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E. H. STEPHAN

1,762,282

SPRAY GUN

Filed April 20, 1928

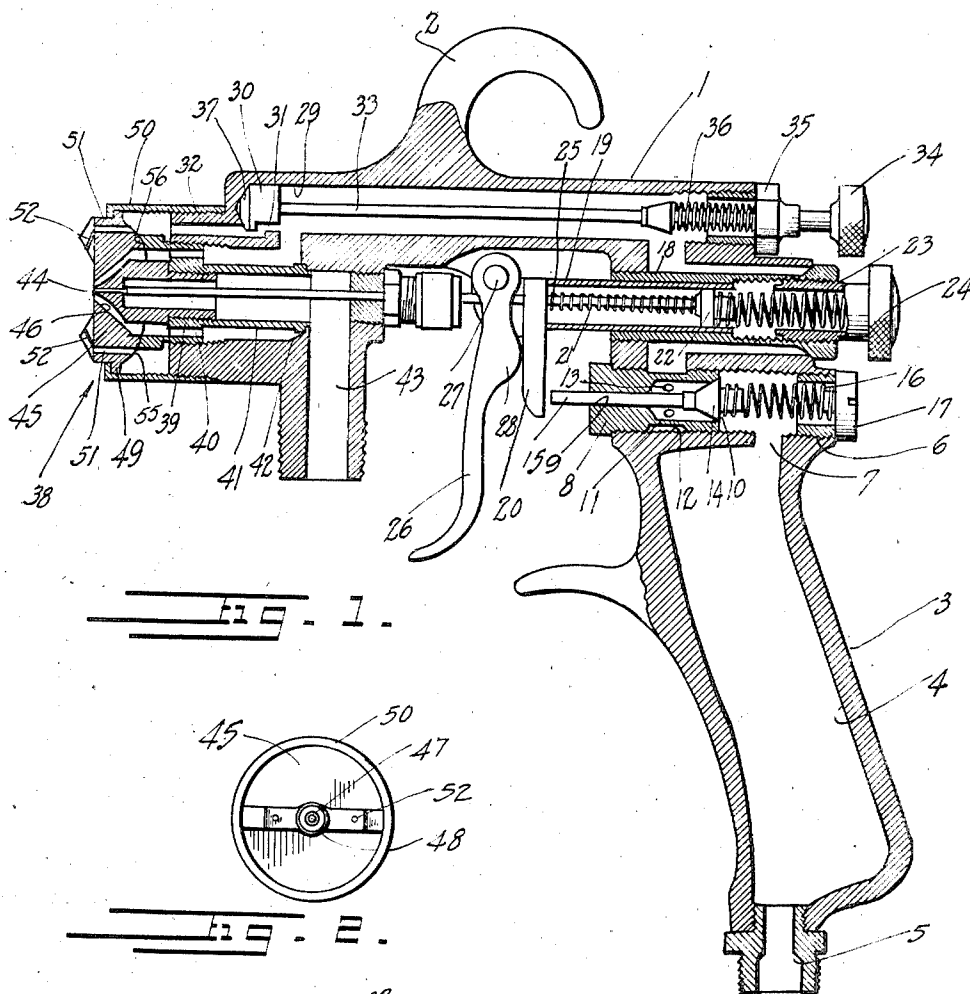


FIG. 1.

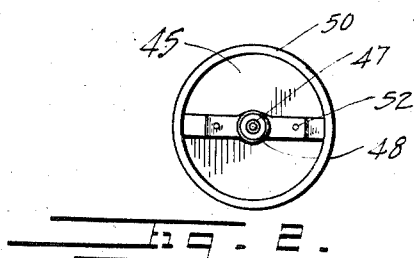


FIG. 2.

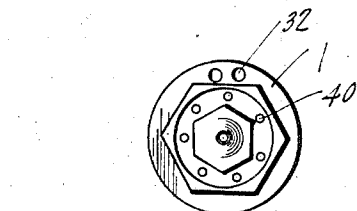


FIG. 3.

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## SPRAY GUN

Application filed April 20, 1928. Serial No. 271,554.

My invention relates to improvements in spray guns, and it consists in the combinations, constructions, and arrangements herein described and claimed.

5 An object of my invention is to provide an improvement over my Patent No. 1,661,239, issued March 6, 1928.

A further object of my invention is to provide a device of the type described which has 10 novel means for actuating the air valve, whereby there will be no frictional contact with the valve stem.

A further object of my invention is to provide a device of the type described which 15 has novel means for changing a round spray into a flat spray without adjusting the mouth piece.

A further object of my invention is to provide a device of the type described which 20 is more accurate in operation, and which will not get out of order easily.

A further object of my invention is to provide a device of the type described which has 25 novel means for actuating the air valve and the paint valve simultaneously.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

30 My invention is illustrated in the accompanying drawings, forming part of this application, in which

Figure 1 is a longitudinal sectional view of the device, portions thereof being shown in 35 elevation,

Figure 2 is a front elevation of the mouth piece, and

Figure 3 is a front elevation of the unit forming a portion of the mouth piece.

40 In carrying out my invention, I provide a body portion 1 preferably cast, the casting being provided with a hook portion 2 by means of which the gun may be suspended when not in use. The body portion 1 is provided with a handle 3 having a hollow compartment or passageway 4 which is connected 45 by means of a tube 5 to a compressed air supply, not shown. The passageway 4 communicates with an air valve compartment 6 through an opening or passageway 7.

A valve seat member 8 having an elongated opening 9 therein is provided with a seat 10 at the inner end thereof. The valve seat member is disposed in the compartment 6 and is also provided with a reduced portion 11 providing a passageway 12 there- 55 around. Openings 13 extend through the member 8 and communicate with the annular passageway 12.

A valve 14 is disposed in the valve member 8 and is arranged to engage with the seat 10. A valve stem 15 which is carried by the valve 14 extends through the opening 9. A tension spring 16 is provided for normally holding the valve 14 against the seat 10 and 60 is removably secured in place by a screw 17.

A cylinder 18 is disposed in the body portion 1 above the valve compartment 6 and is provided with a sleeve 19 which is movably disposed therein. A valve actuating arm 20 70 is carried by the outer end of the sleeve 19 and is arranged to engage with the valve stem 15. A paint valve 21 extends through the arm 20 and is provided with a head portion 22 against which is disposed a tension spring 75 23 of relatively great tensile strength. A hollow hand screw 24 is adjustably disposed in the outer end of the cylinder 18 for holding the spring 23 in place and for adjusting the tension of the spring, and controls the 80 paint valve 21, providing a stop so that the valve can be opened only a trifle or a great deal, depending on the amount of paint desired.

A paint valve actuating spring 25 has relatively slight tensile strength and is disposed 85 concentric with the valve between the arm 20 and the head portion 22 within the sleeve 19. A lever 26 is pivotally mounted at 27 to the body portion 1 and is provided with a cam 90 portion 28 which contacts with the arm 20 for a purpose hereinafter described.

An air passageway 29 is disposed in the upper portion of the body portion 1 and is in communication with the passageway 4 95 around the cylinder 18 through the openings 13, the valve compartment 6 and the passageway 7. An adjusting valve 30 is provided with a cutaway portion 31 for allowing communication between the passageway 29 and 100

two parallel-disposed passageways 32. The valve 30 is provided with a valve stem 33 which extends through the passageway 29 and is provided with a knob or hand wheel 34 at the outer end thereof. The valve stem 33 extends through and is movably disposed in a hollow screw 35 which receives one end of a compression spring 36 for normally holding the valve 30 against its valve seat 37.

10 A mouth piece 38 is provided with a guide unit 39 which is secured in the end of the body portion 1 and which is provided with a plurality of circumferentially-disposed air passageways 40. A tubular portion 41 is integral with the unit and is provided with a shoulder 42 which seats against the wall adjacent a paint passageway or inlet 43. The inlet 43 is in communication with a paint supply, not shown. The tubular portion 41 is in communication with a relatively small round outlet opening 44.

The passageways 40 communicate with a guide member 45 which has a conical-shaped recess 46 tapering inwardly from the circular row of passageways 40 to the relatively small outlet opening 44. The outer end of the unit 39 adjacent the outlet opening 44 is reduced to a relatively small end portion 47, and the adjacent end of the conical-shaped recess terminates a short distance from this end portion, thus providing a relatively small circular passageway 48 therearound.

The guide member 45 is provided with an annular flange 49 whereby it may be adjustably secured to the body portion 1 adjacent the unit 39 by means of a collar 50. The member 45 is provided with diametrically-opposed passageways 51 which communicate with the passageways 32. Transversely extending passageways 52 communicate with the passageways 51.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. Let us assume that the operator wishes to actuate the gun for creating a round spray. To accomplish this, the valve 30 is rotated by rotating the hand wheel 34, thus bringing the large portion of the valve into registration with the passageways 32 and cutting off the communication between the passageways 32 and the passageway 29. Let us also assume that the body portion is receiving air under pressure through the passageway 4 and paint under pressure through the inlet 43. The operator may then actuate the lever 26 and in doing so will force the arm 20 against the valve stem 15 and move the valve 14 away from the seat 10. In so doing, air will be permitted to pass through the passageway 4, the passageway 17, through the openings 13 in the valve seat member 8, around the annular passageway 12, through the passageway 29, the passageways 40 and through the

conical-shaped recess 46 and the passageway 48.

At the same time the air valve 14 is actuated, the spring 25 will force the paint valve 21 free from its seat adjacent the opening 44 and allow paint to pass from the inlet 43 through the tubular portion 41 and through the opening 44 where it will be mixed and forced outwardly by the air under pressure which is passing through the opening 48. In this manner, a round spray of paint is forced from the gun.

To create a flat spray, the operator rotates the valve 30 by turning the hand wheel 34 to bring the cutaway portion 31 into registration with the passageways 32. In so doing, this provides communication between the passageways 32 and the air passageway 29. Air will then also pass through the passageways 32 and the passageways 51 and 52. The air in passing through the passageways 51 passes through the stream of paint which is being forced through the opening 44. In this manner, the paint is diverted from a round spray into a flat spray.

It is therefore obvious that actuation of the lever 26 actuates the air valve 14 and the paint valve 21 simultaneously. Furthermore, it is obvious that the amount of paint and air passing from the mouth piece may be varied dependent upon the degree at which the lever or trigger 26 is actuated. Furthermore, the force upon the valve stem 15 is direct and there is no frictional contact between the arm 20 and the valve stem 15. The frictional contact is between the lever or rather the cam portion 28 and the adjacent surface of the arm.

It will be observed by viewing Figure 1 that the inner portion of the guide member 45 has an arcuate-shaped surface 55 which is in contact with an arcuate-shaped surface 56 of the unit 39. The surface 55 is convex and is receivable in the concave surface 56, whereby the member 45 is automatically centered when secured in place. This is a novel feature of the invention.

I claim:

1. A device of the type described comprising a body portion, a main air passageway therethrough, an air valve, a housing for said air valve having openings therethrough, a valve stem extending through said housing, an arm disposed adjacent said valve stem, a sleeve for supporting said arm, a cylinder for movably receiving said sleeve, a trigger pivotally mounted upon said body portion adjacent said arm for actuating said arm for imparting a direct and even movement to said air valve for opening said air valve for allowing air to pass through said housing, the openings in said housing and through said main air passageway, a mouth piece, said mouth piece comprising a unit having a plurality of circumferentially-dis-

posed openings, and a guide portion having a conical-shaped recess for directing the air passing through said circumferentially-disposed openings to and through a relatively small outlet.

5 2. A device of the type described comprising a body portion, a main air passageway therethrough, an air valve, a housing for said air valve having openings therethrough, a  
10 valve stem extending through said housing, an arm disposed adjacent said valve stem, a sleeve for supporting said arm, a cylinder for movably receiving said sleeve, a trigger pivotally mounted upon said body portion  
15 adjacent said arm for actuating said arm for imparting a direct and even movement to said air valve for opening said air valve for allowing air to pass through  
20 said housing, the openings in said housing and through said main air passageway, a mouth piece, said mouth piece comprising a unit having a plurality of circumferentially-disposed openings, a guide  
25 portion having a conical-shaped recess for directing the air passing through said circumferentially-disposed openings to and through a relatively small outlet, a paint valve extending through said unit for varying the flow of a liquid adapted to pass  
30 through said unit, said unit having an outlet disposed adjacent the outlet of said guide portion, and means actuated by the movement of said trigger and said arm for actuating said paint valve when said air valve is  
35 actuated.

Signed at Bridgman, in the county of Berrien and State of Michigan, this 12th day of April, A. D. 1928.

EMIL H. STEPHAN.

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