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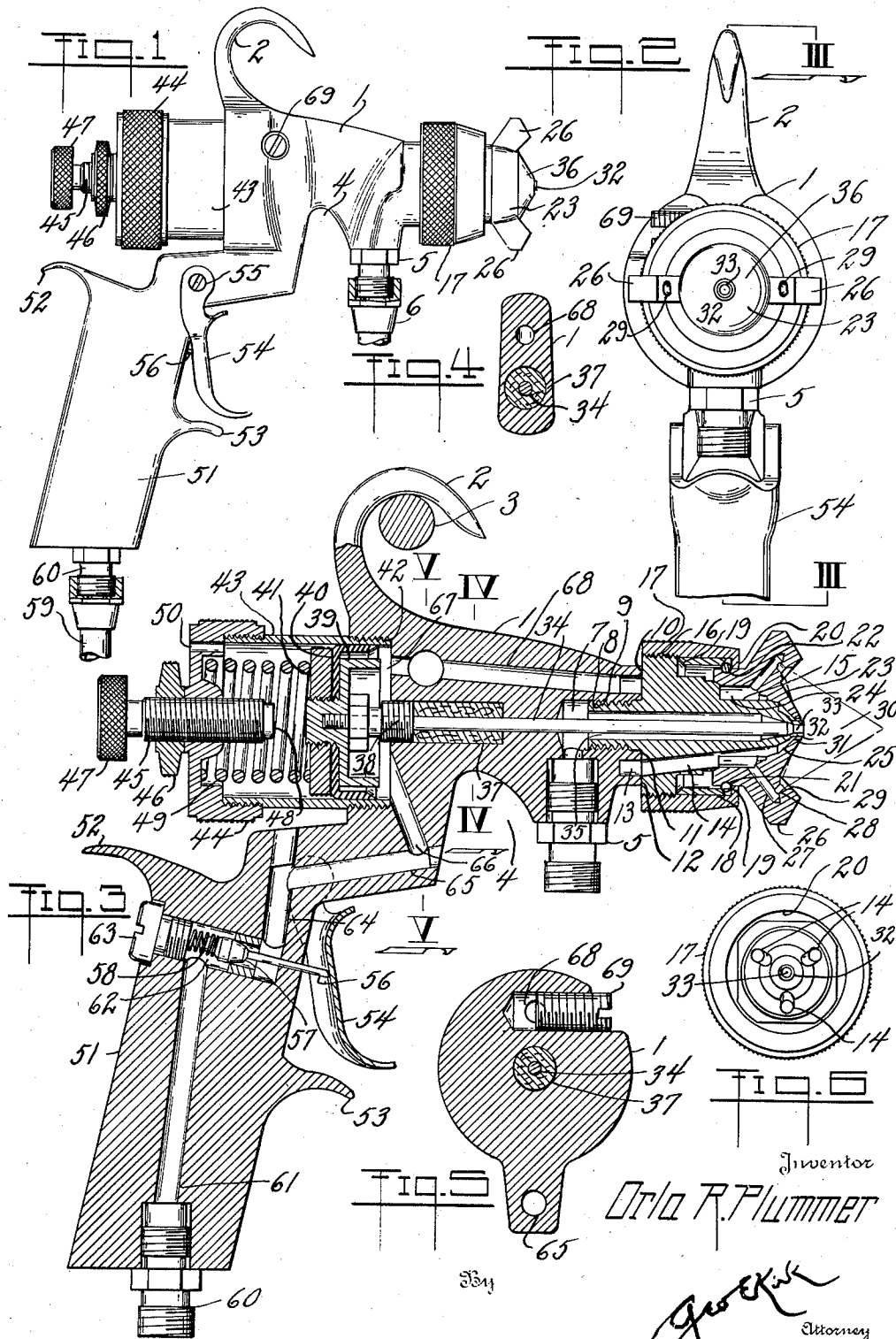
O. R. PLUMMER

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SPRAY DEVICE

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SPRAY DEVICE

Orla R. Plummer, Napoleon, Ohio

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2 Claims. (Cl. 299—140.1)

This invention relates to controlled delivery of a stream of material, whether gases, liquid, molten, or fine particles.

This invention has utility especially in so-called spray gun equipment in cleaning, drying, moistening, applying pigment, and similar purposes.

Referring to the drawings:

Fig. 1 is a side elevation of an embodiment of the invention in a hand tool of pistol form for spray gun use;

Fig. 2 is a view from the right of Fig. 1, parts being broken away;

Fig. 3 is a section on the line III—III, Fig. 2, showing the working parts and passages in this pistol or spray gun tool;

Fig. 4 is a section on the line IV—IV, Fig. 3, showing the relation of the air supply passage and the packed stem or needle valve;

Fig. 5 is a section on the line V—V, Fig. 3, showing the flow controlling adjustments of the motive fluid supply;

Fig. 6 is a view of the nozzle and of the gun with the double horned tip removed;

Fig. 7 is a side elevation of an embodiment of the tool, independent of the pistol grip handle, being thereby readily adapted for mounting in a set-up wherein the work is shifted as to the tool instead of the tool used to deliver to the work;

Fig. 8 is a fragmentary view, with parts broken away, from the left of Fig. 7, showing features of the adjustment of the barrel;

Fig. 9 is a section on the line IX—IX, Fig. 8, showing the passages in the body for the motive fluid and supplemental material to be delivered; and

Fig. 10 is a fragmentary view of a battery or gang set-up of these tools wherein the material may be shifted relatively thereto, parts being broken away.

Body 1 is herein shown with hook 2 adapted to hang the tool on a support 3, as when the device may be not in use (Fig. 3). This body 1 has notch 4 on the lower side providing clearance laterally of fitting 5, to which may be connected flexible duct 6 as a source for the material to flow into, or be drawn into, chamber 7 of the body 1. This chamber 7 has internally threaded portion 8 in which is fitting externally threaded portion 9 of head having main portion 10 abutting against circular end seats 11, 12, of the body 1 concentric with the chamber 7 in providing annular chamber 13 in communication by ways 14 therefrom to a reduced portion 15. The portion 10 has externally threaded region 16 to mount sleeve 17 in

which is mounted circular wedge 18 having beveled ends 19. This sleeve 17 has inwardly extending flange 20 remote from the threaded portion 16 forming a stop for this circular wedge 18 with slight clearance, in which may be located split ring 21, effective as the sleeve 17 cooperates with the head to thrust the rigid wedge 18 into ring collapsing position, whereby this split ring 21 may form a clutch as entering groove 22 in the nozzle member 23.

These ways or passages 14 in the head 10, which has the sleeve 17 and nozzle member 23 assembled therewith, thereby provide annular chambers 24, 25, for motive fluid supply from the chamber 13. This nozzle member has diametrically located projections or horns 26 into which extend ways 27 having at an angle thereto inwardly directed ways 28 with terminal flares 29. In practice, these ways 28 having the spread termini 29 are directed to have converging point 30 in advance of tip 31 of the nozzle head, which provides slight clearance about terminus 32 of the head 10. In this terminus 32 is end 33 as a needle valve or closure for this head from stem 34 extending centrally through chamber or bore 35 from the chamber 7. The direction of these control motive fluid pressure supply jets from the flare ways 29 is such that the spread thereof effects an automatic cleaning of taper portion 36 of the nozzle member. Accordingly, in practice this tool is self-cleaning in the motive fluid operation with such motive fluid as directed upon the material supply or pigment to control such for confined or spread operation, whereby the tool may be used for fine lining, striping, or general spread purposes, according to adjustment.

This stem 34 in the body 1 has compressible packing 37 held therein by threaded nut 38. The stem 34 in passing through this nut engages piston 39 having packing 40 held thereon by threaded disk 41. This body 1 centrally of this piston has threaded portion 42 for cylinder 43 about the piston and provided with piston head 44, threaded thereon. This piston head 44 has centrally threaded therein stop 45 upon which is lock nut 46. Knurled handle 47 may be operated to adjust this stop for its terminus 48 to abut the piston and thereby limit the retracting extent of this needle valve of the stem 34 as to the opening at the end 32. Helical compression spring 49 in the cylinder 43 normally urges this stem 34 into closure position. The retracting of this stem does not effect compression in this cylinder 43 due to vent opening 50.

This body 1 is herein shown having grip 51

of pistol type, wherein there is shield overhang 52 and finger separation projection 53. Above this latter projection 53 (Fig. 1) is trigger 54 having pivot mounting 55. This trigger 54 (Fig. 3) as swung on the pivot 55 toward the grip 51 acts upon stem 56 to unseat valve 57 against normal closing thereof effected by spring 58.

This tool, in addition to the material supply, whether duct or chamber, as connected to the fitting 5, may have duct 59 to fitting 60, from which extends way 61 in the grip to valve chamber 62 normally closed by plug 63. From this valve chamber 62, as the valve 57 is unseated by the trigger 54, motive fluid, as compressed air, may flow by passages 64, 65, 66, into chamber 67 on the side of the piston 39 toward the body 1. From this chamber 67 there is passage 68 in the body 1 to the annular chamber 13. In this passage 68 there is adjustable plug 69 (Fig. 5) which may regulate the relative flow volume to the chamber 13 for functioning as a motive fluid in the jet delivery of this device.

The knurled adjustment 47 may so regulate the stop 48 that the stem 34 does not move into open position relatively to the end 32. Accordingly, pulling of the trigger 54 will then function for the determined flow as by the control plug 69 in delivering this jetting motive fluid from the nozzle or tip. This may be alone, say for cleaning purposes, or a particular character of motive fluid which might be for disinfecting or other purpose. In combining the delivery, it is only necessary that the knurled adjustment 47 be controlled to the position for locating the stop 48 as desired, which as to clearance from the piston may then be locked by the lock nut 46. It thus follows that as the trigger 54 is pulled to open the motive fluid supply, this motive fluid will automatically open the end 32 by withdrawing the stem 34. This means that at no time may there be any advance accumulation of pigment or other solid material on the tool, but that the motive fluid is primarily in service and is effective to the discontinuance of such service. The consistency of the material to be delivered, and the induction action, if gravity be not effective, are factors used in control by the auxiliary adjustment plug 69. However, in normal operation it is only necessary that the tool be directed and the trigger be controlled in the efficient functioning hereunder. Inasmuch as the diametrical location of the projections for the spray may determine the direction of the swath as to width, such may be in the plane of the grip or at any angle thereto, even to crosswise. To effect such, it is only necessary to shift the externally knurled sleeve 17 to release the split ring 21 and then angularly locate the pair of diametrically disposed jet delivery portions as desired, with the sleeve 17 then re-set to hold in such adjusted position.

This tool as described is such as may be handled by the operator in directing toward the work

and shifted along or upon different articles of work. In some instances of use there may be a shifting of the work relatively to the tool, and even grouping of tools, whether for similar or dissimilar material delivery upon the work. To such end, in lieu of the hook 2 which may be used to hang up the tool as out of use, there may be eye 70 (Fig. 7) on support rod 71 (Fig. 10) as a fixed anchorage. In lieu of the trigger 54, valve 72 may cause the pigment or material to be sprayed for the respective tools. The material supply thereto may be controlled by main valve 73 in line 73' having the branches 6, in the event the supply be of similar material instead of different material to the guns or various tools. From the valve 72 the motive fluid has main line 74 to branch valve 75. Further supplemental flow adjustments may be made for the motive fluid by adjusting the plug 69 in each tool or gun and by adjusting each knurled head 47 for the stop 48. There is accordingly possible hereunder accurate adjustment for the respective tools. The self-cleaning operations of the tools insures the maintenance of the character of operation for which initially set so long as the material supplied be uniform.

The countersunk feature 29 for the air ports 28 is effective to protect these minute or small ports from jamming in use, and thus avoids any hazard to this tool from rough usage in handling operations.

What is claimed and it is desired to secure by United States Letters Patent is:

1. A nozzle member provided with a tip having a discharge way, a head for the member having a way, a sleeve mounted on the head and having a flange and clearance as to the member into which clearance the member may be inserted, a split ring about the member in the clearance, and a wedge coacting between the head and ring as acted upon by the sleeve flange to have the effective diameter of the ring changed by sleeve rotation relatively to the head for coaction with the member in one direction for release as effecting swivel mounting of the member as to the head and in the other direction in effecting clamping action between the split ring and wedge to hold the member in the desired set position therefor as to the head.

2. A nozzle tip having a discharge way and a portion having a groove, a head, a sleeve mounted on the head having a flange and clearance relatively to the groove, a ring in the sleeve opposing said groove, and a wedge concentric with the sleeve and extending from the head, whereby upon rotation of the sleeve relatively to the head the ring as held by the sleeve flange may be clamped into engagement with the groove, in effecting holding after swivel adjustment in the mounting of the tip as to the head, for facility in angular adjustment of the tip as to the head.

ORLA R. PLUMMER.