

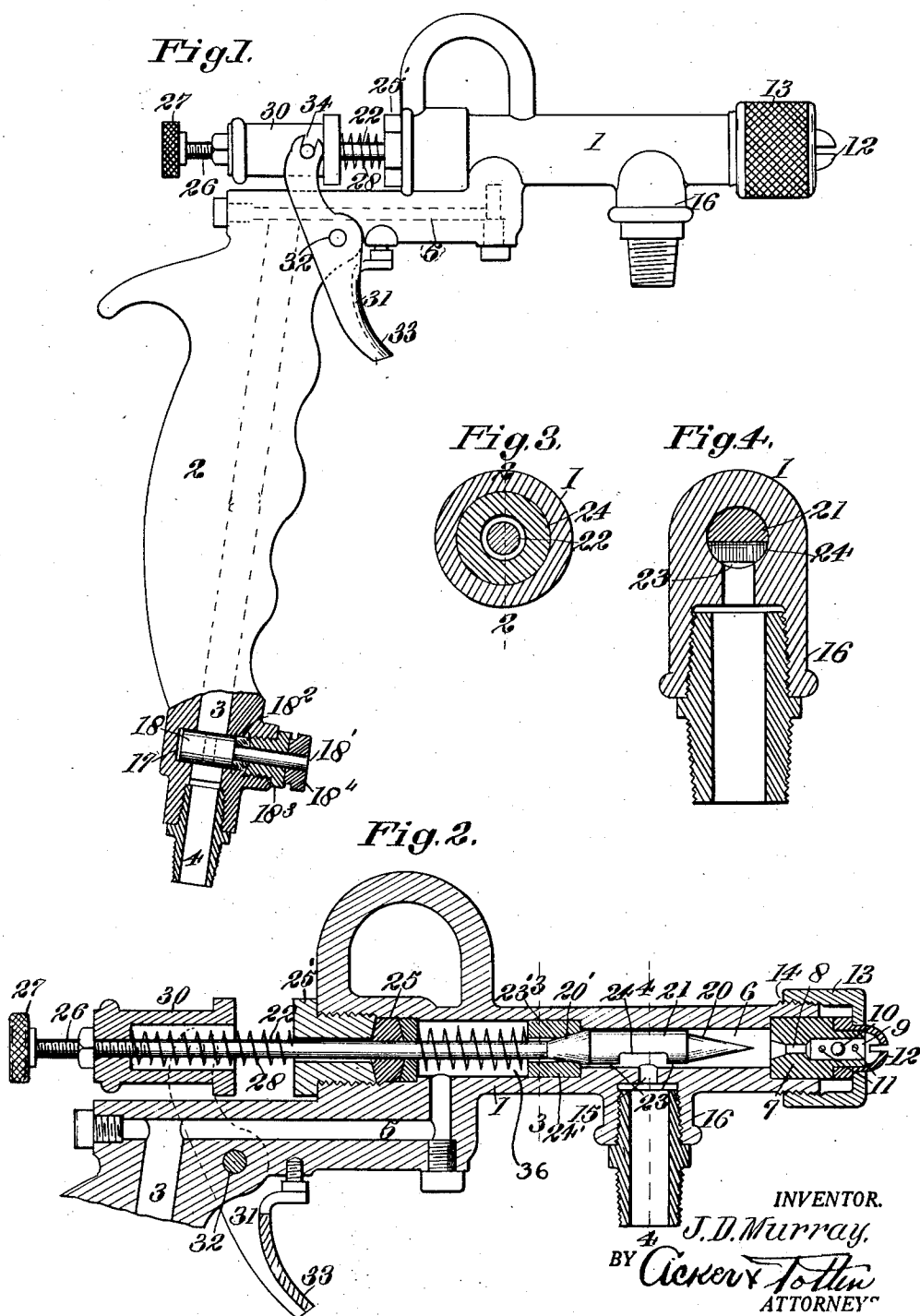
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J. D. MURRAY

PAINT GUN

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UNITED STATES PATENT OFFICE.

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PAINT GUN.

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To all whom it may concern:

Be it known that I, JOHN D. MURRAY, citizen of the United States, residing at the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Paint Guns, of which the following is a specification.

This invention relates to a spray gun designed primarily for the application of paint or other mixtures by mechanical means.

The invention has for its principal objects:—To provide a body for receiving the material to be applied and having a discharge opening which is controlled by a normally unseated needle valve, and which is adapted to be seated by the application of pressure on a controlling trigger associated therewith; to provide a needle valve structure controlling a discharge orifice, which valve is capable of lineal movement and axial rotation, its lineal movement controlling the discharge of the material from the orifice, and its axial rotation regulating the liquid volume for mixing with the air; to provide a structure which is normally maintained unseated by spring pressure and seated by manual pressure, and the position of which is adapted to be varied independently of the operation of the manually depressing means, and without varying the tension of the spring pressure.

The invention consists primarily in a portable body formed with a mixing chamber, having an inlet and a discharge orifice the same containing a controlling valve, the axial rotation of which is adapted to vary the fluid volume admitted into the chamber and the lineal movement of which is adapted to control the material discharged through the discharge orifice, there being provided a suitable hand-grip construction and a trigger for manual operation to lineally move the valve, there being also provided a means for varying the lineal position of the valve in the chamber without resorting to its movement by the operation of the trigger, and a separate valve for regulating the air volume admitted into the mixing chamber. The invention also consists in providing a means for closing the communication between the air supply and mixing chamber when pressure on the trigger is released.

With the above mentioned and other objects in view, the invention consists in the

novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and set forth in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more fully comprehend the invention, reference is directed to the accompanying drawings, wherein:—

Fig. 1 is a view in side elevation partly in section of the preferred embodiment of my invention.

Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 3.

Fig. 3 is a sectional view on line 3—3 of Fig. 2, and

Fig. 4 is a cross sectional view through the largest diameter of the needle valve taken on line 4—4 of Fig. 2.

Referring more particularly to the several views of the drawings wherein like characters of reference designate corresponding parts, 1 indicates a barrel or body of a portable spraying apparatus commonly referred to as the gun type, and the same has detachably secured thereto and extending downwardly from one end thereof a hand-grip portion or stock 2. The hand-grip is tubular in form affording a channel 3, the inlet end of which is connected by a suitable coupling 4 for the supply of fluid preferably air under pressure. The upper end of the channel 3 connects through a bore 5 in the barrel or body 1 with one end of a mixing chamber 6, said chamber being open at one end and said upper end carrying a discharge tip 7 formed with an outlet orifice 8 which terminates in an atomizing chamber 9. In the chamber is loosely mounted a ball 10 loosely confined between the stop pins 11 disposed transversely of the atomizing chamber. Over the discharge end of the atomizing chamber, when it is desired to apply a flat stream, is adapted to be positioned a transversely slotted tip 12, commonly known as the gas tip type, and said tip and member 7 are removably retained in position at the open end of the chamber 6 by a collar 13 threadedly connected as at 14 with the discharge end of the barrel or body 1. Intermediate the point of connection of the bore 5 with the chamber and the

outlet end of said mixing chamber, I introduce into the mixing chamber a bore 15 formed within a lateral extension 16 depending from the barrel or body 1 and said bore connects with the supply or paint or other material to be applied and intermixed with the air. To contract the air volume in the channel 3, I rotatably mount in a recess 17 a chambered air valve 18, the stem 18' of which extends through a gland 18² and stuffing nut 18³ and mounts on its end a hand knob 18⁴. Within the mixing chamber 6 there is mounted with a snug fit a suitable valve consisting of the body 21 terminating in a needle end 20, and a conical valve 20' from which extends a stem 22, the body being longitudinally grooved as at 23, and said needle end is disposed in alignment with the orifice 8. The body 21 overlies the point of intersection of the bore 15 and the chamber 6 and its exterior is transversely cut away as at 24. The stem 22 extends rearwardly from the body 1 through a member 24' having a tapered seat 23' with which valve 20' co-operates and also through a packing gland 25 held in position by a stuffing nut 25'. At a point exteriorly of said stuffing nut the stem is provided with a threaded portion 26 and at its extreme rear end carries a knurled head 27. This valve is normally maintained unseated by the action of a coiled spring 28 abutting at one end against the stuffing nut 25' of the packing, and at its opposite end abutting against the wall of a collar 30 threaded to the portion 26 of the stem. To longitudinally move the valve against the action of the spring 28 to closed position, I provide a bifurcated lever construction 31 fulcrumed at 32 to the rear end of the body or barrel and the forward end of the lever construction is fashioned to provide a trigger 33 disposed in a convenient position in advance of and near the upper end of the hand-grip portion 2. The opposite end of the lever construction is connected through a sliding fulcrum joint 34 with opposite sides of the collar 30.

The spring 28 normally maintains the needle valve 20 unseated and a manual depression of the trigger 33 will cause the forward movement of the needle valve to close the discharge orifice 8. The valve, it will be observed, is also capable of axial rotation within the bore, and its axial position controls the paint or fluid volume admitted into the chamber 6 through the bore 15, as it will be apparent that when the cutaway portion 24 fully registers with the discharge end of the bore 15, a full paint volume is admitted into the chamber, but that on axial rotation said body 21 serves as a cut-off valve to instantly control the admission of paint into the chamber through the bore 15. It will also be apparent that

the maximum opening of the needle valve 20 relative to the discharge orifice 8 may be regulated by the axial rotation of the valve stem 22, and that this is accomplished without varying the tension on the spring 28, as the valve stem is adjusted within the collar 30.

On the full retraction of the valve due to the action of the spring 28 after the release of pressure from the trigger the valve 20' engages the seat 23' and precludes the flow of paint rearwardly from the chamber 6. The member 24' snugly fits the walls of enlarged chamber 36 and its bore is of a diameter slightly greater than that of the stem 22 to afford an air passage into the mixing chamber 6.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent of the United States is:—

1. A spray gun including a body provided with a mixing chamber having a discharge orifice, a nozzle thereover, said body provided with independent air and liquid inlets communicating with the mixing chamber, a valve within the mixing chamber and capable of movement in one direction for controlling the mixture volume discharging from the nozzle, and of movement in another direction for regulating the liquid volume admitted into the mixing chamber.

2. A spray gun including a body provided with a mixing chamber having a discharge orifice, a nozzle thereover, said body provided with independent air and liquid inlets communicating with the mixing chamber, and a single valve adapted for longitudinal and axial movement to control the mixture proportion discharging from the nozzle, and the liquid volume admitted into said mixing chamber.

3. A spray gun including a body provided with a mixing chamber having a discharge orifice, a nozzle thereover, said body provided with independent air and liquid inlets communicating with the mixing chamber, and a single valve capable of axial and longitudinal movement within the chamber, one movement controlling the proportion of mixture and the other controlling the volume discharging from the nozzle.

4. A spray gun including a body provided with a mixing chamber having a discharge orifice, a nozzle thereover, said body provided with independent air and liquid inlets communicating with the chamber, a needle valve reciprocally mounted within the chamber for controlling the mixture discharge through the nozzle, a hand-grip for the body, means for normally maintaining said valve unseated, said valve adapted for axial rotation to control the mixture proportion and a trigger adapted for operation to oppose said unseating means to close the valve.

5. A spray gun including a body provided with a mixing chamber having a discharge orifice, a nozzle thereover, said body provided with independent air and liquid inlets communicating with the chamber, a needle valve reciprocally mounted within the chamber for controlling the mixture discharge through the nozzle, and capable of axial rotation to control the mixture proportion, a hand-grip for the nozzle, a spring for normally maintaining the valve unseated, a trigger for operation to oppose said spring to seat the valve, and means for varying the operative movement of said valve without varying the tension of said spring.

6. A spray gun including a body having a mixing chamber therein terminating in a discharge opening, a pair of inlet channels opening thereinto, a needle valve mounted for reciprocation and axial rotation within said chamber for controlling the discharge opening and for varying the effective area of the discharge end of one of said inlet channels.

7. A spray gun including a body provided with a mixing chamber therein terminating in a discharge orifice, an inlet channel opening into the chamber, a needle valve mounted for axial rotation and reciprocation within said chamber, the reciprocation of said valve controlling the discharge orifice and its axial rotation varying the effective area of the discharge end of said inlet channel.

8. A spray gun including a body provided with a mixing chamber therein terminating in a discharge orifice, an inlet channel opening into the chamber, a longitudinally grooved needle valve slidably fitting within the chamber, means for moving the valve

longitudinally to control the discharge opening, said valve provided with a transverse depression adapted on the axial rotation of the valve for registering with the end of the discharge channel to vary the effective area of its discharge end, a spring for normally maintaining said needle valve unseated, a collar threaded on the stem of the valve and against which the spring bears, a trigger for operation to close the valve, and a fulcrum connection between the trigger body and collar.

9. A spray gun including a handled body provided with a chamber terminating in an outlet orifice, a channel communicating with the chamber for supplying fluid thereto, a normally unseated needle valve for controlling the discharge of fluid through the outlet orifice, a spring for normally maintaining said valve unseated, a collar threadably connected with the valve stem and against which the spring bears, a trigger for operation to close said valve against the action of the spring, and a fulcrum connection between the trigger and collar.

10. A spray gun including a handled body provided with a chamber terminating in an outlet orifice, a channel communicating with the chamber for supplying fluid thereto, a needle valve for controlling the discharge fluid through the outlet orifice, a spring for normally maintaining the valve seated and a trigger associated with the valve for operation to close the same against the action of the spring, said trigger being disposed in advance of the body handle.

In testimony whereof I have signed my name to this specification.

JOHN D. MURRAY.