

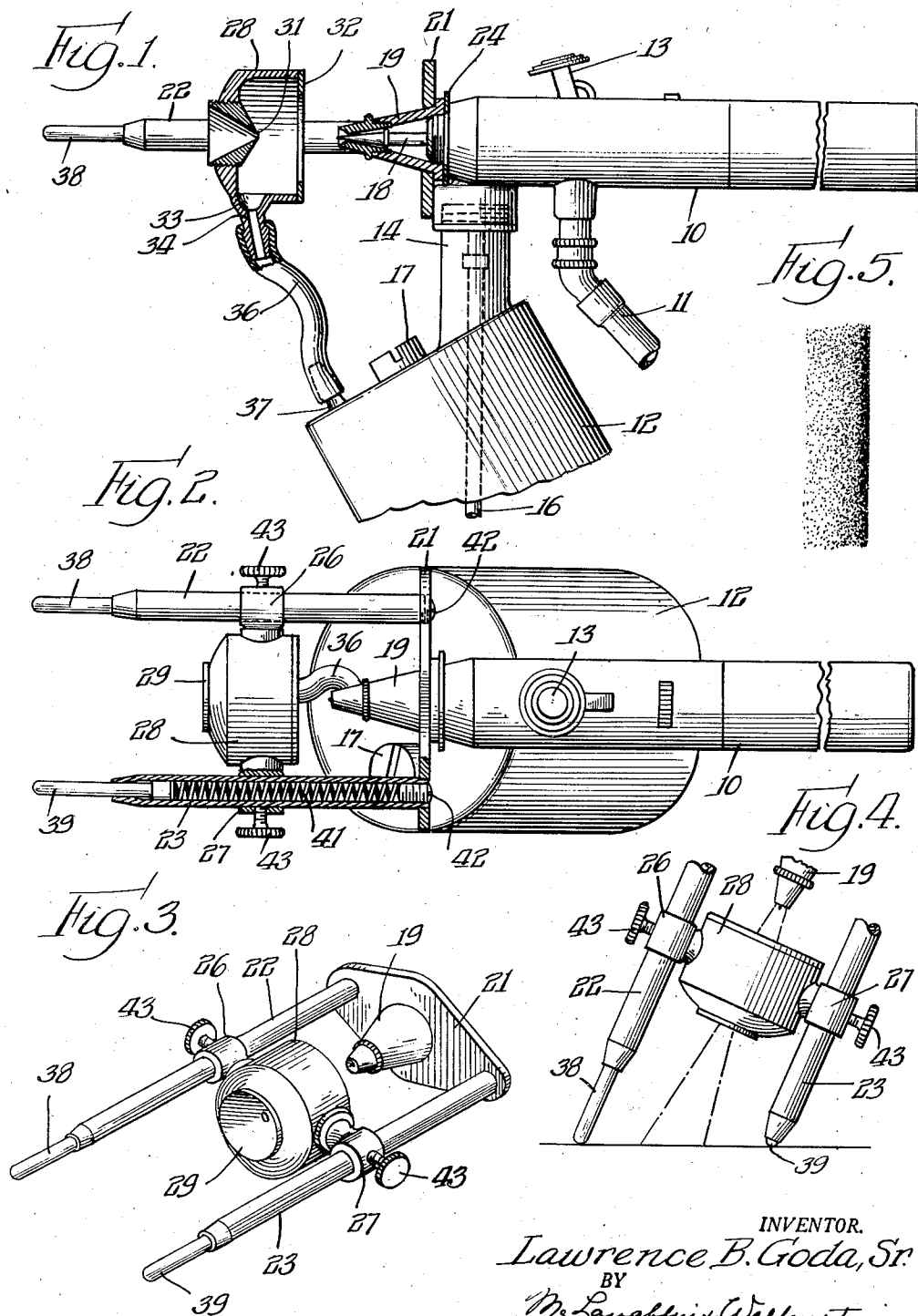
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LITHOGRAPH SPRAY DEVICE

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LITHOGRAPH SPRAY DEVICE

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My invention relates to lithographic spray devices and control devices for use therewith.

So-called pencil airbrushes are employed by skilled commercial artists in many unusual and unexpected ways in producing commercial lithographic plates. Thus with the same airbrush it is possible to produce a stippling effect, a relatively sharp line, or a shaded line which is sharp on one side and blends substantially into a stippling effect on the other side. Generally speaking, considerable skill and the expenditure of a great deal of time are necessary to employ a pencil airbrush to secure all of the usual effects desired.

I have found that by means of special control features, which may be employed as part of a pencil airbrush, I am able to facilitate very greatly the use of a pencil airbrush to secure many novel advantages without appreciably affecting the operation of the pencil airbrush in the usual manner now known in the art.

The principal object of my invention is to improve the ordinary pencil airbrush to enable it to be used for a wider variety of purposes, and with the expenditure of much less than the usual amount of time.

Another object is to provide an attachment for a conventional airbrush for the purpose of controlling in an improved manner the spray discharged therefrom.

Other objects and features of the invention will be apparent from a consideration of the following detailed description taken with the accompanying drawing wherein—

Fig. 1 is a fragmentary elevational view partly in longitudinal section and showing a lithographic spray device comprising one embodiment of my invention;

Fig. 2 is a plan view of the lithographic spray device, a guide member forming a part of a control attachment being shown in longitudinal section;

Fig. 3 is a perspective view showing the spray control attachment separated from the spray gun and adapted for attachment to any usual type of spray gun or airbrush;

Fig. 4 is a fragmentary elevational view showing one manner of using the device of my present invention; and

Fig. 5 illustrates one typical effect which is readily obtainable by means of the device of my present invention but is difficultly obtainable, or obtainable only after tedious work by the skilled craftsmen when using a conventional type of airbrush.

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In accordance with the general features of my invention, I provide an orifice containing member supported on guides running parallel to the axis of the spray nozzle and supporting the orifice containing member at a selected position in the path of the spray, whereby to limit more or less the spreading action of the spray, depending upon the position at which the orifice containing member is placed. The orifice is as near a flat plate orifice as possible and may vary in diameter from a few thousandths of an inch to approximately one-eighth inch or more. Means is provided to trap liquid which does not pass the orifice and deliver it back to a liquid reservoir of a general type normally associated with a spray gun. The orifice is preferably formed at the apex of a cone, the sides of which diverge in such a way as to preserve the general characteristics of a flat plate orifice while, at the same time, securing advantages from the standpoint of trapping of liquid and control thereof. The guides on which the orifice containing member is carried are also adapted to engage the surface against which a spray is directed to facilitate proper application of the control spray, and means is provided, preferably in the form of spring pressed guide extensions for directing the spray at any angle which may be required in operation while still maintaining both guide members in contact with the surface.

As previously pointed out, the spray device of my present invention may take various forms, the embodiment shown in the drawing having proved very effective in the production of commercial lithographs. The spray device utilizes a conventional form of spray gun 10 adapted to be connected with an air line 11 and withdraws lithographing fluid from a reservoir 12 in response to operation of a control member 13. Various types of valve mechanisms known to those skilled in the art may be utilized to cause withdrawal of liquid from the reservoir 12 and discharge thereof in the form of a spray in the desired manner. The reservoir 12 is a more or less conventional type of reservoir with an extension 14 adapted to screw into a boss on the lower side of the spray gun, and to be held in such a position that a liquid withdrawing line 15 extends to substantially the lowermost part of the reservoir. A filling cap 17 is provided so that the reservoir may be filled without dismantling the spray apparatus.

A spray nozzle 18 is provided with a nozzle cap or head 19 and this nozzle cap 19 carries a transverse mounting plate 21 to which guides 22 and

23 are secured. The plate 21 and guides 22 and 23 form a part of a separate control device such as shown in Fig. 3 and which will be described more in detail hereinafter. The nozzle cap, however, is attached such as by threads, as shown, to the spray gun 10, a suitable gasket or washer 24 being provided to form a tight connection. Those skilled in the art will understand that a conventional type of spray gun may include the spray gun reservoir, etc., including the nozzle cap 19 but without the mounting plate 21. The mounting plate 21 has been provided in accordance with my invention and is secured to the nozzle cap 19 or other portion of the spray gun in any suitable or desired manner. In a preferred form of the invention, the mounting plate and nozzle cap 19 are welded or brazed together to form substantially a unitary structure so that they are removed together to produce a separable device such as illustrated in Fig. 3. If it is then desirable at any time to employ the spray gun separately and without the device of Fig. 3, this may be done by merely supplying an extra nozzle cap 19.

The guides 22 and 23 have threaded thereon a pair of ring supports 26 and 27 which together carry a shell 28 in the center of which is threaded a cone member 29 having an aperture 31. At the side of the shell 28 opposite to the cone 29, an annular flange 32 is provided in the nature of a baffle to facilitate retaining liquid material within the shell. A portion 33 of the shell, near the bottom thereof, is expanded to form a collecting sump leading to an apertured boss 34 connected to a tube 36 of rubber or the like, the other end of which is in communication with the reservoir through an apertured boss 37 attached thereto. The inside of the shell, including that portion of the cone member 29 which liquid may strike, is so shaped as to minimize splashing of liquid which may hit it and at the same time to facilitate flow of liquid to the sump 33 and deliver it back to the reservoir. The spray gun is used in various positions, a common one being to have the nozzle end of the spray gun tilted somewhat downwardly from the position shown in Fig. 1. The arrangement which I provide will cause the liquid to be returned to the reservoir at any position which the spray gun is apt to assume during normal operating conditions.

Within the guides 22 and 23, but forming a part of an extension thereof, I provide plungers 38 and 39 spring pressed outwardly by means of springs, one of such springs 41 being shown in Fig. 2. The structure shown places an enlarged portion of the plungers within an inner tubular portion of the guides, one end of the springs being engaged against the enlarged inner portion of the plungers and the other end engaged against a threaded plug 42 which retains the spring in place.

The ring supports 26 and 27 may be positioned at various locations along the guides 22 and 23 to control the distance of the orifice 31 from the spray gun nozzle. Means is provided to hold the ring supports with the shell 28, and appurtenances thereto, at any desired position longitudinally of the guides. In the drawing, I show simply large headed machine screws 43 threaded in the ring supports and adapted to engage the guides to hold the parts in position. I may, however, use any usual form of quickly released friction providing device to secure the desired effect. I describe the cone member 29 as being threaded in position. My invention contem-

plates the provision of several cones with different sizes of orifice with means to provide for quick interchange of cone members in the event the artist may wish to go from one kind of orifice to another. The use of double or quadruple threads of multiple pitch or the like is suggested for the purpose. In Fig. 1, I illustrate a threaded connection but, the cone member being in full section, the multiple pitch of the threads does not appear.

The lithographic spray device of my invention may be used as ordinary lithographic spray devices are used but has several features and advantages which make it particularly adaptable for securing, in an expeditious manner, the kinds of results desired in commercial lithographs and the like. When employing a fairly large orifice 31, the orifices may be placed very close to the nozzle outlet (the parts are approximately full scale) in which event the orifice will have little or no effect upon the spray and the device may be used as an ordinary air pencil with the exception, of course, that the guides may be used to position the spray and facilitate the operator's application thereof to a surface. By placing the orifice at a progressively greater distance away from the nozzle, the diverging portion of the spray is trapped in the shell and only those portions having a substantially forward component pass the orifice and reach the lithograph surface. Thus the spray is allowed to diverge more or less depending upon the relative positions of the orifice and nozzle. Some change in the characteristics of the applied liquid may be obtained by bringing the orifice 31 closer to or further away from the lithograph surface such as by forcing the plungers 38 and 39 inwardly or letting them extend their maximum distance.

It will be noted that the orifice diverges and the material forming it comes to a sharp edge. This structure not only provides an orifice as close as possible to a theoretical "flat plate orifice" but it also causes any liquid which does not pass the orifice to immediately be diverted away from the orifice rather than collect at the orifice and permit subsequent discharge in the form of large particles. While some slight diverging of the spray may take place after it passes the orifice 31, the divergence will be very slight and not appreciably more than can be accounted for by the forces set in motion within the liquid as it leaves the nozzle proper.

By means of my invention a usual form of stipple effect or shading may be obtained, or a sharp line may be produced by preventing the spray from spreading and going over the same line slowly enough to permit deposition of sufficient liquid. In addition, desired vignette effects may be obtained in any position, such as the effect indicated generally in Fig. 5. By slanting the spray such as by collapsing the plunger 39 as illustrated in Fig. 4, the deposited spray may be caused to be dark and sharp on one side (the side of the collapsed guide plunger) and shading into a stippled effect at the other side. Both plungers may, of course, be permitted to contact the lithograph surface while slanting the spray device whereby to obtain a vignette effect running at right angles to the illustrated device of Fig. 5. This effect, as pointed out, can be obtained because, while the knife edge of the aperture cuts the spray sharply and a nozzle action is prevented because of the sloping sides of the core orifice, some spray action is still present in the discharged spray and by slanting the spray in the

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manner described the portion which travels the greater distance will spread more than the portion nearer to the orifice.

It will be noted that the guides not only function to guide the orifice to position as it is moved toward or away from the work, but also to guide or assist the operator in his work. Various arrangements of guide members may be used. The form shown, however, has the advantage of showing the artist (the operator) exactly where the spray will strike before he actually releases the spray.

I have described my invention in detail in order that those skilled in the art may understand how to practice the same; but the scope of the invention is defined in the claims.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A lithographic spray device, comprising a guide member, means to support said guide on an airbrush generally parallel to the axis of a spray produced thereby, means longitudinally adjustably carried by said guide member forming an aperture aligned with said spray, means for trapping liquid which does not pass said aperture, and a spring pressed extension on said guide member adapted to engage a lithograph surface to position said orifice with respect thereto.

2. A lithographic spray device comprising a spray gun, a reservoir for liquid secured thereto, a nozzle cap, a plate secured thereto, a pair of mutually parallel guide tubes carried by the plate, spring propelled plungers projecting from said guide tubes, a shell having a pair of integral ring supports surrounding said guide tubes, means providing a cone shaped orifice in said shell, means causing sprayed material which does not pass said orifice to collect in a lower portion of said shell, and means for delivering liquid therefrom to said reservoir.

3. A lithographic spray device, comprising a pair of mutually aligned guide members, means to support said guide members on an airbrush in a position generally parallel to the axis of a spray produced thereby, means carried by said guide members forming an aperture aligned with said spray, said aperture being of a size to pass only part of said spray, means for trapping sprayed liquid which does not pass said aperture, and a pair of mutually parallel spring pressed plungers carried by said guide members and extending in front of said aperture, said plungers

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adapted to engage a lithograph surface to adjustably position said orifice away from such surface at a desired angle thereto.

4. A lithographic spray device comprising a spray gun having a nozzle cap, a pair of parallel guide members carried by such cap, a shell longitudinally adjustable carried by said guide members, a cone member carried by the shell providing an aperture at its apex in the path of a spray, means for collecting in said shell sprayed material which will not pass said orifice, and spring pressed plungers carried by said guide members and adapted to engage a lithographic surface to adjustably position said aperture with respect thereto.

5. A manually supportable lithographic spray device for producing lithographic art work, said device comprising a spray gun including a nozzle and manually manipulatable control member for controlling delivery of spray through said nozzle, a shell disposed in the path of said spray, said shell being relatively open in the direction facing the spray, a cone having an orifice at its apex, said cone carried by the shell at a position opposite to the said opening and having its apex facing said opening, means for positioning said shell with respect to said nozzle and means for preventing splashing from said shell of such liquid as does not pass through said orifice, and means for drawing from said shell such liquid as may be trapped therein, the space between said shell and nozzle being relatively open.

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