

Feb. 5, 1952

A. ABBOTT ET AL  
SPRAY GUN

2,584,178

Filed Sept. 17, 1948

2 SHEETS—SHEET 1

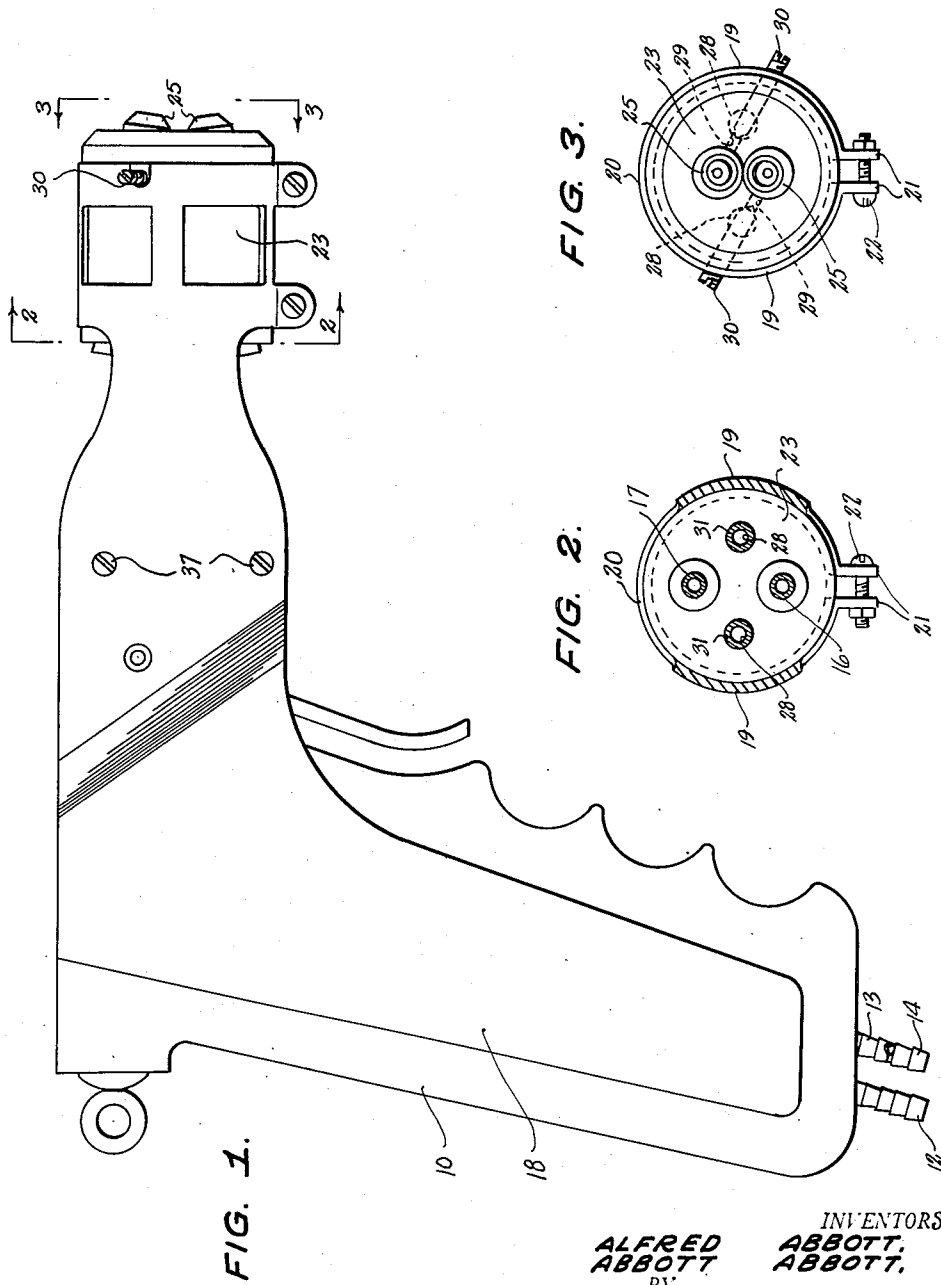


FIG. 1.

FIG. 2.

FIG. 3.

INVENTORS.  
ALFRED ABBOTT,  
ABBOTT,  
BY

*McMorrow, Berman + Davidson*  
ATTORNEYS.

Feb. 5, 1952

A. ABBOTT ET AL

2,584,178

SPRAY GUN

Filed Sept. 17, 1948

2 SHEETS—SHEET 2

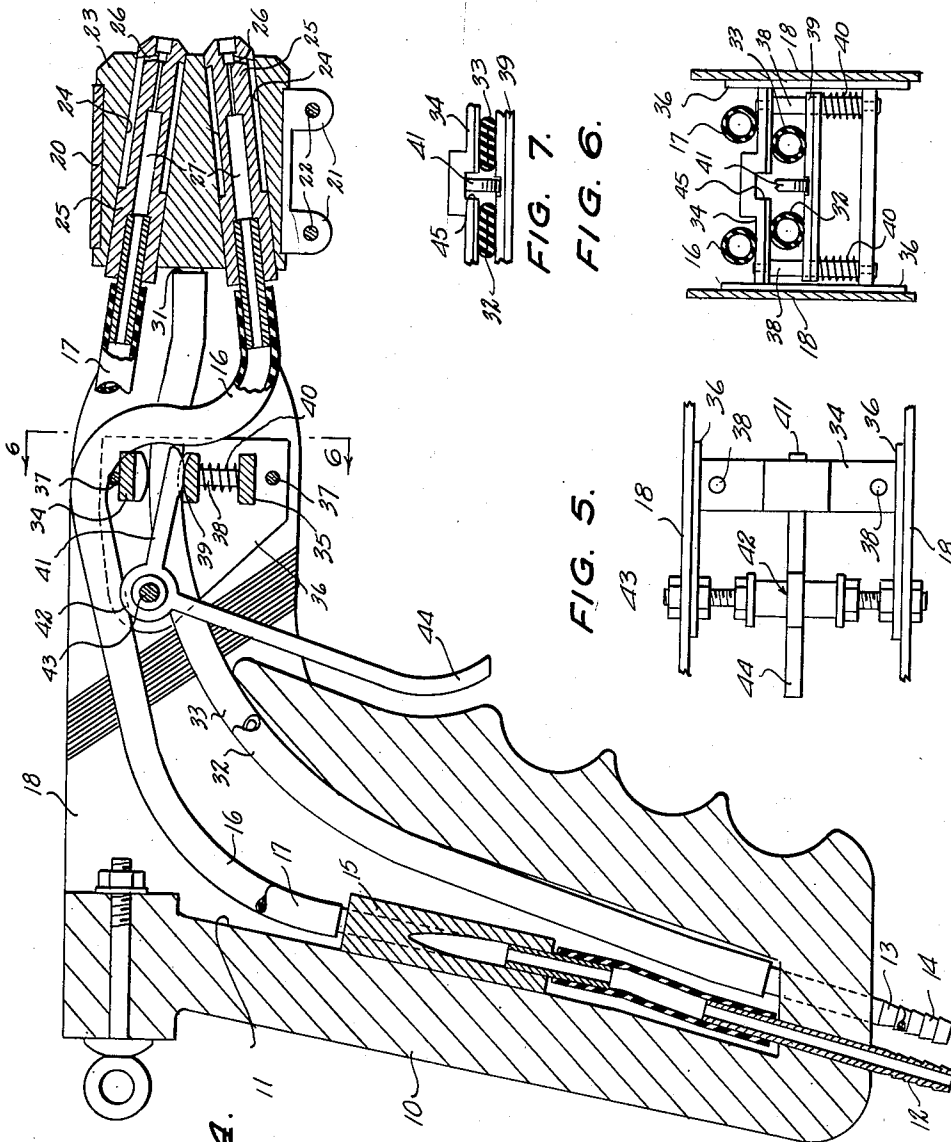


FIG. 4.

FIG. 5.

FIG. 6.

FIG. 7.

INVENTORS.  
ALFRED ABBOTT,  
ABBOTT,  
ABBOTT,  
BY

McMorrow, Berman + Davidson  
ATTORNEYS.

# UNITED STATES PATENT OFFICE

2,584,178

## SPRAY GUN

Alfred Abbott and Abbott Abbott, Albany, N. Y.

Application September 17, 1948, Serial No. 49,766

2 Claims. (Cl. 299-143)

1

2

Our invention relates to spray guns, and more particularly to spray guns as are adapted for spraying a mixture of a liquid or liquids and a gas or gases under pressure onto a surface or an article, whereby to coat or impregnate the same. The gun according to the invention is particularly applicable to the simultaneous spraying of two fluids which are maintained in an unmixed condition until they are discharged from the spray nozzle of the gun, whereby to mix in mid-air prior to impinging upon the surface or article to be coated or impregnated.

With the foregoing in view, it is an object of our invention to provide an improved spray gun of the class described.

A further object is to provide an improved spray gun which includes means for supplying a liquid and a gas under pressure to a spray nozzle, together with novel means for cutting off the flow of one of the liquid and/or gas to the nozzle.

A further object is to provide an improved spray gun which includes means for supplying at least two liquids separately to a spray nozzle for spraying by means of a gas under pressure, together with a single means for simultaneously stopping the flow of both liquids.

Other objects and advantages reside in the particular structure of the invention, combination and arrangement of the several parts thereof, and will be readily understood by those skilled in the art upon reference to the attached drawing in connection with the following specification, wherein the invention is shown, described and claimed.

In the drawing:

Figure 1 is an elevational view of a spray gun according to the invention;

Figure 2 is a transverse vertical sectional view taken substantially on the plane of the line 2-2 of Figure 1;

Figure 3 is a front view taken substantially on the plane of the line 3-3 of Figure 1;

Figure 4 is a longitudinal vertical sectional view through the gun of Figure 1;

Figure 5 is a fragmentary plan view of the gun illustrating a detail;

Figure 6 is a transverse vertical sectional view taken substantially on the plane of the line 6-6 of Figure 4, parts being omitted;

Figure 7 is a fragmentary vertical sectional view similar to Figure 6, but showing the parts in a different position.

As aforesaid, the gun according to the invention is particularly adaptable for the simultaneous spraying of two separate fluids which are

adapted to come in contact and/or chemically react in mid-air prior to impinging on the surface or article to be coated or impregnated. Specifically, the gun of the invention is capable of being used to spray a silver solution and a reducer solution simultaneously from a spray nozzle, whereby the two fluids come in contact and chemically react in mid-air, whereby to precipitate a coating compound for plate glass, whereby to form a mirror. For this type of work, the silver solution and the reducing solution must be mixed and applied to the glass virtually simultaneously, whereby the spray gun according to the invention is particularly well adapted for this purpose.

Referring specifically to the drawings, wherein like reference characters have been used throughout the several views to designate like parts, 10 designates any suitable butt or handle for the spray gun which preferably comprises a pistol grip and which is formed with an interior cavity 11 into which opens a single air conduit 12 and a pair of liquid conduits 13 and 14. The compressed air conduit 12 is operatively connected by any suitable forked union 15 to a pair of air conduits 16 and 17 which lead to the spray nozzle to be described later.

The gun according to the invention includes a pair of side plates or supports 18 which are secured to the butt in any suitable manner, not shown. The plates 18 extend forwardly of the butt in spaced relation. The plates 18 are generally flat, but include forward ends which are formed to provide opposed concave surfaces 19 connected together by an arcuate cross-piece 20 whereby to provide a hose clamp. Each forward end 19 is provided with a pair of depending ears 21 and the opposed pairs of ears 21 are adapted to be clamped together by any suitable means such as the screws or bolts 22 whereby the portions 19 and 20 are adapted to be clamped about a spray nozzle 23 and operatively connect the latter to the gun.

The nozzle 23 is formed with an upper and a lower bore 24, which bores converge forwardly and are adapted to have secured therein in any suitable manner atomizing fittings 25. Each fitting 25 includes an axial air passage 27 into which opens a fluid passage 26 which is in communication with the related bore 24. As best seen in Figure 3, the nozzle 23 is likewise formed with a pair of laterally-spaced bores 28, each of which includes a passage 29 communicating with one of the bores 24 aforesaid. Needle valves 30 are adapted to be threaded in the nozzle 23 to control the flow of liquid through the pas-

3

sages 29. The bores 28 include rearwardly-directed fittings 31 which are adapted to be connected in any suitable manner to liquid conduits 32 and 33 which extend rearwardly from the nozzle 23 and which are operatively connected to the liquid conduits 13 and 14. The liquid conduits 32 and 33 are flexible and are preferably formed of rubber-like material.

It should be understood at this time that the liquid is preferably fed to the nozzle 23 by the conduits 13, 14, 32 and 33 under relatively low pressure. Likewise, the compressed gas or air is fed to the nozzle 23 by way of the conduits 16 and 17 under relatively high pressure. It should be understood also that the flow of air through the conduits 16 and 17 may be controlled and regulated by any suitable air valve, preferably one outside of the butt 10, whereby the flow of air may be turned on or off in any suitable manner, not shown. However, we prefer to control the flow of liquid to the nozzle 23 by means now to be described.

Rearwardly of the nozzle 23, the side plates 18 are connected together by upper and lower cross-bars 34 and 35, respectively. Such cross-bars may be secured to the inner plates 36 fixed to the inner surfaces of the side plates 18 in any suitable manner, as by the bolts or machine screws 37. A pair of laterally-spaced, vertically-directed guides 38 connect the cross-bars 34 and 35. A third cross-bar 39 is slidable on the guides 38 and comprises a movable jaw adapted to cooperate with one of the cross-bars 34 and 35 to provide a clamp. In the embodiment shown, the upper surface of the jaw 39 cooperates with the lower surface of the upper cross-bar 34 to comprise a clamp for a purpose to be described. Expansive coil springs 40 surround the guides 38 below the clamp-providing cross-bar 39, whereby to load the same for movement toward the stationary clamp jaw 34. The movable jaw 39 is slotted centrally to receive the free forward end of a lever arm 41 of a trigger 42. The trigger 42 is pivoted between the side plates 18 by any suitable pivot-providing means 43 and includes a depending lever arm 44 providing a finger piece. As best seen in Figure 6, the under surface of the upper cross-bar 34 is slotted, as at 45, to receive the upper edge of the trigger lever arm 41. As best seen in Figure 4, when the trigger 44 is moved in a clockwise direction, the forwardly-directed lever arm 41 depresses the movable clamp jaw 39 and moves the same away from the stationary jaw 34 against the action of the springs 40. Likewise, upon release of pressure on the finger piece 44, the springs 40 will move the movable jaw 39 upwardly into substantial engagement with the stationary jaw 34. As clearly seen in Figures 4, 6 and 7, the flexible rubber-like conduits 32 and 33 extend between the jaws 34 and 39 on either side of the lever arm 41. Thus, and as best seen in Figure 7, when pressure on the finger piece 44 is removed, the conduits 32 and 33 are flattened between the jaws 34 and 39, whereby to seal the same and prevent the passage of liquid to the nozzle 23. Thus, although the flow of air through the fittings 25 continues until the air is shut off by any suitable valve, flow of liquid to the nozzle is simultaneously cut off in both of the conduits 32 and 33, whereby no liquid is sprayed from the nozzle. At the same time, a pull on the finger piece 44 so as to rock the trigger 42 in a clockwise direction, Figure 4, simultaneously unseals both of the conduits 32 and 33 and permits the liquid in each

4

conduit to flow immediately to the nozzle 23. Not only does the arrangement thus described eliminate the necessity for a pair of identical valves, but also provides a simple means for simultaneously sealing and unsealing both liquid conduits, whereby a costly coupling and duplicate valves is eliminated.

While we have shown and described what is now thought to be the preferred embodiment of our invention, it is to be understood that the same is susceptible of other forms and expressions. Consequently, we do not limit ourselves to the precise structures shown and described hereinabove except as hereinafter claimed.

We claim:

1. In a spray gun, a hollow handle, a pair of spaced supports arranged transversely of and adjacent to one end of said handle and each having one end fixedly secured to said handle, a nozzle positioned adjacent the other end of said supports and connected thereto, a pair of flexible conduits arranged in side by side relation with respect to each other longitudinally of and within said handle and each having one end adjacent to the other end of said handle and adapted for connection to a source of fluid supply, the other end of said pair of conduits extending through and out of said one end of said handle between said supports and connected to said nozzle for conducting fluid to said nozzle, a first fixed bar arranged transversely of and on one side of said conduits adjacent to and spaced from said nozzle and engageable with the adjacent portion of each of said conduits, a second bar positioned on the other side of said conduits in parallel spaced relation with respect to said first bar and connected to said first bar for movement toward and away from the latter, spring means connected to said second bar for biasing the latter toward said first bar to thereby simultaneously press said pair of conduits between said bars, and hand actuable means positioned between said supports adjacent said one end of said handle and rockably supported in said supports, one end of said hand actuable means being engageable with said second bar and the other end being exteriorly of said supports for effecting the movement of said second bar away from said first bar to thereby simultaneously release said conduits from pressing engagement with said bars.

2. In a spray gun, a hollow handle, a pair of spaced supports arranged transversely of and adjacent to one end of said handle and each having one end fixedly secured to said handle, a nozzle positioned adjacent the other end of said supports and connected thereto, a pair of flexible conduits arranged in side by side relation with respect to each other longitudinally of and within said handle and each having one end adjacent to the other end of said handle and adapted for connection to a source of fluid supply, the other end of said pair of conduits extending through and out of said one end of said handle between said supports and connected to said nozzle for conducting fluid to said nozzle, a first fixed bar arranged transversely of and on one side of said conduits adjacent to and spaced from said nozzle and engageable with the adjacent portion of each of said conduits, a second bar positioned on the other side of said conduits in parallel spaced relation with respect to said first bar and connected to said first bar for movement toward and away from the latter, spring means connected to said second bar

5

for biasing the latter toward said first bar to thereby simultaneously press said pair of conduits between said bars, a trigger positioned between said supports adjacent to and spaced from said handle and having one end pivotally connected to said supports, the other end of said trigger being exteriorly of said supports and movable toward and away from said handle, an arm arranged transversely of and adjacent to said one end of said trigger and having one end fixedly secured thereto, the other end of said arm being engageable with said second bar for effecting the movement of said second bar away from said first bar upon the movement of said trigger toward said handle to thereby simultaneously release said conduits from pressing engagement with said bars.

ALFRED ABBOTT.  
ABBOTT ABBOTT.

6

## REFERENCES CITED

The following references are of record in the file of this patent:

## UNITED STATES PATENTS

Number	Name	Date
729,423	Scheiber et al. -----	May 26, 1903
1,363,967	Fulton -----	Dec. 28, 1920
1,661,150	Birkenmaier -----	Feb. 28, 1928
1,876,988	Lormor -----	Sept. 13, 1932
2,116,833	Jenks -----	May 10, 1938
2,133,147	Mortimore -----	Oct. 11, 1938
2,197,995	Crowley -----	Apr. 23, 1940
2,356,865	Mason -----	Aug. 29, 1944
2,366,969	Kiggins -----	Jan. 9, 1945