they are first introduced successively for applying or spraying on the usual coat of paint, usually red, to the back and bottom. On the following day after the back and bottom paint is dry, the refrigerators are again inserted for spraying on the first coat of varnish over the filler on the front, top and sides. On the third day they are again inserted to receive the interior coating of white primer spray for the food chamber. On the fourth day the finishing coat of varnish spray is applied to the front, top and sides, and on the fifth day a coat of white enamel spray is applied to the interior. During all the five days' time the great number of units under process have to be stored carefully and protected from dust and injury.

By the present invention, all of the foregoing defects and difficulties are overcome, and a refrigerator such as mentioned at its first insertion into, or passage through the booth is given its coat of red back and bottom paint, its first coat of varnish or "var-

nish first coater" on its front, top, and sides, and its coat of white primer, one coat following the other without taking out of the booth until ready to dry, all in one day, instead of three days. The second coat of varnish and the white enamel can both quickly be applied on the second day, so that only two fifths or 40% of the time formerly required is necessary. It is, of course, to be understood that the actual time required for brushing or spraying on each coat is only a few minutes. The three operations of the first day take only about five to ten minutes per unit.

The main objects of the invention are to provide an improved form of booth and equipment therefor better adapted for a wide range of purposes such as painting or applying bronze paint to furniture, spraying animals, and applying disinfectants, and adapted for effecting greater economy in the paint and other materials used, and especially to recover such part of the spray as misses the object toward which it is directed and thereby prevent its waste; to provide a settling tank and separator in connection therewith; to provide improved draft controlling means, and to so conduct the spray as to avoid inhalation thereof by the operator; to provide for utilizing as fuel such of the lighter vapors as cannot be condensed or otherwise recovered; to provide efficient means for cleaning the booth and recovering such paint and other materials as collect thereon; to provide improved means for putting out fires in and about the booth and to prevent spreading of fires when started; to provide better facilities for easy handling of the materials used and the objects to be treated; and to provide for accommodating a plurality of workmen in each booth.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which—

Figure 1 is a medial vertical section of the spray booth with part of the device in front elevation.

Fig. 2 is a front view of the device with the doors swung partly open.

Fig. 3 is a rear elevation of the booth.

Fig. 4 is a top view partly in section.

Fig. 5 is a conventional diagram illustrating the piping system.

Fig. 6 is a horizontal section of the casing of the propeller for the mixing fan.

Fig. 7 is a vertical section of a mixing can and motor.

Fig. 8 is a diagram and section of the automatic fire extinguisher.

Fig. 9 is a side view of a paint can with a motor and casing mounted thereon.

Fig. 10 is a horizontal section through the fan casing of Fig. 9.

Fig. 11 is a perforated baffle plate.

Fig. 12 is a side view of the paddle wheel.

Fig. 13 is a plan of the front part of the booth with the doors extended wide for receiving a ladder or other large object to be treated.

Fig. 14 is a plan of the main table equipped with a plurality of small supplementary tables.

Fig. 15 is an axial cross section of the main platform and supporting means showing the tilttable construction.

Fig. 16 is a cam cap.

In the embodiment shown in the drawings, the booth 1 comprises a wall member or members 2, a roof 3, doors 4, windows 5 and a discharge member 6. The booth when closed is substantially cylindrical. The extent of the doorway is preferably about 180° and is disposed opposite the discharge member. The doors are preferably arcuate in shape and are hinged together in pairs to the opposite sides of the doorway, and are swingable outwardly to a greater or less extent, preferably into alinement on opposite sides so as to make room for transmitting, if desired, a long narrow body such as an automobile body or a ladder 7, illustrated in Fig. 13. As thus constructed, when the doors are opened wide, the objects to be treated or sprayed may be passed through the booth in continuous procession at a speed adapted to suit the convenience of the operator or operators stationed at the booth.

The discharge member or flue 6 extends from the upper back part of the booth downward and backward to an upright part 8 terminating in a tubular connection 9 leading to a furnace (not shown) or to any other desired means for ultimately disposing of the gases.

A system of piping 10 is provided for directing a current or a plurality of currents of air under pressure toward and through said discharge flue. The lower or middle part of the flue is provided with a condenser member 12 or spray retaining means, and also with fluid splashing and collecting members 13 and 14. The upstanding discharge part 8 contains one or more tortuous passageways, best shown in Fig. 3, adapted to still further oppose the escape of vapor particles.

The spraying brushes 16 for applying the coloring material, varnish, or other material, may be of any type desired, several well known forms being on the market. Each brush comprises a discharge nozzle and a handle, suitable connections being provided for attaching a pair of tubes 18 and 19, one of which is connected to a source of pigment or other material to be sprayed, and the other to a source of air or other fluid pressure adapted to drive the material forward in a finely divided state, such as spray or dust. In order to facilitate the application

of a plurality of materials at the same time or in quick succession, a corresponding plurality of brushes are provided for the booth, each brush being connected to a corresponding source of material, such as paint, varnish or the like contained in the cans 21 held demountably in the upper part of the booth, on shelves 22 as illustrated in Fig. 1.

Each supply tube is provided with readily controlled valves or equivalent means 23 for turning the supply off and on as required, and the brushes 16 moreover are readily interchangeable.

The piping system 10 as a whole is illustrated diagrammatically by a perspective view shown in Fig. 5, wherein the several arrows indicate the position of discharge apertures 23 in the pipes, and also the direction of the individual drafts or blasts of air. The piping system communicates with a source of air pressure such, for instance, as illustrated in Fig. 4, where the pressure tank 25 is connected to the compression pump and engine 26 whereby the pressure is maintained. The piping system comprises a main trunk line extending from the upper end of the discharge flue 8 downward across the condenser and lower part of the flue, upward and forward to the central part of the booth, and thence downward to an arcuate part, the branches 28 of which extend to the line of the door hinges 29 where upright members 31 extend to the roof or dome 3 where they are connected by an arcuate tube 33 disposed in the forward part of the dome. Each of the door members 4 is provided with a vertically disposed discharge tube adjacent to its outer edge, said tubes being connected turnably by suitable joints with the adjacent part of the main piping system. Various other branches are disposed about the booth in such manner as to most effectively drive the vapors into the discharge flue 6 and prevent their settling on the windows, walls and other parts of the booth.

The doors are preferably demountable with respect to each other and the frame of the booth, and the blower tubes carried thereon are accordingly provided with readily detachable connectors of flexible character, as for instance, such as used for connecting up the air brake system on railway trains.

The vapor condenser or collecting means 12 contained in the discharge flue includes a closed tank or receptacle 38 for the materials collected, the liquid agitator or splasher 13, the baffle plates 14, a guide shield 39 and closure means 40 and 41 on each side for substantially sealing the condenser when not in use. The tank part 38 is provided with an inclined partition member 43 having an opening 44 at its lowest point adapted to facilitate the settling of the heavier liquids

and solids consisting mainly of pigments in the lower part of the tank, the lighter and more volatile parts of the liquid remaining in the upper part of the tank above said partition. The inner part 39 of the partition or shield 38 is hinged at 45 to the outer or stationary part, and is curved upwardly and outwardly so as to direct the fluid particles thrown up by the splasher across the path of the incoming spray and vapor.

The splasher 13 comprises a shaft 47 journaled demountably in the passageway, said shaft being provided with radially disposed arms or spoons 48, the tips of which are adapted to coact with the surface of the liquid when in one position, and to receive a blast of propelling fluid or air from the pressure nozzle 50 when in the opposite or upper position. The spoons or vanes of said splasher serve to throw the liquid particles not only backward but upward and forward in the discharge passage, some of the liquid being thrown against the baffle plates 14 together with the spray contained in the air draft. The baffle plates serve particularly to collect and separate the heavy materials, such as pigment, and cause the same to flow downward through the aperture 44 into the lower compartment.

In order to facilitate removal of the several parts for cleaning, a removable cover 52 having a handle 53 is provided above the splasher whereby the latter, as well as the demountable partition 43 and shield 39 may be removed when desired.

The upright part 8 of the discharge flue includes two oppositely disposed tortuous or semi-circular passageways 55 communicating with the upper part of the flue from whence the air and gases are discharged through the pneumatically controlled doorway 41 into the tube 9 which in turn communicates by a branch 9' with a furnace or other receptacle (not shown), or by a branch 9'' with the open air, communication with said branches being controlled by a damper 9'''.

The sealing means for the condenser includes the damper or lid 40 at the intake end, and the damper 41 at the outlet end. When the air pressure is cut off gravity serves to close said doors. When the air is turned on, however, a draft is turned against the projecting door parts 58 and 59 respectively, whereby the doors are thrown open. The heavier door 40 is provided on its free edge with a pair of lifting vanes or shields 58 and 58' adapted to receive the force of the upwardly moving air blast and thereby assist in opening said door. A supplementary lifting arm 58'' is also provided opposite the nozzle 60. The vacant space beneath the liquid collecting chamber may be utilized for storage purposes, as will be understood, drawers 61 being preferred.

Upper and lower cocks 62 and 63 are provided for drawing off the liquids contained in the corresponding parts of the condenser 12.

5 In order to facilitate cleaning the interior of the booth after use, a suitable receptacle or trough 63 is provided, extending around the lower part of the booth walls adapted for collecting washing fluid or other material running down over the wall surface. 10 Whenever it is desired to clean the walls one of the spray brushes 16 is connected to a can 21 containing benzine or other suitable cleaning material and the walls are sprayed 15 therewith, the liquid and the paint washed thereby from the walls running down and collecting in said trough, from which it may be poured into the discharge and collecting part 6—12 of the booth, or drained into any 20 suitable receptacle and subsequently used or refined as may be desired.

In order to further facilitate cleaning and in some measure prevent the collection of paint and other materials on the walls, a 25 plurality of swinging plates or baffle members 65 are mounted in the upper part of the booth, which members tend to create dead air spaces adjacent to the booth surface and thereby prevent deposit of the materials 30 used.

Further means to prevent the deposit of materials include the backwardly inclined shields or louvers 67 which direct the air rapidly upward over the rear wall or partition 68 and so prevent settling of the material on the wall. 35

In order to provide for efficient lighting of the booth and to assure the uninterrupted maintenance of good lighting, improved 40 means are used to prevent the collection of paint and the other materials on the windows 5 and on the lamps used. For this purpose the baffle members 65 are pivotally suspended or otherwise disposed adjacent to 45 the front or underside of the back roof window, and the air tube 70 is caused to direct a blast of air across the front roof window. For the purpose of artificial lighting an electric bulb 71 or other suitable lamp is dis- 50 posed in the dome-shaped cavity 72 in the central upper part of the roof, said cavity providing a dead air space wherein the lamp is substantially free from exposure to the vapor laden currents of air. The walls 55 of said dome member are provided with windows. Wall windows are also provided as illustrated. Fire resistant glass is used for all windows, the form known as wire-glass being preferred.

60 Automatic shutters 74 are provided for all windows to further insure against spreading in case of fire in the booth. In order that the shutters may close automatically they are urged normally toward their closed position 65 either by gravity or suitable resilient

means such as helical springs or the like as shown at 76.

The shutters are held open by means of a fusible or combustible member 77, said means, such as a fuse-wire, cord or the like, 70 being disposed within the booth as shown.

There is provided an elevator or platform 80 which can be raised from the floor, and can also be rotated on its vertical axis, somewhat as a barber's chair is controlled. This 75 elevator is intended to facilitate handling the articles, as for instance a table 81, to be sprayed so as to enable the operator to get at the different sides quickly. (See Figs. 1 and 14). The central pedestal 82 is hollow 80 and adapted for pneumatic hydraulic or oil lift control. Roller bearings 83 are provided for the rotary table. The shaft 84 reciprocates vertically in the member 82 and so raises and lowers the platform 80. In order 85 that the table 80 may be tiltable, turnably related mounting means are provided at the upper end of the plunger 84. Said means comprise coacting arcuate members 85 and 85', the former being made in two inwardly 90 facing parts secured to the under side of the roller bearing frame which is attached to the under side of the table and the other being attached or formed unitarily with the shaft 84 and is cylindrical in shape. One of 95 the parts of said member 85 is provided with an aperture 85'' positioned to register successively with a vertically disposed series of corresponding apertures 85^a on one side of the part 85'. Attached to the under side 100 of the concentrically disposed roller bearing frame is a manual control lever 85^b having a latch or plunger 85^c thereon arranged to coact with the apertures 85'' and 85^a in said members 85 and 85' for adjusting the tilt 105 of the table 80, as will be understood by reference to Fig. 15.

One or more auxiliary elevators 86 are adapted to be mounted on the main elevator 80. For this purpose the main platform 80 110 is provided with sockets 88 and the platforms 86 have support rods or arms 89 fitting in said sockets. The arms 89 may be upright and straight, or may be bent crank-like, so as to swing the platform 86 about 115 the corresponding socket as a center.

Moreover, part of the members 86 are mounted turnably on the upper ends of the rods 89. Others are mounted tiltably, either directly on the horizontal part of the rods 120 89 or on an upright part substantially as shown in Fig. 14, so as to better adapt the elevator for manipulation so as to give ready access to the different parts of certain 125 kinds of objects when treated, it being understood that the two parts of the member 85 fit tightly on the member embraced thereby so that friction will serve to maintain adjustment against accidental change.

The paint cans 21 illustrated in Figs. 1, 7, 130

and 9 are of improved form adapted to effect great economy of materials and efficiency in operation. According to the methods heretofore used, much time is lost by the operator in straining and preparing the material to be sprayed and in keeping the apparatus running smoothly and uniformly. The spray brushes 16 being of a delicate nature respecting construction and operation, are sensitive to small foreign substances or solid masses contained in the liquid to be sprayed, such as particles of dirt, lumps of pigment, or paint skins.

The cans shown in the drawings are adapted to overcome these difficulties. Each can comprises an upright cylindrical part or wall 91, a funnel-shaped bottom 92 and discharge outlet 93, a perforate diaphragm or strainer 94 adjacent to the bottom, a rotary mixing member 95 and means 96 for keeping the strainer free and operative. The diaphragm 94 may to advantage be composed of woven wire fabric, but other suitable means may be used. The mixer 95 comprises a vertically disposed shaft 97 on which is wound spirally a tapered ribbon member 98 having its broad end disposed downwardly as illustrated in Fig. 7. Journal means 99 and 100 for said shaft are disposed adjacent to the top and bottom of the can, said means each comprising a spider member or hub with radial arms supported by or bearing against the walls of the can. Said shaft 97 is of hollow construction and adapted to receive a measuring rod 105 extending from the bottom of the can to a height sufficiently above the top for ready handling and reading. Said can has a top or cover member 107 easily removable and preferably provided with a threaded engagement. Said cover is provided with suitable openings 108 and 109 to accommodate attachment of the driving means 110 near the center and to receive the hydrometer 112 near the outer edge. The driving member or fan 110 comprises a hub 115 the lower end of which is formed to coact with the upper end of the shaft 97 so as to operate co-turnably therewith and to facilitate lifting off therefrom.

A wind shield or protective guide 118 is provided for the fan part of the propelling means. Said shield may be mounted directly on the wall of the booth as illustrated by screws or rivets 119 in Figs. 6 and 7, or may be formed integrally with the cover of the can, as shown in Fig. 9. The fan is provided with a plurality of arms 121 fixed on the upper part of the fan hub, each arm being provided with a depending vane 122. Stop means 123 are provided for limiting the swing of the vane in one direction to a vertical position, said vane being free to swing upward to a horizontal position in the opposite direction.

Draft apertures 125 and 126 are disposed in alinement in the back part of said shield, and a draft nozzle 127 is arranged to discharge a blast of air across the shield and against the fan blades as indicated in Fig. 6. When the blades come within range of the air blast the air forces them into their vertical or most effective position. When the vanes pass out of range of the blast they are free to trail backward or swing upward so as to offer the least resistance while passing through the dead air space in the front part of the shield. The semi-circular door 130 on the front of the shield permits of removing the fan, as whenever it is desired to take down the can from the shelf 22.

In the form shown in Fig. 9 the fan 133 and casing 134 are connected together detachably. The casing member need not necessarily be removed for taking the can down from the shelf, but may be removed whenever desired by unscrewing the cover from the can as indicated by the threads 136.

In order to facilitate handling the can in any desired position, either upright, inverted, or on its side, a pair of handles or bails 140 are provided one at each end, as illustrated in Figs. 7 and 9. In case it is desired to thoroughly mix the paint after standing, the can may be removed from the shelf and by means of the medially disposed pivots 141 may be mounted in any suitable support means or journals and the can rotated on its medial transverse axis until the pigment or other solid matter is thoroughly mixed with the liquid material, whereupon the can may be returned to its shelf aperture 142 in the booth.

The pails or cans 21 may hold any kind of liquid or powdered matter intended for spraying purposes. Being cone-shaped at the bottom, and having a pipe connection for joining onto a feed hose 18 at the lowest point, all material will be drained out when the supply is exhausted. A shut-off 145 is provided so that when the hose is disconnected, it is convenient to turn the can upside down, so that the settlements in the can will not fill up the outlet or cone-shaped part of the can. Hence the can is always ready to use. Whenever it is desired to turn the can upside down, the user will only remove the wind wheel part of the agitator, inasmuch as it is detachable, and screw on the cap 147 over the opening for the shaft that connects the wind wheel with the agitator 95. It is an easy matter to make the can air tight. One may use a separate can for each color or kind of liquid to be used. This feature eliminates all of the old ways of straining paints or liquids. It saves the user the bother, trouble and time required to empty and clean out the can each time it is used. By this invention it is possible to use one color in the booth as long as

necessary, and then immediately switch the spray brush onto another color, which can be held in readiness in a separate can. As the cans 21 each have two handles, lower and upper, it is easy to turn the can one way or the other, as for the purpose of shaking the contents of the can.

The can 21 is arranged in such way that when the supply tube 18 is attached to the coupling at the bottom of the cone part of the can, and compressed air is applied, the paint can be forced through the tube from the lower portion of the cone shape, up around through the top of an adjacent can, the hose being attached to the screw top where the hydrometer is inserted. This simple operation strains the liquid, thus saving the bother of straining through cheese cloth or other strainers, and saving the loss of paint that is left in the cloth strainer and cans each time. In addition to keeping paint clean and air tight at all times in this way the user is saved the loss resulting from throwing away paint skins and waste paint that is spilled or otherwise lost in handling and drying when paint buckets are left open. In filling the cans for spraying purposes, the pails 21 permit of pumping the required amount of paint or other liquids directly from the original packages to the paint pail, doing away with loss of material and time, and keeping the environment clean, as cannot be done wherever paint is in open packages.

The top or dome 3 of the booth extends sidewise somewhat across the front so as to extend well over the main working part of the booth, as illustrated in Fig. 4, where the left half of the view is a plan and the right half a horizontal section adjacent to the roof. The dome has sides 3' extending down to meet the tops of the doors 4. On the left-hand side of said Fig. 4 the doors are shown in their intermediate position, while on the right-hand side they are shown by dotted lines in their closed position. The overhanging front part of the roof is supplemented by roof shutters or wings 150 having a horizontally disposed hinge axis at 151 adjacent to their lower edges whereby they may be swung down to a horizontal position when the doors are wide open and the booth is correspondingly extended. The projecting inner edges 153 of said shutters coact with the adjacent part of the booth frame to serve as a stop for limiting the downward swing of the shutters, as will be understood by reference to Figs. 2 and 3. When said shutters are lowered, their under sides are flush with the lower edge of the projecting roof or dome member 3', and the doors are free to swing backward and forward underneath the same.

According to the improved and simplified process of this invention, the articles to be

sprayed with one or more materials are passed in substantially continuous succession into and through the spray booth where the several materials are applied either simultaneously or in quick succession, and the unused or dissipated spray material is recovered either by collecting it in the condenser or by subsequent washing of the walls of the booth with a suitable cleaner, the several parts which may be used again being eventually recovered.

Although several embodiments of the invention are herein shown and described, it is to be understood that no attempt has been made to show specifically all useful embodiments and that numerous details of the constructions shown and described may be modified or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:—

1. A spraying booth, comprising a top or canopy, closure walls on one or more sides, a plurality of doors adapted to close or nearly close the booth and to swing outward to open the booth and virtually increase the size thereof, a vapor discharge passage or outlet flue in the back part of the booth, and draft supplying means for directing the unused spray and vapor backward and into said outlet flue.

2. A spraying booth, comprising a wall member, a top member, one or more door members on one side, a discharge flue on the opposite side, means in or associated with said flue for condensing and collecting liquid from the passing vapor and spray, and a flue extension leading to a waste discharge or to a furnace or burner.

3. A spraying booth, open on one side to accommodate a workman and having means to drive the surplus spray backward and out of the booth, and means for handling and advancing the objects to be sprayed through the booth in substantially continuous procession.

4. In a spraying booth, a system of piping suitably distributed and having a plurality of discharge outlets, in combination with a source of air pressure, a source of fire extinguishing material, and means for connecting either of said sources to said piping.

5. In a spraying booth, a system of piping having a plurality of discharge apertures directed diagonally against the walls of the booth and toward the vapor discharge opening thereof, a plurality of sources of materials adapted for delivery through said piping, and means for connecting either or all of said sources to the piping.

6. In a spraying booth having an outlet for the discharge of spray, a system of piping having discharge openings directed toward the walls and also in the direction of said discharge apertures, a source of air

pressure communicating with said system, a source of fire extinguishing chemical under pressure also communicating with said system, and means for turning on and off each of said sources.

7. In a spraying booth a system of piping having a plurality of discharge openings, in combination with a source of air pressure, manual means for turning said air pressure on and off, a source of fire extinguishing material adapted for discharge through said piping, and automatic means for turning the latter source on subject to excessive heat such as caused by fire.

8. In a spraying booth a system of piping having a plurality of discharge openings, in combination with a source of air pressure, manual means for turning said air pressure on and off, a source of fire extinguishing material adapted for discharge through said piping, means tending normally to remain open, adapted for connecting the latter source to said piping, and means for holding the latter connecting means closed, said holding means being disposed in such positions as to be affected by the heat in case of a fire in the vicinity of the piping system whereby the fire extinguishing material is released.

9. A spraying booth adapted for opening on one side and having a discharge flue for the air and vapors on the opposite side, in combination with a piping system disposed in and throughout said booth and having discharge nozzles disposed adjacent to the walls and directed toward the discharge flue whereby lodgment of liquid and vapor on the walls is prevented and the vapors are caused to discharge through said flue.

10. In a spraying booth having a discharge flue with vapor collecting means and closure members associated therewith, a system of piping having discharge nozzles adjacent to said closure members and arranged to discharge a blast of air for automatically opening said closure members when the booth is in use.

11. A spraying booth and a source of air pressure, in combination with a discharge tube communicating therewith and connecting said source to said booth, a source of fire extinguishing material with which said discharge tube also communicates, a valve arranged and adapted for movement to connect said discharge tube operatively to either one or the other of said sources, resilient means urging said valve to one position for connecting said discharge tube to the source of fire extinguishing material, holding means within said booth adapted to be released by fire in the booth for normally holding the valve in its opposite or air discharge position, and tubular means connecting said sources for supplying air pressure

to force out the extinguishing material through said discharge tube when said valve is released by the holding means.

12. A spraying booth, in combination with a system of piping having discharge outlets distributed in the booth, sources of air and fire extinguishing chemical each connected to said piping system, a valve adapted for cutting off either of said sources from the piping system, and means operatable by fire for actuating or reversing the position of said valve.

13. A spraying booth, having a plurality of doors hinged together, and fluid pressure draft supplying pipes mounted thereon, said pipes having flexible connection means.

14. A spraying booth having a doorway with doors hinged to opposite sides thereof, and a system of fluid pressure piping including pipes mounted on the walls of the booth and on said doors respectively, said pipes having outlets pointing toward the central and back part of the booth and adapted to produce a draft in that direction.

15. A spraying booth having an outlet or discharge flue for the air draft and vapors carried thereby, means in said flue for condensing and separating the vapors from the air, and a collecting reservoir associated therewith into which the liquefied material flows from the condensing means.

16. A spraying booth having an outlet or discharge flue for the air draft and vapors carried thereby, and means in said flue for condensing and separating the vapors from the air, said means comprising a plurality of baffle plates disposed uprightly for draining the condensed liquid therefrom into a suitable receptacle.

17. A spraying booth having an outlet or discharge flue for the air draft and vapors carried thereby, and means in said flue for condensing and separating the vapors from the air, said means comprising a receptacle for liquid, and means for throwing or splashing the liquid into and across the flue to assist in condensing and collecting the vapors carried by the air.

18. A spraying booth having an outlet or discharge flue for the air draft and vapors carried thereby, and means in said flue for condensing and separating the vapors from the air, said means comprising a receptacle for liquid in the lower part of said flue, means for throwing or splashing the liquid upward in said flue, and guide means for directing the upthrown liquid across the flue.

19. A spraying booth having an outlet or discharge flue for the air draft and vapors carried thereby, and means in said flue for condensing and separating the vapors from the air, said means comprising a re-

ceptacle for liquid, a rotary agitator therefor comprising vanes or spoon members arranged to dip successively into the liquid when rotated, and means for directing a blast of air against said vanes when in their outermost position for driving said means.

20. A spraying booth having an outlet or discharge flue for the air draft and vapors carried thereby, and means in said flue for condensing and separating the vapors from the air, said means comprising a fan member arranged to throw liquid into the current of air and vapor and baffle plates arranged to collect and separate the liquid from the pigment and condensed vapor as the draft passes therethrough.

21. A spraying booth having a vapor discharge flue disposed downwardly along part of its length, a liquid receptacle in or adjacent to the lower part of said flue, a partition separating the lower and upper parts of said liquid receptacle, means for draining the heavier parts of said liquid into the lower compartment, and separate means for drawing off the lighter and heavier liquids respectively.

22. A spraying booth having a discharge flue for the vapors, means disposed in or adjacent to said flue for condensing and collecting the liquids and solids carried by the air and vapor passing through said flue, automatic closure means for said flue to close the same when the booth is not in use, and pneumatic means for opening the closure means when the booth is in use.

23. In a device of the class described, a discharge vapor flue having a receptacle for liquid in the lower part, in combination with a rotary paddle wheel arranged to throw the liquid backward, upward, and forward over said wheel.

24. A spraying booth the sides of which are provided with liquid collecting troughs at or adjacent to the floor, in combination with a source of paint, varnish, or other material to be sprayed upon objects placed in the booth, a source of cleaning material such as benzoin or the like, and means for spraying the same against the walls of the booth for cleaning the same.

25. In a spraying booth, means for spraying the paint or other material to be applied to the objects placed in the booth, means for spraying benzoin or other suitable cleaning material against the walls of the booth, and means for collecting the cleaning material and matter contained therein.

26. A spraying booth having recessed walls or roof members, and lights mounted in the recesses.

27. A spray booth having a recess formed in the wall or roof adapted to provide a substantially dead air space wherein a lamp or light may be disposed free from the effect of the air draft and spray carried thereby.

28. A spraying booth having light apertures or windows, in combination with shutters therefor, and automatic means for closing said shutters in case of fire.

29. A spraying booth having an aperture, in combination with an automatic closing shutter therefor, and means extending within the booth for holding said shutter open, said means being inflammable so as to release the shutter for self closing in case of fire.

30. In a spray booth, a plurality of cans or sources of material to be sprayed, a spray brush communicating flexible with each of said sources respectively, and means for automatically raising and supporting the several brushes within convenient reach when not in use.

31. In a spray booth, a plurality of sources of spray material, a spray brush and flexible tube communicating with each of said sources respectively, and a system of cords, pulleys and weights or counter-balances adapted for automatically raising and supporting the several brushes independently of one another when not in use.

32. In a spray booth, a plurality of cans or receptacles for spray material, tubular means extending therefrom respectively to a point within convenient reach of the operator, and a spray brush adapted for connecting interchangeably to said tubular means.

33. In a device of the class described, a plurality of spray brushes, means for supplying air pressure thereto, independent sources of material to be sprayed through the several brushes respectively, and yielding means for urging the several brushes to a retracted or non-operating position within convenient reach of the operator.

34. In a spraying booth, a source of pigment, varnish and the like, an independent source of fluid cleaning material, tubular means extending from said sources to within convenient reach of the operator, and a spray brush adapted for connecting interchangeably to either of said tubular means whereby the operator may spray the material from the first mentioned source in the usual manner and thereafter spray the cleaning material upon the walls and other objects to be cleaned.

35. In a spraying booth, a shelf having an aperture, a paint can having a base formed to fit in said aperture for supporting the can upon said shelf, mixing means having a vertical axis, adapted for rotation in said can about said axis, and pneumatic propelling means attached to the upper part of said mixing means.

36. A spraying booth having a shelf adapted to receive a mixing can for material to be sprayed, a vertically mounted mixer in said can, a wind shield mounted on the interior

of the booth back of the position for said can, said shield being formed for admitting and discharging air on the side adjacent to the wall, an outwardly swinging or removable door member on the opposite or front side of said shield to facilitate insertion and removal of the can to and from its position on the shelf, pneumatic propelling means attached to said mixer and projecting above said can, and means for directing a blast of air through the apertured rear part of said shield for coaction with pneumatic driving means.

37. In a spraying booth, a paint can having a discharge opening at or adjacent to the bottom, a spray brush connected to said opening, a straining diaphragm above said opening, and a brush or comb member mounted in the can and adapted for movement over and against said diaphragm to prevent clogging thereof.

38. In a spraying booth a mixing can for paints and the like, having a discharge aperture near the bottom and a straining diaphragm adjacent to and above said aperture, in combination with automatic mixing means comprising a vertical axial shaft having a brush member thereon for keeping the strainer open, means on said shaft for effecting vertical movement or circulation of the liquid, and means for rotating said shaft, and a spray brush communicating with said aperture.

39. A spraying booth having an outlet flue for the discharge of vapor, dust and the like, and a system of piping communicating with a source of air pressure adapted for creating a draft through said booth toward said outlet flue, in combination with a mixing can having an agitator with a fan member, and means for directing a blast of air from said piping against said fan member for driving the agitator.

40. In a spraying booth, a platform where- in the object to be sprayed may be placed, a source of fluid pressure, and means connected thereto for driving the surplus spray and

vapor out of the booth and for controlling the elevation of said table respectively.

41. In a spraying booth, a platform, fluid control lifting means therefor, a source of fluid pressure, and manual means for applying said pressure to said lifting means.

42. In a spraying booth, a main platform, means for varying and adjusting the height thereof, and a supplementary platform mounted above said main platform and being revoluble about the vertical axis of said main platform.

43. In a spraying booth, a main platform and a supplementary platform connected thereto by an arm, the inner end of which is pivoted to the main platform and the outer end being swingable to move the supplementary platform to various points above the main platform.

44. In a spraying booth a rotatably mounted platform, and means for adjusting the height thereof.

45. In a spraying booth, a rotary main platform adapted for adjustable height, and a supplementary platform mounted for swinging about the vertical axis of the main platform.

46. In a spraying booth, a platform adapted for tilting on its horizontal axis.

47. In a spraying booth, the main platform and a supplementary platform mounted upon and above the main platform, said supplementary platform being tiltable on its horizontal axis.

48. In a device of the class described, a main elevator or platform mounted to rotate on a vertical axis and having a plurality of means adjacent to its edge for mounting supplementary elevators or platforms, and means for raising and lowering the main platform.

Signed at Chicago this 21st day of September, 1916.

CHARLES GRANT THROOP.

Witnesses:

FRED M. DAVIS,
RALPH M. SNYDER.