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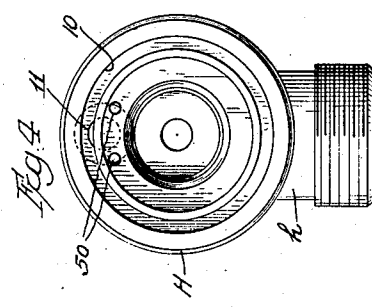
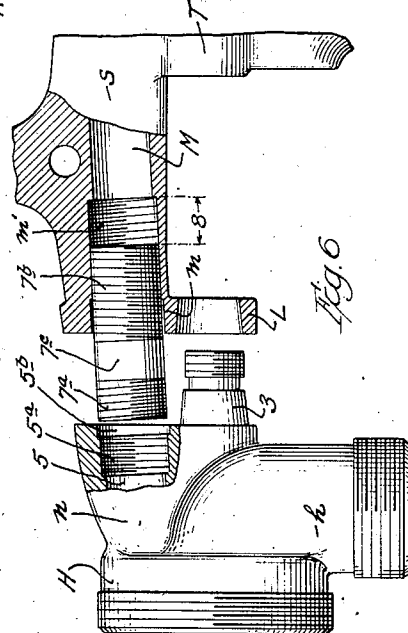
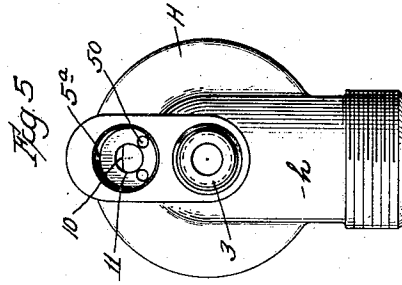
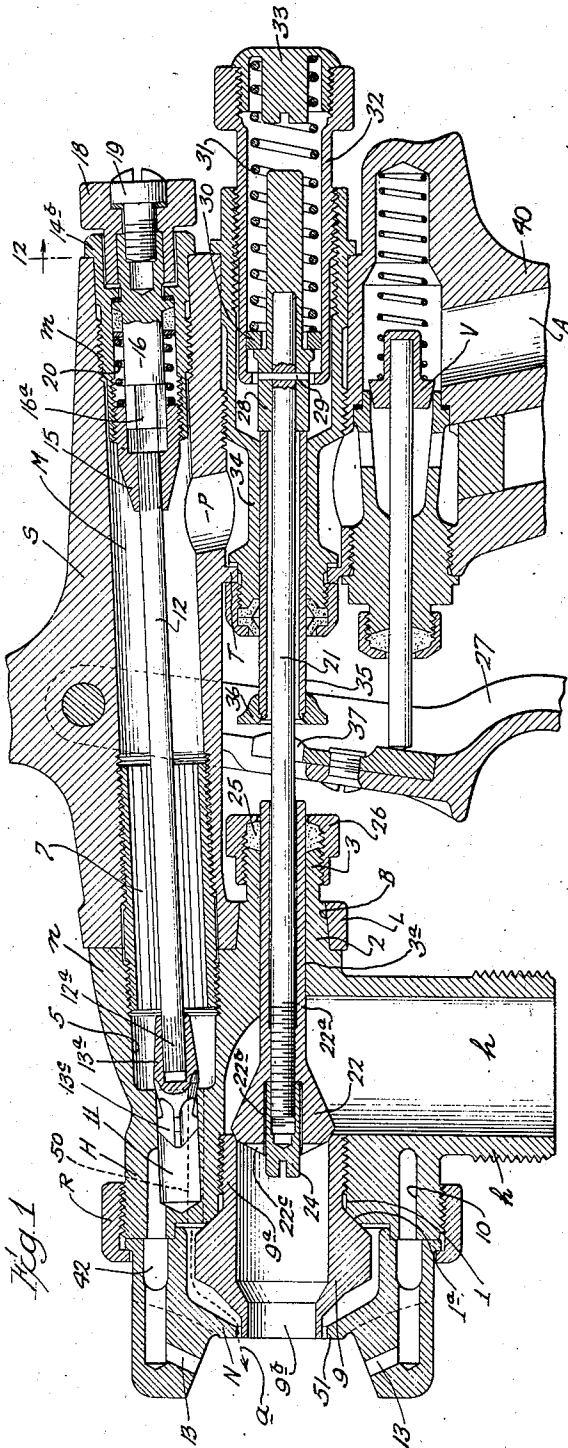
S. BRAMSEN ET AL

2,107,726

SPRAY GUN

Filed Oct. 2, 1935

2 Sheets-Sheet 1



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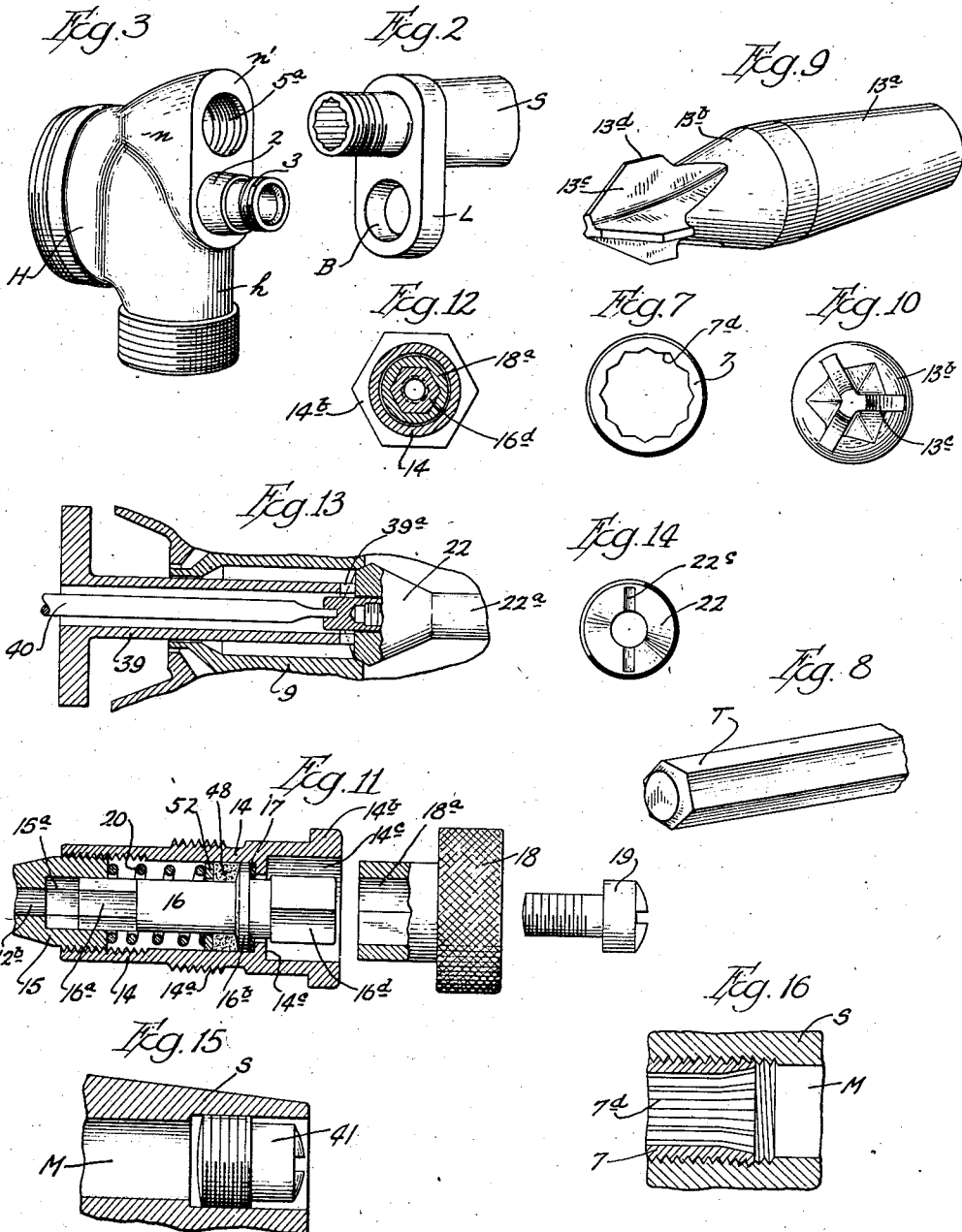
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## UNITED STATES PATENT OFFICE

2,107,726

## SPRAY GUN

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Application October 2, 1935, Serial No. 43,244

15 Claims. (Cl. 299—140.1)

Our invention relates to novel structural features of spray guns, its general objects being these:

(1) Providing a novel and easily manufactured two-part gun body which will permit the forward part of this body to be of highly durable and accurately machinable material while allowing the main body part to be of lighter and cheaper material, and which will allow the forward body part to be clamped directly and firmly flatwise against the main body part.

(2) Providing a two-part assembly for this purpose which will permit a relatively small-diametered stock part of the gun body to have a main air passage of large effective area even when a side air control valve extends within this passage.

(3) Providing a two-part body assembly which will permit the use of straight, instead of tapering, threaded connections between the connecting member and the two body parts so as to insure a tightly sealed connection between these parts even with such looseness or inexact fitting of the threads as is encountered in the commercial manufacturing of spray guns.

(4) Providing a body part connecting member which can readily be rotated (and, if desired, latched in position) before the side-air control provisions are attached to the main body part.

(5) Providing a two-part body assembly in which the forward (harder metal) part will afford a seat for a supplemental air valve controlling the supply of air to the side ports of an air nozzle attached to this frontal body part.

(6) Providing the said side-air control valve with a head slidably guided by the forward body part, and constructing this valve head so as to permit an ample flow of air past the guided head portion when the valve is retracted from its seat.

(7) Providing straight and easily drilled ports within the forward body part through which air can flow into the usual central port of the air nozzle of the gun.

(8) Providing effective means, associated with the adjusting and valve-closing provisions for the said supplemental air valve, for preventing a leakage of air when the said valve is being adjusted in position by a digital manipulation tending to tilt the axis of the valve.

(9) Providing an adjusting provision for the supplemental air control valve which will either permit the valve adjustment to be made digitally, or will require a special key for that purpose.

Illustrative of the manner in which we accom-

plish the above recited, as well as further objects,

Fig. 1 is an enlarged central longitudinal and vertical section through a spray gun embodying our invention, with the usual suspension hook, the major portion of the handle and the lower portion of the trigger broken away.

Fig. 2 is a reduced frontal perspective view of the forward portion of the main body part of the gun.

Fig. 3 is a similarly reduced rear perspective view of the frontal body part.

Figs. 4 and 5 are respectively front and rear elevations of the frontal body part, drawn on a scale intermediate that of Figs. 1 and 3.

Fig. 6 is a side elevation of the frontal body part and the forward portion of the main body part, with a portion of each in central, vertical and longitudinal section, including the connecting nipple as the latter is positioned prior to its rotation for fastening the said body parts to each other.

Fig. 7 is an enlarged rear end view of the connecting nipple which attaches the frontal body part to the main body part.

Fig. 8 is a perspective view of the forward portion of a tool suitable for use in rotating the said nipple.

Fig. 9 is an enlarged perspective view of the head of the supplemental air valve, and Fig. 10 is a similarly enlarged front elevation of this valve head.

Fig. 11 is an enlarged central and longitudinal section through the rearward guide and adjusting provisions associated with the supplemental air valve which has the head of Fig. 9, with the digitally operable knurled member detached and partly shown in elevation, and also showing the screw whereby this member can be attached for digital use.

Fig. 12 is an enlarged section taken along the line 12—12 of Fig. 1.

Fig. 13 is a vertical section through the material valve of the gun and parts adjacent thereto, showing the conjoint use of simple tools for adjusting the effective length of the so-called needle valve from the front of the gun.

Fig. 14 is a front elevation of the head of this valve.

Fig. 15 is a fragmentary section of the upper rear end corner of the gun body, showing the substitution of a closure plug for the detachable spray-shape control parts of Fig. 11 when the same gun is to be used without a flattening of the spray.

Fig. 16 is an enlarged section of adjacent por-

tions of the rear end of the body part connecting nipple and of the main gun body part.

In Fig. 1, the main body part of our gun includes a normally horizontal barrel or stock S from the rearward portion of which the usual handle 40 depends, and the handle has the usual air supply passage A for supplying air past a main air valve V and through a port P to a longitudinal main air passage M in the stock.

For this main passage, we initially provide a corresponding bore extending entirely through the stock. We also provide the forward end of the stock S with a depending lug L which has a longitudinal and rearwardly tapering bore B (Fig. 2), the axis of which lug bore diverges rearwardly downwards at a minor acute angle from the axis of the main air passage M in the stock. This lug has its frontal face in a common plane, at right angles to the axis of the lug bore and hence somewhat oblique to the axis of the main air passage, with the front end of the stock.

The separately manufactured forward part H of the gun body, shown separately in Fig. 3, is of the general shape of a hollow elbow, which elbow has an upright arm *h* threaded at its lower end for coupling a material supply hose to it, and has its other arm extending forwardly and enlarged at its forward end into a head against which an air nozzle N can be clamped by an attaching ring R. This forward body part H also has an upwardly directed nub *n* overlying the bore of the upright arm *h* of the elbow. This nub has its rear face *n*<sup>1</sup> in a plane at right angles to the axis of the bore *l* of the forward arm of the said elbow-shaped part, and the nub is shaped so that its said planar rear face extends downwardly beyond the said bore axis and around the forward end of the hereafter recited tapering boss 2.

In addition, the forward part of our gun body includes a tubular boss 2 extending rearwardly from the said rear face and coaxial with the bore *l* of the forward (and upper) arm of the said elbow. This tubular shank is of greater length than the thickness of the lug L on the stock of the main body part and has its forward portion tapering rearwardly and desirably formed for fitting into the tapering bore B of the said stock lug, in addition to having a more rearward and smaller diametered extension 3.

Extending forwardly into the riser nub *n* of the forward body part is a bore 5 which aligns axially with the main air passage M in the stock S of the main body part when the said forward body part has its said rear face *n*<sup>1</sup> bearing flatwise against the end face of both the said stock and the lug L which depends from that stock, and when the tapering boss 2 of the forward body part is socketed in the bore B of the said lug.

To clamp the head part to the body part when these separately manufactured portions of our gun body are thus positioned, we employ a simple hard metal nipple (generally designated as 7) which has its two end portions reversely threaded, desirably with a straight right-hand thread 7a (Fig. 6) on a relatively short front portion of the nipple and with a left-hand straight thread 7b on a much longer rear portion. This nipple preferably also has an unthreaded portion 7c disposed between its said reversely threaded portions, which cylindrical portion 7c can readily be gripped for initially screwing the nipple part way into the gun stock

before beginning to attach the head part of the body to the said stock. In addition, we preferably broach at least a considerable rearward part of the bore of the nipple to form longitudinal grooves in that bore—as for example by forming the twelve uniformly spaced grooves 7d shown in the enlarged end view of Fig. 7, so that a rotating tool T of hexagonal section can be slidably inserted in either of two rotational positions into (or even through) the polygonal bore of the nipple.

To cooperate with the said doubly threaded nipple, we provide the bore 5 in the forward body part with a thread 5a (Fig. 6) fitting the forward thread 7a on the nipple, and preferably form a relatively shorter rear end portion 5b of the said bore of larger diameter.

In the stock of the main body part we form the forward portion *m* of the main air passage M so as to present a cylindrical extreme forward portion, and thread the part *m*<sup>1</sup> of this passage behind the said cylindrical portion to match the rearward threaded part 7b of the nipple. In addition, we make the joint depth of the said cylindrical bore portions 5b and *m* somewhat greater than the length of the unthreaded part 7c of the nipple.

In assembling the two body parts, the nipple is first screwed into the stock bore of the main body to such an extent—as shown for example in Fig. 6—that the spacing 8 between the rear end of the nipple and the rear end of the thread *m*<sup>1</sup> in the said bore is greater than the length of the thread 5a in the forward part of the body. When this head part is moved slightly farther rearward toward the main body part than shown in Fig. 6, the cylindrical rear end 5b of the upper bore in the said forward body part will readily permit the forward end portion of the nipple to slide into it until the extreme forward end of the nipple reaches the rear end of the threaded bore portion 5b.

When a suitable nipple-rotating tool, as for example that shown in Fig. 8, is then inserted forwardly into the main air passage M of the stock S and is slid into gripping relation to the multi-grooved bore of the nipple, a rotation of this tool in the same direction as the threading of the forward end part of the nipple will screw the nipple into the head part thread 5a; and, owing to the relatively reverse threading 6b on the rear end part of the nipple the same rotation of the nipple will also back the nipple into the stock. Consequently, with the lengths of the recited bore and nipple parts suitably proportioned, anyone can speedily rotate this nipple until the rear face of the head part is firmly clamped against the co-planar faces of the front end of the stock S and the body lug L.

During this attaching, the obliquity of the opposed faces of the two body parts to the axis of the nipple will cause the forward body part to move somewhat upward. But this does not prevent the tapering boss 2 on the head part from freely entering the bore B of the depending lug on the stock when the said lug bore has its axis suitably spaced from the axis of the passage into which the nipple is being retracted, and when the cone angle of the taper of the lug bore is not less than twice the angle at which the axis of the main air passage M diverges rearwardly from the axis of the said lug bore. Indeed, with the parts accurately proportioned, we can assemble our two-part gun body when the said cone angles of both the lug bore and the boss

2 are each exactly twice the said axes-diversion angle, so that we obtain an exceedingly rigid assembling of the two body parts.

Moreover, after the two body parts have thus been assembled, the bore of the rear end of the nipple can be expanded so as to jam its extreme rearward thread portions into the metal of stock, as shown in Fig. 16, thereby preventing the ordinary user of such a spray gun from separating the two body parts. On the other hand, if the nipple is not thus forcibly anchored to the main body part, any good mechanic can readily be instructed how to unscrew the nipple for separating these body parts and attaching a different forward body part—as for example one designed for carrying material and air nozzles of other sizes or constructions.

The horizontal bore portion 1 of the elbow-like material passage in the forward body part is threaded for receiving the shank 9a of a material nozzle 9, here shown as having the discharge end 9b of its bore of a large diameter suitable for sluggish materials (such as asphalt paints) and having a tapering portion engaging a forwardly flaring seat 1a at the forward end of the said bore portion 1 of the material passage.

When the issuing material is to be converted into a flattened spray, the head portion H of the forward body part is provided with a forwardly open annular channel 10 to which air is supplied, from the air bore 5 into which the nipple 7 opens, through a smaller diametered bore 11 coaxial with the air passage M in the stock of the main body part. This permits us to have the valve controlling the side air for the air nozzle N—namely that supplied by the channel 10 to an opposed rearwardly opening channel 42 in the air nozzle, and from the latter to the opposed side air ports 13—seat in the hard metal of the forward body part instead of having a seat for it in the soft metal which lightness demands for the main body part.

Such a side-air control valve desirably has its adjusting provisions at the rear end of the stock and it has heretofore been customary to use the forward tip of a valve stem as its seating portion, as also to support this valve stem only by guide means associated with its rear end portion. Since such a stem should be of relatively small diameter in proportion to that of the material passage M in which it extends, so as not to throttle the flow of air through that passage, the usually provided small-diametered seat for such a stem tip has much too small an area to stand much wear.

Moreover, when such a valve is adjusted by digitally rotating a knob associated with the rear end of the stem, this knob is apt to be pressed to one side during its rotation, thereby tilting the valve stem sufficiently to throw its forward end considerably out of alinement with the axis of the seat for that end. Consequently, we have found that the air sometimes will whirl while flowing past this valve tip, and with the commonly used high pressure of such air this whirling may rotate the valve so as to nullify the adjustment.

To overcome these difficulties, we employ a control valve having a diametrically enlarged head attached to the usual slender stem, thereby allowing the bore 11 in the forward body part to be of much larger diameter than the said stem and enabling us to provide a valve seat of greatly enlarged area. In addition, we provide the

valve head with a portion, forward of its seating portion, which is slidably guided by the said bore 11 so that the valve stem is continually supported from both ends during its normal range of movement.

Thus Fig. 1 shows the slender valve stem 12 as having a forward fluted portion 12a tightly socketed in an axial bore extending forward into the rearward portion 13a of a valve head which is shown on an enlarged scale in Fig. 9. This valve head has a forwardly tapering frusto-conical portion 13b adapted to seat in the flaring rear end of the bore 5 in the forward body part, and the more forward part of the valve head has a plurality of radial guide webs 13c which present their radially outer edges 13d in a common cylindrical surface corresponding to the said bore 5. These webs are freely spaced from each other to permit air to flow between them from the space surrounding the forward portion of the said tapering part 13b, when the valve is retracted off its said seat.

To move the side-air control valve longitudinally for its adjustment, we employ the control unit shown in Fig. 11, which can be attached to and detached from the main part of our gun body as unit. This includes a sleeve 14 having a part 14a intermediate its length exteriorly threaded to fit a corresponding threaded portion of the rearward part of the air passage bore M, the sleeve also having an enlarged head 14b engaging the rear end of the stock and having an interior annular flange 14c intermediate of the ends of the sleeve.

Threaded into the forward end of the bore of the sleeve 14 is a tubular rear valve head 15 which has the forward portion of its bore contracted in diameter and has the rear end portion of the valve stem 12 firmly socketed in this forward bore portion, and which rear valve head has its larger diametered rear bore portion 15a of a uniform polygonal section. Extending slidably forward into this rear bore portion is the correspondingly sectioned forward end portion 16a of a plunger 16 which presents a head 16b in front of the interior annular flange 14c of the sleeve 14, and which plunger slidably fits a cylindrical portion of the bore of this sleeve.

This plunger 16 is continually urged rearwardly by a spring 20 interposed between the plunger head 16b and the rear valve head 15, the pressure of the said spring being transmitted through a washer 52 engaging the rear end of the spring and a packing 48 disposed between the said washer and the plunger head 16b.

If the spring pressed directly against the plunger head and a gasket behind this plunger head was the only packing associated with that head, we have found that any radial pressure exerted on the rear end of the plunger may tilt the plunger sufficiently off the axis of the valve sleeve 14 (if the threaded connection between that sleeve and the rear valve head 15 is not highly exact) to reduce the compression of the gasket portion at one side of the plunger stem, thereby permitting a leakage of air. But with two packing members respectively at opposite sides of the plunger head, a tilt in any plane diametric of the plunger and tending to reduce the gasket compression at one side of the plunger axis will cause the spring-pressed washer 21 to increase the compression of the packing 48 at the same side, so that our simple two-fold packing provision avoids the otherwise resulting air leakage.

For a digital control of the side air for the air nozzle of our spray gun we employ a cap-like member, which, as also shown in Fig. 11 has a polygonally sectioned shank 18a slidably fitting the rear end 16d of the plunger 16, and also has an enlarged and peripherally knurled rear end knob 18, this cap-like member being fastened to the plunger by a screw 19 threaded into the said plunger end 16d, as in Fig. 1.

Thus assembled, a digital rotation of the knob 18 will rotate the plunger, and the interfitting of the polygonal forward portion with the correspondingly sectioned part 15a of the rear valve head 15 will cause the rear valve head to rotate with it, so that the threaded connection of this valve head to the stationary sleeve 14 will cause the control valve to move forward or rearward according to the direction of the said rotation. Moreover, since this control valve is guided at both ends, any commercial lack of axial alignment between the just described plunger and the guide for the forward head of the control valve will be immaterial, as the slenderness and length of the valve stem 12 will readily allow this to flex accordingly.

In practice we have found that with our heretofore described simple nipple arrangement for fastening a separately formed forward body part to the stock of a main body part we can obtain a highly secure assembly with a connecting nipple having a bore nearly as large in diameter as the air passage M in the said stock, and with the rear end of the nipple still spaced considerably forward from the port P which admits air to the said passage. This use of a large bored nipple also allows ample air space around the valve stem 12 extending through it, so that the pressure loss of air flowing from the said port to the air inlet bore 5 of the forward body part can be quite small even in a generally small diametered stock.

So also, the forming of the guide bore 11 in the forward part of our gun body allows us to provide straight bores 50 leading to the front of this body part from the bore 5 behind the seat for the side-air control valve, through which bores air can flow (along the arrow line d in Fig. 1) to the central air port 51 of the air nozzle of our spray gun.

Moreover, if the spray gun is to be used by unskilled operators, the knobbed member 18 of Fig. 11 can readily be detached by merely removing the screw 19 and the supervisor can then carry this with him after he has made the desired adjustment, since the rear end 16d of the valve plunger cannot readily be rotated with an ordinarily accessible tool.

When our spray gun is to be used with heavy and sluggish materials (such as asphalt, cement paints, or tar roofing materials) we desirably control the flow of material through the gun by a material valve having a head portion adapted to seat at the rear end of the bore of that nozzle, as in Fig. 1. For this purpose we provide the multi-part valve shown in Fig. 1, comprising a tubular head member fastened adjustably and detachably to a rod-like valve stem 21.

This head member has both end portions of its longitudinal bore diametrically enlarged and has the forward portion of the valve stem threaded through the intermediate bore portion, so that the head member can be adjusted longitudinally on the said stem and then locked against rotation by a cap nut 24 which extends

into the forward bore portion 22b and bears against the bottom of that bore portion.

The major and rearward portion of this head member is an exteriorly cylindrical shank 22a which extends slidably through an axial bore 3a in the rearwardly extending boss 3 on the forward part of our gun body, while the head proper (22) is disposed continuously within the upright material inlet bore h<sup>1</sup>. A packing 25 clamped to the forward end of the said boss 3 by a cap 26 (which has an axial bore in its head) seals the said slidable stem part of the valve head member to the adjacent gun body part to prevent leakage of material around the said shank 22a, and the relatively large diameter of this shank (in proportion to that of the valve stem 21) enables us to obtain a much better guiding than if the said stem was directly guided by a bore in the boss 3 as heretofore proposed. The just described construction of the material-discharge controlling valve and the parts associated therewith has been more fully disclosed and claimed in our copending application #69,762, filed March 20, 1936 on a Material-discharge control valve for spray guns.

The valve stem 21 extends through a suitable aperture in the usual trigger 27 which actuates the main air valve V, and thereafter rearwardly into a presser head 28 to which the said valve stem is fastened by cross-pin 29. This presser head extends into a spring cylinder 32 and has a shoulder bearing rearwardly against a ring 30 slidable in the said cylinder, which ring is continuously pressed against the said shoulder by a spring 31 which bears rearwardly against a detachable rear cylinder head 33, after the manner more fully disclosed in our copending application #47,580, filed October 31, 1935.

Bearing rearwardly against the forward end of the presser head 28 and slidably guided by a forward tubular extension 34 of the said cylinder is a tube 35 having a considerably larger bore than the diameter of the valve stem 21, which tube has a head 36 fastened to its forward end, and disposed for engagement by nubs 37 on the trigger 27, as also more fully disclosed in our said copending application.

With the stem of the needle valve thus extending freely both through the tubular thrust sleeve 35 and through the major portion of the length of the shank 22a of the valve head, this stem is free to flex, so that we eliminate the heretofore often encountered binding or cramping of such a valve stem which occurs when this stem slides in bores fitting it.

To adjust the effective length of the valve stem 21, the user partly unscrews the cap nut 24 and then retracts the valve by rearward pressure on the trigger 27 sufficiently to open the valve somewhat, and grips the valve stem portion in front of the trigger to hold the latter from rotating. While thus gripping the valve stem, the user can rotate the valve head in either direction by a tool gripping that head, as per example by a knobbed tube 39 which has projecting fingers 39a at its tip (as in Fig. 13) for entering portions of a diametric slot 22c (Fig. 14) in the forward end of the valve head 22; and he can thereafter insert a screw-driver shank 40 through the bore of the said tube 39 (as in Fig. 13) to screw the locknut 24 down on its seat again.

With our gun thus constructed, a detaching of the air and material nozzles also permits the user to detach the entire head of the material valve from the front of the gun, without disassembling

any other parts of the gun, so that this head can readily be replaced.

In practice, we desirably make the main body part of our gun of a light aluminum alloy, while using a hard bronze drop forging for the forward body part so as to permit an accurate machining of the latter part—as for example the threading of the bore portion 5a into which the attaching nipple extends. With this threading accurately fitting that of the nipple (which nipple desirably is of steel) an accurate fit of the rear threaded nipple portion is less material because of the much greater length of the latter threading.

By thus using a nipple of relatively short length in proportion to that of the air passage M for tightly and rigidly connecting the two body parts we eliminate the decided throttling of the said passage which occurs when an attaching member extends through the entire length of the passage, as heretofore proposed. We also eliminate the difficulty of preventing air leakage at the rear end of this passage, as encountered with a heretofore proposed full length attaching member, and in addition we are able to employ an accurately guided and sensitively adjustable control valve for the air supply to the side air ports of the air nozzle of the gun.

However, while we have heretofore described our invention in connection with an embodiment including numerous desirable details of construction and arrangements, it should be obvious that changes might be made without departing either from the spirit of our invention or from the appended claims.

Moreover, it is to be understood that various features of our invention need not be used conjointly with one another. Thus, the same main body part may be used interchangeably with forward body parts adapted for use with other nozzle assemblies, as shown for example in our said copending application #47,580. So also, if the air nozzle of the gun requires no side air ports, or needs no adjustment of the air supply for its side air ports, the supplemental air control valve with its frontal head and the valve control means shown in Fig. 11 may all be omitted to cheapen the gun. In this case a mere plug 41 may be used for closing the rear end of the main air passage M in the stock of the gun body, as shown in Fig. 15.

We claim as our invention:

1. A body assembly for a spray gun, comprising: a main body part having an axially straight longitudinal air supply passage extending through it; a forward body part bearing flatwise against the forward end of the main body part and having a secondary air passage extending through it, the rearward portion of which secondary passage aligns axially with the said air supply passage; and a nipple having its end portions threaded in relatively reverse directions into the rear end of the said secondary passage and into a forward portion of the said air supply passage to clamp the said head part against the said body part; the said air supply passage having its rear end freely open during the initial assembling of the gun body to permit the insertion of a tool for rotating the said nipple.

2. A body assembly for a spray gun, as per claim 1, in which the threaded connection of the said nipple to the bore of the air supply passage in the main body part is considerably longer than the reversely directed thread on the nipple, so as to permit the nipple to be threaded part way into the said air supply passage before the nipple

is rotated further in the same direction during the attaching of the head part to the main body part.

3. A body assembly for a spray gun, as per claim 1, in which the nipple has an unthreaded exterior portion between its said reversely threaded end portions, and in which the said main air passage has a cylindrical bore portion between the front end of that passage and the portion of that passage into which the rearward part of the nipple is threaded, which cylindrical bore portion of the main air passage normally houses at least the major portion of the unthreaded exterior portion of the said tube.

4. A spray gun body assembly as per claim 1, in which at least the rear end portion of the bore of the nipple has re-entrant formations adapted to be engaged by a tool for rotating the nipple to effect the said clamping.

5. A spray gun body assembly as per claim 1, in which the air passage in the said head part has a diametrically contracted portion forward of the part of the last named passage into which the nipple is threaded, the rear end of the said contracted passage portion affording a rearwardly facing annular seat coaxial with the main air supply passage in the main body part.

6. In a spray gun, a body comprising a stock having a longitudinal air passage opening at the front end of the stock, and a forward body part bearing rearwardly against the front end of the stock and having a secondary air passage the rear end of which aligns with the forward end of the longitudinal air passage in the stock; a nipple having its opposite ends threaded in rotationally reverse directions respectively into the rear end portion of the said secondary passage and the forward portion of the longitudinal air passage in the stock, the nipple clamping the head part of the body to the said stock; the secondary air passage having a part thereof, forward of the nipple, formed as a rearwardly facing seat aligning axially with the longitudinal passage in the stock; and a longitudinally movable valve member extending freely within the said longitudinal passage and freely through the bore of the said nipple, the valve member having a forward part adapted to engage the said seat.

7. A spray gun body and valve assembly as per claim 6, including means supported in the rear end of the said longitudinal passage and connected to the rear end of the said valve member for moving that valve member toward and away from the said seat.

8. A body and valve assembly as per claim 6, in which the head part of the body also has a supplemental air passage extending through it and presenting an inlet, spaced from the said seat, leading from the part of the secondary air passage behind the said seat.

9. A spray gun body and valve assembly as per claim 6, in which the secondary air passage in the head part of the body has a cylindrical portion adjacent to and forward of the said annular seat; and in which the valve member has a portion forward of its said seat-engageable part extending into and slidably guided by the said cylindrical portion of the secondary air passage, the said portion of the valve member having longitudinal surface grooves through which air can flow when the valve member is retracted to move the said seat-engageable part away from the said annular seat.

10. In a spray gun, a body comprising a stock having a longitudinal air passage opening at the

front end of the stock, and a forward part bearing rearwardly against the front end of the stock and having a secondary air passage the rear end of which aligns with the forward end of the longitudinal air passage in the stock; a tubular member having its opposite ends socketed respectively in the rear end portion of the said secondary passage and in the forward portion of the longitudinal air passage in the stock; the secondary air passage having a part thereof, forward of the tube, formed as a rearwardly facing seat aligning axially with the longitudinal passage in the stock; a longitudinally movable valve member extending freely within the said longitudinal passage and freely through the bore of the said tube, and having a forward part adapted to engage the said seat; and a valve control unit extending into the rear end of the said longitudinal air passage and connected to the rear end of the said valve member, the control unit effectively sealing the rear end of the longitudinal air passage and the stock having an air port for admitting air to the last named passage at a point between the control unit and the rear end of the said tubular member.

11. A spray gun body assembly as per claim 10, in which the forward body part also has at least one auxiliary air passage leading to the front of that body part from portions of the secondary air passage radially outward of the said seat.

12. In a spray appliance in which there is a body member formed with a rearwardly open bore and in which a movable valve member has a stem extending within and coaxial with the said bore, and in which the appliance includes a seat adapted to be engaged by a forward portion of the valve member, means for controlling the position of the said valve member, the said means comprising: a sleeve mounted in the rear end of the said bore and having an interior annular flange intermediate its ends, a stem end member fastened to the rear end of the said stem and threaded into the forward end of the bore of the said sleeve, the said member presenting a prismatic bore behind the part of that

member to which the said stem is fastened; a plunger disposed within the said sleeve and having a peripheral flange disposed forwardly of the interior flange of the sleeve and slidably fitting the bore of the sleeve; the plunger having a polygonal forward end portion extending into and slidably fitting the said prismatic bore of the stem end member; a compression spring operatively interposed between the rear end of the said stem end member and the said peripheral flange of the plunger; and means manually operable from the rear of the said sleeve for rotating the plunger, to cause the plunger to rotate the said stem end also, whereby the threading of the stem end member into the sleeve will cause rotation of that member to move the said member and the valve stem attached to it longitudinally of the said bore.

13. Means for controlling a movable valve member of a spray appliance, as per claim 12, including an annular packing disposed between the said peripheral flange of the plunger and the rear end of the spring.

14. Means for controlling a movable valve member of a spray appliance, as per claim 12, including an annular packing disposed between the said peripheral flange of the plunger and the rear end of the spring, and a second packing member disposed between the peripheral flange of the plunger and the interior flange of the sleeve.

15. Means for controlling a movable valve member of a spray appliance, as per claim 12, in which the manually operable means include a plunger portion extending rearwardly through the bore of the said interior flange of the sleeve and presenting a rear end portion of polygonal section, and a forwardly opening cap member slidably fitted upon the said rear plunger end, and means detachably fastening the cap member to the said plunger end, the cap member presenting a digitally actuable portion behind the said sleeve.

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