

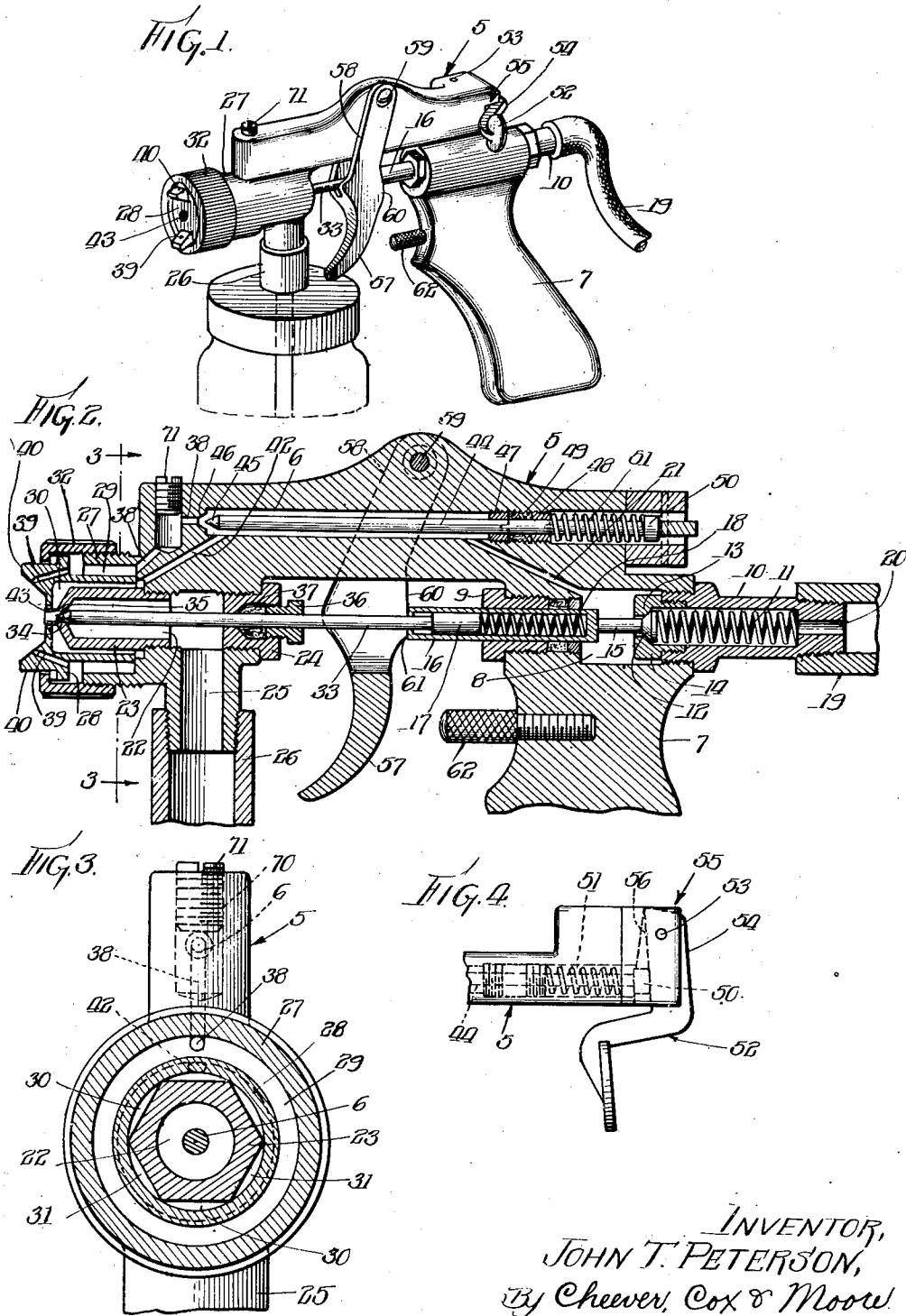
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J. T. PETERSON

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SPRAY GUN

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INVENTOR,
JOHN T. PETERSON,
By Chewer, Cox & Moore
ATTYS.

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SPRAY GUN

John T. Peterson, Chicago, Ill.

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1 Claim. (Cl. 91—45)

This invention relates to spray guns which are used for spraying paints, lacquers and other fluids.

The primary object of the invention is to provide a new and novel arrangement of parts, whereby various adjustments may be made with the same hand with which the spray gun is handled to regulate the flow of fluid, to change the kind of spray as from a flat spray to a round spray, and to regulate the amount of air.

Another object of the invention is to provide new and novel means for providing two kinds of sprays from the nozzle of the spray gun.

A further object is the particular arrangement of parts and the manner in which the gun is regulated, controlled and adjusted.

Numerous other objects and advantages will become apparent throughout the progress of the following specification.

The invention comprises in general a spray gun of pistol shape having a pistol grip and a plurality of triggers or adjusting members for controlling the operation of the spray gun. All the adjustments being arranged in such a position so that they may be made with one hand which is the hand carrying the spray gun. A main bore is provided in the body of the gun through which air passes from the air inlet through the nozzle. Two auxiliary bores or passages connect with the main bore and one of these auxiliary bores is controlled by a needle valve for permitting or preventing communication with one auxiliary bore. A trigger or thumb piece is provided near the grip for operating the needle valve to open or close one of the auxiliary bores. Normally the needle valve permits communication with the auxiliary bores to provide a flat spray. When the thumb piece is operated the flat spray auxiliary bore is closed and the bore leading to the chamber to provide a round spray, is open. A main trigger is provided which operates a valve to permit air to pass through the main bore and through either of the auxiliary bores, as required. This trigger also controls a needle valve which regulates the amount of material passing out of the nozzle. An air line is connected to the main air bore and a line leading to a source of fluid supply is connected at the front end of the spray.

The accompanying drawing illustrates a selected embodiment of the invention, and the views therein are as follows:

Fig. 1 is a detail perspective view of the spray gun.

Fig. 2 is a detail longitudinal sectional view of the improved spray gun.

Fig. 3 is a detail sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a detail view showing the thumb piece for operating the needle valve in the main air chamber.

Referring to the drawing, 5 designates generally the spray gun body having a longitudinal main bore 6. A pistol grip 7 is connected to the body portion 5 and has a chamber 8, in which bushings 9 and 10 are threadedly arranged. The bushing 10 has a spring 11 arranged therein which normally holds a valve 12 against a seat 13 provided in a screw member 14 which has threaded engagement with the bushing 10. A valve stem 15 is rigidly connected to a hollow member 16, in which a plunger 17 has restricted movement. A spring 18 arranged in the hollow member 16 normally urges the plunger 17 to the left, Fig. 2.

An air line 19 is connected to the bushing 10 and leads to a suitable source of air supply, such as an air compressor (not shown). Air coming through the line 19 passes through the bore 20 in the bushing 10 and into the chamber 8 and passes from the chamber 8 through a passage 21 leading to the main bore 6.

The forward end of the body 5 is provided with a horizontal bore 22 which is closed at its forward end by a substantially blunt pointed hollow bushing 23 and at its rear end by a bushing 24. A vertical bore or passage 25 has communication with the horizontal bore 22 and has a line 26 connected thereto which leads to a source of fluid supply, such as paint, lacquer, and the like.

A barrel 27 is made integral with the main body 5 and houses a nozzle 28 which is smaller than the barrel 27, to provide an annular passage 29 thereabout. The nozzle 28 is provided with a chamber 30, into which the bushing 23 is received, the bushing 23 being hexagonal in shape, Fig. 3, so as to provide a plurality of air passages 31. A ring 32 threadedly engages the barrel 27 and maintains the nozzle 28 in proper operative position in the annular passage 29.

A needle valve 33 is fixed to the plunger 17 and has a pointed end 34 which extends through an opening 35 in the forward pointed end of the bushing 23. A stuffing box 36 and packing 37 are arranged around the needle valve 33, where the valve passes through the bushing 24 to prevent any liquid coming through the line 26 from blowing out along the valve.

An auxiliary bore 38 is provided in the body 5 of the spray gun and has communication with the main bore 6 and the annular passage 29. Small passages 39 are provided in the extending wings 40 on the nozzle 28. A second auxiliary bore 42 is arranged in the body 5 to permit communication between the main bore 6 and the bore 30 to allow air coming through the main bore to pass around the bushing 23 and pass out through the air passages 31 and thence out through a central opening 43 in the nozzle.

A needle valve 44 is arranged in the main bore 6 and has a pointed end 45 which is adapted to engage a seat 46 provided in the auxiliary passage 38 which leads to the annular passage 29. The needle valve is supported in position by bushings 47 and 48. Packing 49 is arranged between these bushings to prevent air entering the bore 6 from backing out along the valve. A plunger 50 is arranged at the end of the needle valve 44, and a spring 51 having restricted movement between the bushing 48 and the plunger 50, normally pushes the needle valve 44 to the right, Fig. 2, to maintain the auxiliary bore or passage 38 in communication with the main bore 6, the annular opening 29, and the passages 29 in the nozzle. As air passes through the passages 29 as described a suction is created which causes liquid material to be drawn up through the line 26 and out through the opening 43 in the nozzle.

A thumb piece 52 is pivotally supported by a pin 53 to the back of the body and includes an outwardly extending arm or lever 54 which fits into a slot 55 formed in the casing or body, the pivot pin 53 holding the arm in position. The end 56 of the arm 54 limits inward movement of the thumb piece, while the spring 51 normally urges the thumb piece 52 outwardly, pulling the needle valve 44 to the right Fig. 2.

A trigger 57 has a bifurcated end 58 which fits over the body 5 of the gun and is pivotally connected to the body at 59. This trigger has a shoulder 60 which engages the end 61 of the hollow member 16 for operating the air valve 12 and the needle valve 33. An adjustment member 62 threadedly engages the butt or grip 7 of the gun to limit the movement of the trigger 57. When the trigger is moved to the right, Fig. 2, the shoulder 60 engages the edge 61 of the hollow member 16, compressing the spring 18 and moving the valve 12 from its seat 13 to permit air to enter through the bore 20 into the chamber, 8, thence through the passage 21, main bore 6, and auxiliary bore 38 into the annular passage 29, and then out through the passages 39 in the nozzle 28. In normal operation, as shown in Fig. 2, some air will pass through the auxiliary bore 42, through the passages 31, and then out through the nozzle opening 43. While a round spray is thus created, the position of the passages 39 causes the air coming through these latter sprays to change the round spray and converge it with the flat spray. The ultimate spray thus issuing from the gun is truly flat or fan-shaped. Continued pressure of this trigger will depress the spring 18 and move the hollow member 16 until the plunger 17 engages the end of the hollow member 16 to pull the needle valve 33 from its seat 34. This passage of air creates a suction causing fluid to be drawn up through the line 26, which will then pass through the vertical bore 25 into the horizontal bore 22, where it will pass out through the opening 43 in the nozzle. The

adjustment member 62 can be operated conveniently with the same hand that grips the handle or butt 7 of the device, thereby permitting all the necessary adjustments to be made with the same hand which operates the spray gun.

Operation

In practice, the trigger 57 is operated causing movement of the hollow member 16 to the right, Fig. 2, unseating the valve 12 from its seat 13 and permitting air to enter through the passage 20 into the chamber 8, and thence through the main bore and auxiliary passages out through the nozzle. Continued pressure of this trigger pulls the needle valve 33, thereby permitting the liquid supply to have unobstructed flow through the nozzle.

In the embodiment shown, air will pass from the chamber 8 through the passage 21 into the main bore 6, through both of the auxiliary bores or passages 38 and 39, through the annular passage 29 and the passages 31, and then through the passages 39 provided in the wings 40 of the nozzle 28 and through the opening in the member 23. The position of the passages 39 causes the air to converge, and the rushing of air through these passages and through the opening in the member 23 creates a suction which draws up the liquid material. The converging of the air streams through the openings 39 causes the material issuing from the opening 43 in the nozzle to be fan-shaped or flat. If a round spray only is desired, the thumb piece 52 is operated to move the pointed end 45 of the needle valve 44 against its seat 46, shutting off communication to the auxiliary passage 38. The air will then pass from the main bore 6 through the second auxiliary passage or bore 42 and into the passage 30, where it will pass out through the passages 31 around the bushing 23 and out through the opening 43 in the nozzle. This rushing of air will also create a suction which causes the liquid fluid to be drawn up through the line 26, and as it passes through the opening in the pointed end of the bushing 23, the material spray leaving the nozzle will be conical shaped or in the shape of a horn. The adjustment member 62 is operated to regulate the movement of the trigger 57 to control the amount of air coming in through the line 19 and to regulate the movement of the needle valve 33 to regulate the amount of material which passes through the nozzle.

The trigger, the thumb piece, and the adjustment member are all conveniently located so that the trigger may be operated with the forefinger and the thumb piece operated with the thumb of the same hand that grips the spray gun. When trigger adjustment is required, the thumb and forefinger of the operating hand can very conveniently operate this adjustment member.

The invention provides a conveniently operated, comparatively simple spray gun, which can be operated, controlled, and adjusted with the hand that grips the spray gun. It is not necessary to operate certain parts with the other hand as it is often inconvenient. The parts are conveniently located and the entire device can be manufactured and assembled very readily and economically.

To facilitate in assembling the parts and drilling the passages therein, a large opening 70 is provided at the forward end of the body

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which is closed by a plug 71. This arrangement permits the passages to be drilled easily and quickly.

Changes may be made in the form, construction, and arrangement of the parts without departing from the spirit of the invention or sacrificing any of the advantages thereof, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claim.

The invention is hereby claimed as follows:

A hand spray gun comprising a casing having a pistol grip handle, said casing having a plurality of passages therein, there being an air passage in the handle leading to a source of air supply, one of said passages leading to a source of liquid supply, a liquid valve controlling the supply of liquid passing through the last named passage, an air valve in the handle controlling the amount of air supply, means connecting the liquid valve and air valve together, said means including a hollow member

and a plunger operating in the hollow member, a spring in the hollow member and engaging the plunger to urge the liquid valve in closed position, a spring operating against the air valve to hold the air valve in closed position, a trigger pivoted to the casing and in normal engagement with the hollow member, pressure on the trigger first moving the liquid valve off its seat and moving the plunger a predetermined distance to subsequently move the air valve off its seat, a valve and valve stem carried in another of said passages, a thumb piece pivoted to the casing for operating the last named valve, and means carried by the casing to limit the movement of the trigger in a predetermined direction, said trigger, thumb piece and last named means being arranged in juxtaposition so that any or all of said three last named members may be operated by the same hand in which the gun is held.

JOHN T. PETERSON.

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