Dec. 31, 1940. A. SHELBURNE 2,227,161

PAINT SPRAY GUN

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FIG. 1

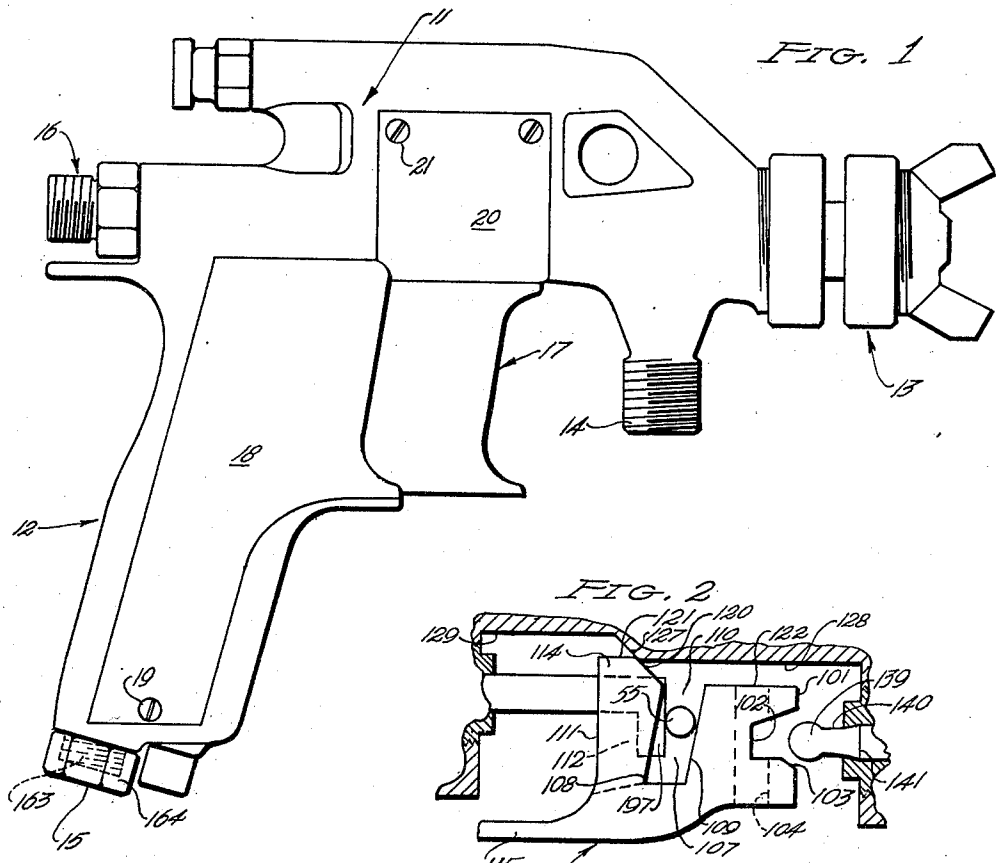


FIG. 2

FIG. 3

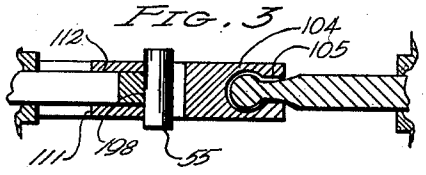
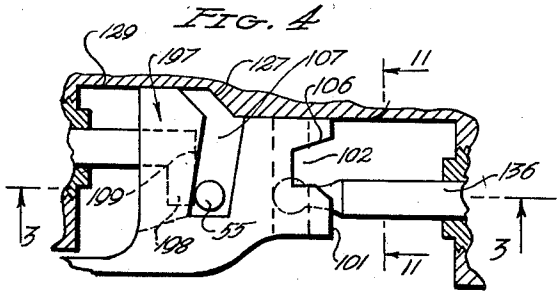


FIG. 4



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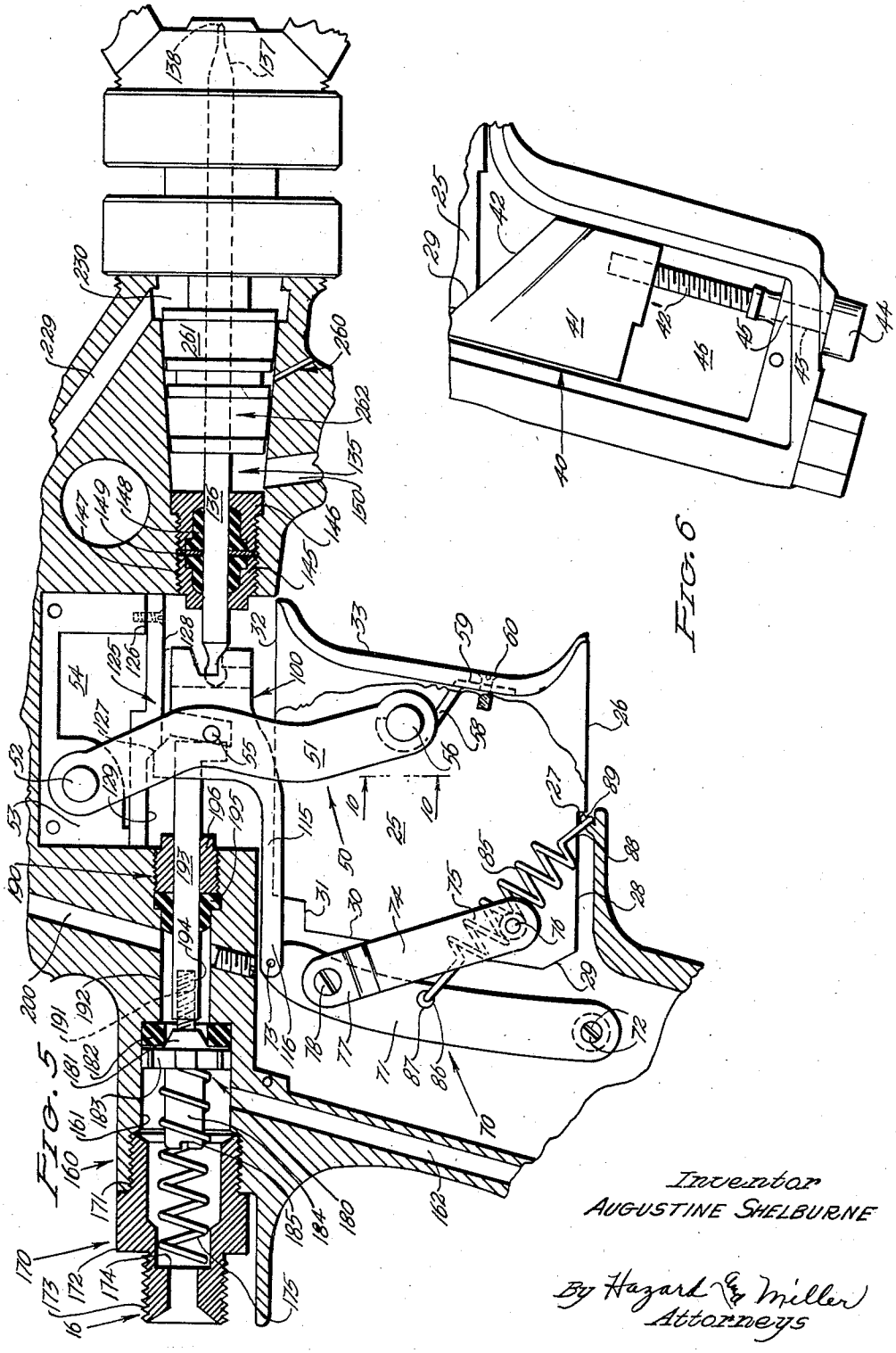


FIG. 5

FIG. 6

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FIG. 1

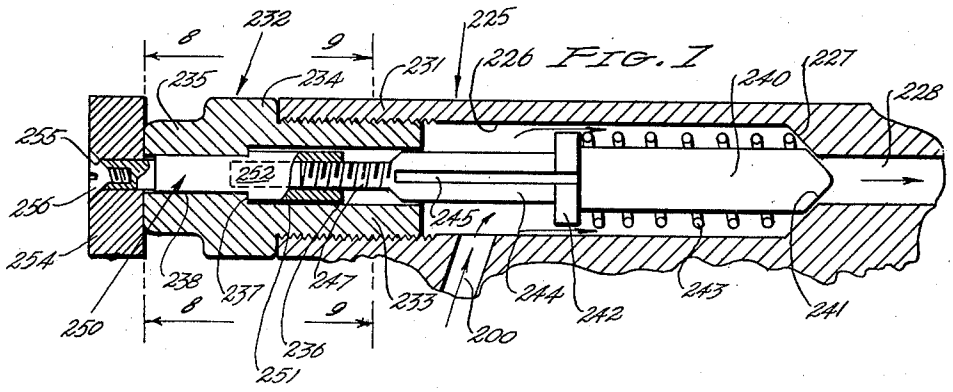


FIG. 8

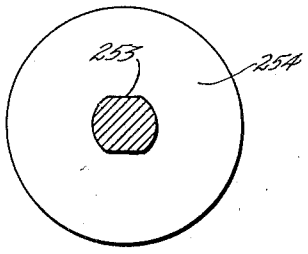


FIG. 9

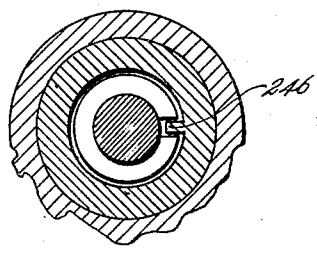


FIG. 10

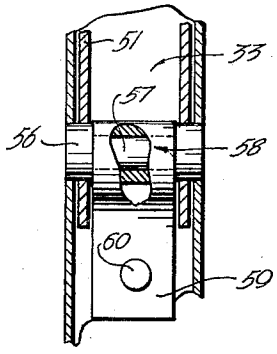
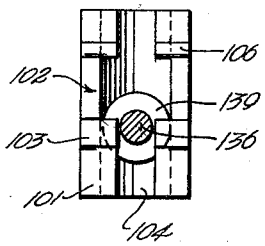


FIG. 11



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UNITED STATES PATENT OFFICE

2,227,161

PAINT SPRAY GUN

Augustine Shelburne, Los Angeles, Calif.

Application October 31, 1938, Serial No. 237,851

22 Claims. (Cl. 137—144)

My invention relates to an improvement in paint spray guns and involves a considerable change in the construction and design over most of the spray guns operated by air now on the market or patented.

One of the major objects and features of my invention includes a construction by which the needle controlling the paint valve has a straight and exact longitudinal motion without developing any angular motion when operated by or in conjunction with the trigger control of the gun. This action gives an improved control of the valve and also reduces the wear on the packing of the needle permitting use of a more or less permanent packing instead of the usual packing which must be more or less frequently removed.

In view of the fact that the needle must be readily removed for cleaning, another object and feature of my invention resides in a readily disconnectible attachment of the inner end of the needle to a sliding block operated in conjunction with the movement of the trigger and in this connection a more detailed feature resides in forming the inner end of the needle with a rounded head and a reduced neck adjacent thereto. The block has a vertical slotted recess to engage the head and a slotted shoulder to fit the neck of the needle when in the operative position. To engage and disengage the head of the needle with the block, a further characteristic of my invention is in the provision of a cam construction producing a vertical lift and depression of the block so that when the trigger is fully extended as when the paint gun is out of use, the needle may be readily removed. The action is to automatically release the needle from the block at the forward end of the stroke so that it may readily be removed by hand after removing the nozzle.

Another object and feature of my invention is the provision of a trigger construction and assembly which has a nearly straight line movement as distinguished from an arcuate movement on a single pivot. To obtain this action I employ an upper and forward lever which reacts on the cam block, this having an upper fixed pivot to the body of the gun, the trigger plate being pivoted to the lower end of such lever, however the movement of the rear portion of the trigger is controlled by a secondary lever pivoted at its lower end in the hand grip portion of the gun and employs a link interconnected between the upper part of the secondary lever and the lower rear portion of the trigger plates having the finger grip end, therefore it may be considered that the trigger assembly has a movement in two compensating arcs of the primary and second levers modified by the movement of the link.

A further detail inventive feature is in the employment of a secondary lever pivoted in the hand grip part of the gun with a link connected to the trigger and also utilizing a tension retraction spring, a second lever having a pivotal connection to a projection or tailpiece of the needle actuating block to give this block an in and out movement in conjunction with its lifting and lowering movement.

Another main characteristic of my invention resides in having a straight line longitudinal movement for the air valve operating rod which actuates the closure plug of the air valve, such plug and the rod being normally thrust forward by a spring action and the forward end of the rod having a loose sliding connection in the cam block which actuates and controls the vent valve needle, however the forward end of this rod has a thrust reaction against a loose transverse pin operating on a slight incline in a slot in the cam block and such pin being attached to the forward or first lever of the trigger assembly.

My invention is illustrated in connection with the accompanying drawings, in which:

Fig. 1 is a side elevation of the paint spray gun omitting the hose connected to the compressed air supply or the connection to the paint can.

Fig. 2 is an elevation with parts broken away and side cover plates removed showing the actuated block for the paint valve needle with this block in its forwardmost position and with the needle disconnected as in a position for removal for cleaning or replacement.

Fig. 3 is a horizontal section on the line 3—3 of Fig. 4 in the direction of the arrows showing the inner head end of the needle engaged by the sliding block.

Fig. 4 is a side elevation similar to Fig. 2 with the block retracted and thus the needle pulled inwardly.

Fig. 5 is an enlarged longitudinal section through the main part of the gun, the stock and hand grip parts being shown in a vertical central section and other internal parts being illustrated in elevation to illustrate the mounting of the block engaging the needle and the action of the trigger.

Fig. 6 is an elevation on the same scale of Fig. 5 of the lower end of the hand grip of the gun with

the cover plate removed to illustrate the removable abutment limiting the retraction of the trigger.

Fig. 7 is a longitudinal section on the same plane as Fig. 5 and on the same scale of the upper part of the stock of the gun showing the air control valve.

Fig. 8 is a transverse section on the line 8—8 of Fig. 7 in the direction of the arrows.

Fig. 9 is a transverse section on the line 9—9 of Fig. 7 in the direction of the arrows.

Fig. 10 is a partial section on the line 10—10 of Fig. 5 in the direction of the arrows.

Fig. 11 is a vertical section on the line 11—11 of Fig. 4 in the direction of the arrows illustrating the end face of the needle engaging block.

Referring to the construction of Fig. 1, I designate the upper part 11 as the stock of the gun and the portion 12 the hand grip end. The outer part 13 contains the nozzle, the immediate construction of the nozzle is not part of my present invention. The threaded nipple 14 provides for a connection to the paint either by a hose to a paint can or a small sized can being directly attached to the nipple. At the lower end of the hand grip I provide a connecting structure 15 for the conventional compressed air hose. The secondary nipple 16 involves a feature of my improvement and provides for a connection of the compressed air hose at the rear or handle end of the stock. The trigger is designated by the numeral 17 and has a nearly straight sliding motion as hereunder detailed. A part of the hand grip end is enclosed by a removable plate on one side indicated 18 and attached by a screw 19. There is also a cover plate 20 on each side attached by screws 21 to the stock portion and enclosing parts of the mechanism for operating the needle.

Referring first to the trigger assembly 17, this is formed of a plate bent and shaped with two opposite and similar sides 25, these being defined as having a lower edge 26, a shoulder 27, a raised lower edge portion 28, an abutment beveled stop edge 29, a rear and upwardly sloping edge 30, a cut-out upper corner piece 31 and a top edge 32. The finger grip U shaped bent portion 33 is convex in cross section on its outer surface and of sufficient size to be engaged by two fingers. The upper edge is covered by the plate 20.

The stop assembly 40 for limiting the retraction of the trigger as shown in Fig. 6 includes a slidable block 41 which has a sloping beveled upper face 42, this having the same slope as the beveled abutment edges 29 of the two sides of the trigger plate 25. An adjusting screw 42' is threaded in the block 41 and extends through a perforation 43 in the bottom of the hand grip portion 12. This screw has a knurled head 44. The neck portion 45 of the screw prevents the longitudinal movement of the screw, therefore on rotation it moves the block 41 downwardly or upwardly in the guide space 46 provided in the handle part of the stock. This part is accessible for connection and adjustment on removal of the plate 18. In Fig. 6 the end 29 of one of the sides 25 of the trigger is shown in contact with the sloping edge 41 of this retraction block.

An operating lever designated by the assembly 50 employs two similar strap-like levers 51 pivoted on a loose pin 52 which is fitted through a web 53 located in a transverse opening 54 of the stock part of the gun. This pin and the levers are enclosed and held in place by the two cover plates 20. A second loose pin 55 is mounted in a perforation through the two lever straps. A third loose pin 56 extends through eyes in the lower parts of the lever straps. This pin preferably has a slightly reduced neck 57 and engages a hook 58. Such hook has a strap end 59 attached by a screw 60 to the finger grip convex end 33 of the trigger.

A secondary lever and link equipment 70 employs a secondary formed strip-like lever 71 pivoted at 72 by a screw attaching this to part of the hand grip portion of the gun. The upper end of this lever has a pivot pin 73 for a purpose hereunder designated. A link 74 has a tongue-like end 75 extending between the two sides 25 of the trigger and pivoted thereto by a pivot pin 76. The upper end of this link has a yoke with two similar arms 77 and pivotally connected to the lever strip 71 by a pivot screw 78. A retraction spring 85 has its inner end 86 caught in an eye 87 of the secondary lever 71 and its outer end 88 attached to a projecting prong 89. The lower edge portion 26 extending forwardly of the shoulder 27 rides on opposite sides of the prong 89 when the trigger is retracted.

The needle control block 100, note particularly Figs. 2, 3, 4, 5 and 11, has a front edge 101 with a deep notch 102 extending rearwardly from side to side. This is provided with a lower edge bevel 103. A vertical circular bearing bore 104 extends from top to bottom of the block 100 and a contracted slot 105 extends from the circular bearing bore. The base of the transverse notch 102 intersects the cylindrical bore 104 at substantially its diametrical center. Such construction is therefore to engage a ball shaped end of a pin or plunger of a valve as hereunder detailed. The transverse notch 102 also has an upper bevel 106. In addition the block is provided with an inclined slot 107 extending from side to side. This slot has opposite wedging surfaces 108 and 109. It is open at the top 110. The back wall 111 is provided with a vertical recess-like longitudinal slot 112 extending inwardly. The longitudinal slot 112 communicates with the transverse slot 107, thus the block at its upper rear portion 114 has a deep slot 112. The pin 55 is designed to fit in the transverse slot 107 and extends slightly beyond the ends of the slot and as above mentioned, is confined by the side plates 20. The block has a tail-piece 115 extending rearwardly with a downwardly extending forked end 116 which end straddles the second lever 71 and engages the pivot pin 73 at the upper end of the lever.

The wedging feature to develop the up and down movement of the block includes the sloping wedge surface 120 on the block between the rear upper edge 121 and the front upper edge portion 122. This is designed to engage a fixed wedge plate 125, note particularly Fig. 5. This plate is secured to the web 53 in the stock of the gun being attached by screws 126. Such wedge plate has a sloping wedge surface 127 and extending forwardly from this there is a lower surface 128 and extending rearwardly, the second lower surface 129.

The needle assembly designated by the numeral 135 includes the cylindrical needle 136 having the tapered forward end 137 with the needle point 138 controlling the paint orifice. This is a standard part in the nozzle assembly 13 and need not be described. The inner end of the needle however has a spherical ball shaped head 139 with a reduced neck 140 contiguous thereto. The cylindrical part of the needle terminates at the end 141 of the reduced neck. The needle re-

ciprocates through inner and outer packing glands 145 and 146, note Fig. 5. Each of these is threaded and may be threaded from opposite ends into the threaded opening 147. Each gland is in the form of a cup and has packing material 148 which is a somewhat permanent character. The glands and the packing are separated by a washer 149. The paint passage 150 is on the nozzle side of these packing glands and due to the fact that there is no up and down or wobbling motion of the needle but a straight reciprocating motion, no paint passes along the needle through the packing into the space in which the wedge block 100 or the levers operated by the trigger operate and have their movement. Therefore to clean the needle it is only necessary to disconnect the needle from the block 100 and draw this outwardly through the forward end of the gun after removal of the nozzle assembly 13.

One of the main features of my invention is the manner in which the needle 136 operating the paint valve is readily engageable with and disengageable from the block 100 and in operation the block develops a straight line or rectilinear movement of the needle without any up and down or lateral pressures tending to wear the guides through which the needle operates. Referring to Fig. 2, the needle is entirely disengaged from the block 100 and this block being in a forward position is also in a lowered position due to the sliding contact of the surface 120 of the block and 127 of the wedge plate 125, hence when in this position and after removing the outer part containing the nozzle, the needle may readily be removed for cleaning and reinserted. The size of the transverse notch 102 is such that the ball end 139 of the needle may readily fit in this notch and extend inwardly to the remote side of the vertical bore 104. Should the block 102 not be lowered to a sufficient extent, thrusting the needle rearwardly will engage the beveled surface 193 and thus depress the block or if the block is too low, the ball will engage the sloping surface 106.

When the needle is thrust rearwardly and conversely, the block in a forward and lower position, the ball thus is vertically aligned with the vertical cylindrical bore 104, then on the further retraction of the block by operating the trigger assembly 17, the block is automatically elevated until the ball of the needle drops below the transverse notch 102. The shoulders 140 forwardly of the ball 139 therefore fit in the reduced vertical slot 105 and the ball is firmly engaged in the vertical bore 104 for a forward thrust action to close the valve or a rearward motion by pulling to open the paint valve due to the straight line motion of the block 100 in operating the trigger. It will thus be seen that there is a straight line thrust or pull on the ball of the needle valve assuring that there will be no distorting wear on the various guides and packings of the needle of the paint valve.

The main air valve and its interconnection with the trigger is substantially as follows, the assembly being designated 160. This includes a cylindrical chamber 161 in the stock portion 11 of the gun. A duct 162 leads downwardly through the hand grip end to the air inlet 15 to which an air hose may be connected. This air connection has a threaded nipple 163 and when this is to be closed or inoperative a closure cap 164 is applied. This is shown in Fig. 1 and the gun is illustrated in a condition for applying air through the secondary nipple 16. This nipple 16 includes the bushing 170 having an inner externally threaded end 171 threaded in the end of the stock, a wrench grip portion 172 and the threaded nipple end 173. Manifestly when this end is to be closed off and the air connection 15 used the cap 164 may be transferred to the nipple end 173 or another closure may be utilized. The bushing is provided with a shoulder 174 against which is seated a compression spring 175 and this presses against the valve plug 180. This plug has a cone shaped seating end 181 and contacts a soft material ring seat 182. A head 183 has notches in the side to allow passage of air through the notches inside of the cylindrical chamber 161. An additional feature involved in my invention includes the stud 184 extending from the valve head and having a screw driver kerf 185. The spring is coiled around this stud but a screw driver may be inserted through the nipple end 173 and through the spring to turn the valve head assembly.

The adjustable rod connecting the valve and the trigger assembly designated by the assembly numeral 190 includes a threaded pin 191 preferably formed integral with the valve plug and passing through the seat into the passage 192. A cylindrical rod 193 has a threaded socket 194 engaging the threads of the screw. This rod passes through the packing 195 and a plug 196 assembled in the stock from the space in which the block 100 operates. The forward end of the rod 193 is provided with a hook end 197. This has a downwardly extending finger 198 engaged in the recess 113, the rod fitting in the vertical slot 112 of the block 100. The forward vertical edge 199 of the rod may engage the pin 55. The spring 175 thus is operative to urge the air valve plug 181 to its closed valve position and also thrust the block 100 forwardly and manifestly the trigger also to its forward position but on the pull back of the trigger due to the backward movement of the pin 55, the rod 193 is thrust rearwardly and hence opens the air valve. This admits air to the duct 200 extending upwardly to a secondary air control valve hereunder described.

The adjustment of the stud and air valve plug in relation to the thrust rod 193 is usually made such that when the air valve is entirely closed the trigger has not quite reached its full forward position, however the spring 85 acting through the lever 71 and the link 74 gives the additional thrust slightly separating the end 198 of the thrust rod from the pin 55 giving movement to the position shown in Fig. 2. In this position the block 104 is depressed and the needle 136 may readily be disengaged from such block. When the needle is thrust inwardly to engage in the slot 103 of the block the first action in retracting the trigger is to engage the pin 55 with the finger end 198 of the rod 93 and slightly open the air valve. Immediately following this the block has been raised sufficiently to enable the groove 106 of the block to engage the neck and head of the needle and thus initiate the opening of the paint valve at the nozzle. Therefore the air flow can always be developed slightly prior to the flow of the paint.

The adjustable air valve to control the volume of air flow designated generally by the numeral 225, note particularly Fig. 7, is located in the upper part of the stock 11. The air duct 200 extends upwardly to a longitudinal cylindrical air valve cylinder 226. This cylinder has a cone shaped valve seat 227 at its base and a discharge duct 228 connecting with the downwardly in-

clined duct 229 (note Fig. 5) which connects with the chamber 230 back of the nozzle 13. The outer portion of the cylinder 226 is screw threaded as indicated at 231 and has a plug 232 threaded therein, such plug having a reduced exterior threaded end 233, a wrench grip head 234 and a reduced end 235. The plug has a relatively large bore 236, a shoulder 237 and a reduced bore 238. The cylindrical valve plug 240 has a cone shaped end 241 to engage the conical seat 227. There is a cylindrical shoulder 242, this however being of less diameter than the cylinder 226 and a compression spring 243 has a thrust reaction against the shoulder 242 and the seat 227, thus reacting to open the valve. Extending from the shoulder in an opposite direction to the plug there is a cylindrical stem portion 244 having a longitudinal groove 245 which is engaged by a fixed spline or projecting pin 246 in the plug 232, this being located in the reduced portion 233, note Fig. 9. The stem has a threaded end 247 which is engaged by a rotatable nut assembly 250. This has the internally threaded nut portion 251 which is in reality a socket in an elongated cylindrical rod 252, the rod having the enlarged end with the nut portion and a reduced portion fitting in the bore 238 and therefore having an engagement with the shoulder 237. The outer end of the rod has flattened sides 253 (note Fig. 8) to which is attached a knurled finger grip knob 254, this being secured by having a countersink 255 with a screw 256 threaded in the end of the rod and thus clamping the head to the end of the rod. By this construction the knob 254 may be rotated, thus rotating the nut structure which due to the screw threaded connection with the threaded portion 247 of the stem develops a longitudinal movement of the plug 240 and hence regulates the spacing of the seat 227 and the conical end 241. This thus regulates the air passage no matter whether the air supply is from the air connection 15 at the lower end of the hand grip or at the air connection 16.

An air vent 260 is to discharge any air which may blow back from the chamber 230 of the nozzle past the babbitt packing 261 of the paint transmission structure 262.

Various changes may be made in the details of the construction without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. In a paint spray gun having a paint valve with a reciprocating needle control combined with a trigger assembly, a needle control means interconnected between the trigger assembly and the rear end of the needle constructed and adapted to actuate the needle with a rectilinear motion and having means to release the needle when in its closed position as to the paint valve to facilitate ready removal of the needle.

2. In a paint spray gun having a paint discharge valve with a needle control combined with means to confine the needle to a rectilinear motion, a trigger assembly, a needle control block, means interconnecting said block with the rear end of the needle and the trigger assembly, means reacting with the block to shift said block vertically and a connection between the block and the trigger assembly to move the block longitudinally, said block and the rear end of the needle having an interconnecting means constructed and adapted to release the needle when in the closed position of the paint valve to facilitate ready removal of the needle.

3. In a paint spray gun having a paint nozzle valve with a control needle combined with guide means for the needle constructed and adapted to confine the needle to a rectilinear motion, a trigger assembly including a pivoted lever, a control block, a cam reacting means engaging the block, an interconnection between the lever and the block, a slip connection between the block and the inner end of the needle whereby on the retracting motion of the trigger and the block the inner end of the needle is gripped by the block and on the extreme forward motion the needle is released whereby such needle may be readily removed for cleaning.

4. In a paint spray gun as claimed in claim 3, an air valve having an adjusting rod, a valve plug reacting against a valve seat actuated by said rod, means to guide said rod in a rectilinear motion and a sliding contact means between the lever and the rod to move said rod during the movement of the trigger assembly in operating the needle and the said control block.

5. In a paint spray gun having an air and a paint valve, a trigger assembly including a finger grip element, a first and a second lever each pivotally connected to the gun, one lever extending downwardly from its pivot and the other upwardly and means forming a pivotal connection between each lever to the finger grip element of the trigger assembly whereby said trigger assembly is guided between opposing arcs of the arcuate movement of the levers and means interconnecting the trigger assembly and the paint and air valves.

6. In a paint spray gun as claimed in claim 5, the downwardly extending lever having a pivotal connection to the finger grip element, the upwardly extending lever having a link connection to another portion of the finger grip element and a tension retraction spring between one of the levers and the fixed structure of the spray gun.

7. In a paint spray gun having a paint valve with a needle and means to guide said needle in a rectilinear motion together with a trigger assembly to actuate the needle combined with a needle control block, a cam means and a spring actuated means urging said block into an uppermost position in its travel on retraction, the cam being adapted to depress said block, an interconnection between the block and the trigger assembly to retract the block, the inner end of the needle having a ball head with a reduced neck, the forward end of the block having a releasing socket engaging said ball and neck whereby on retraction of the block by a retracting movement of the trigger assembly the needle is gripped and moved towards an open valve position but when the valve is open with the trigger assembly and the block in its forwardmost position, the head and neck become disengaged from the socket to facilitate ready removal of the needle.

8. In a paint spray gun as claimed in claim 7, the interconnection between the trigger assembly and the block including a lever pivotally connected to part of the spray gun and having a pin, the block having a transverse slot engaged by said pin, the said pin being operative to retract the block and the slot permitting an up and down movement of the block.

9. In a paint spray gun as claimed in claim 7, the said needle control block having a rearward projection, the trigger assembly including a lever

pivoted to a fixed portion of the spray gun below the block, the upper end of the lever engaging the said projection, a spring to retract the trigger assembly whereby the movement of the said lever develops a lifting and a longitudinal movement of the control block.

10. In a paint spray gun, an air valve including a valve seat, a valve plug engaging therewith, a spring urging the plug to its seating position, a pin connected to the plug, a rod in alignment with the pin, a threaded connection between the rod and the pin, a guide means for the rod, means restraining the rod from rotation, the portion of the gun opposite the rod having an opening whereby the plug may be rotated to adjust the pin and the rod and a trigger assembly having means reacting with part of said rotation restraining means to retract the said rod to open the valve.

11. In a paint spray gun having a paint valve with a reciprocating needle and a guide for such needle combined with the needle having a head with a neck on its inner end, a control block, means manually operable to reciprocate said block, a cam means to depress the block during a portion of its forward movement with means to elevate the block and provide a straight reciprocation of the block in a portion of its rearward movement, the block having a transverse notch and a contracted slot to engage the head and the neck portion of the needle, the depression of the block being adapted to release the head and the neck of the needle in the extreme forward movement of the block.

12. In a paint spray gun as claimed in claim 11, the head of the needle being ball shaped, the back of the deep notch having a bearing bore to engage the said ball shaped head of the needle.

13. In a paint spray gun having a paint valve with a reciprocating needle control and a guide means to provide a straight reciprocating motion for the needle combined with the needle having a ball shaped head and a contracted neck, a control block having a transverse notch at its forward end, a bearing bore intersecting the notch, means to move the control block whereby in the forward portion of its movement the ball shaped head of the needle enters the notch, means operative on retraction of the block to slightly elevate such block to fit the said ball in the bearing bore and thereby grip the head of the needle for retraction of the needle with the retraction of the block.

14. In a paint spray gun as claimed in claim 13, the transverse notch having bevels to guide the ball shaped head of the needle into the said notch, there being a contracted slot extending from the bearing bore to the forward edge of the control block adapted to accommodate the contracted neck of the needle whereby in the slight upward movement of the block, the ball and the neck have a relatively downward movement in the bearing bore and the said contracted neck.

15. In a paint spray gun having an air valve with a circular seat, a plug engaging therewith, a supply air duct on one side of the seat, an exhaust air duct on the opposite side of the seat, a rod, a connection between the rod and the plug, a guide means for the rod restricting the rod to a straight line reciprocating motion, the end of the rod remote from the plug having an edge, a cylindrical rotatable pin having its periphery contacting said edge and a trigger assembly to move the pin in an arcuate movement with the axis of the pin parallel to the axis of the arcuate movement, the said arcuate movement developing a straight line motion of the said rod in one direction and a spring means to move the plug and the rod in the opposite direction.

16. In a paint spray gun, a finger operated trigger and operating connection including a first lever having a pivotal mounting at one end in a fixed position in the body of the gun, said finger operated trigger having a pivotal connection to the opposite end of said first lever, a secondary lever having a pivot at a first end in a fixed position in the gun, a link pivoted to a second end of the second lever, said link having a pivotal connection to the finger operative trigger and a retraction spring between the second lever and the fixed part of the gun.

17. In a paint spray gun as claimed in claim 16, a control block slidably mounted in the body of the gun and having a tail piece pivoted to the second lever, a needle for a paint valve operatively connected to the control block, a pin on the first lever having a sliding connection with the control block, an air valve having an operating rod with a forward end engaged by the said pin whereby the movement of the said pin controls the movement of the needle of the paint valve and the rod of the air valve.

18. In a paint spray gun having a paint valve with a needle, means to guide the needle in a rectilineal motion together with a trigger assembly to actuate the needle combined with a needle control block, an interconnection between the block and the trigger assembly to retract the block, the inner end of the needle having a connection with the said block by a retracting movement of the trigger assembly to thereby open the paint valve, the interconnection between the trigger assembly and the block including a lever pivotally connected to part of the spray gun and having a pin, the block having a transverse slot engaged by said pin, the said pin being operative to retract the block and the slot permitting an up and down movement of the block in relation to the pin.

19. In a paint spray gun having in combination a block slidably mounted for longitudinal movement, a paint valve having a control needle with an operative connection to the forward end of the block, an air valve having an operating rod, the said block having an interengaging guide means with the forward end of the rod, such block having a transverse slot, the forward edge of the rod extending into said slot, a lever pivotally connected in a fixed position as to the gun and having a pin extending through said slot and moving in an arc on the pivot of such lever, the said pin contacting the forward edge of the rod and thrusting such rod to an open valve position, the pin also engaging the block at the transverse slot moving such block and the needle of the paint valve rearwardly to open the paint valve.

20. In a paint spray gun having a paint valve with a needle valve and an air valve with an operating rod, a spring thrusting the air valve and the rod to a forward closed valve position combined with a block, means to guide such block in a longitudinal movement, a connection between the block and the needle, the block having a transverse slot and also a longitudinal slot with the forward end of the rod of the air valve extending therein and having a forward edge, a lever pivoted to a fixed part of the gun and having a pin extending into the transverse slot, such slot sloping downwardly and rearwardly to accommodate the arcuate movement of the said pin

whereby on a retracting movement of the said lever the pin engages the end of the rod of the paint valve thrusting such rod and valve to an open air valve position and engages the block retracting the block and thereby moving the needle to open the paint valve.

21. In a paint spray gun having a paint valve with a needle and an air valve with an operating rod with means urging said rod to a closed air valve position combined with a block slidably mounted in the gun and having a transverse slot, the forward end of the rod having an edge extending into such slot when the air valve is in the closed position, the slot inclining downwardly and rearwardly in the block and having parallel forward and rearward surfaces, means to interconnect the needle of the paint valve with the block, a pin extending into the said transverse slot and adapted to contact the front and rear surface of the slot and also the forward edge of the rod, means to move the pin in an arcuate movement to first engage the edge of the rod and move the rod and air valve to an open valve position and then the pin engaging the rear surface of the slot in the block, moving the block rearwardly and hence the needle rearwardly to subsequently open the paint valve, the pin in its arcuate movement moving upwardly and downwardly in the inclined slot.

22. In a paint spray gun having a paint valve and an air valve with an operating rod with means normally urging the rod to a closed air valve position combined with a block slidably mounted in the gun and having a transverse slot inclined downwardly and rearwardly from the top of the block, such slot having front and rear surfaces, the forward end of said rod having an edge extending into alignment with the transverse slot, means interconnecting the paint valve with the block, a pin, means to move such pin in an arcuate movement, the pin extending into the slot to engage the forward end edge of the rod and to engage a surface of the slot and thereby retract the block, opening the air valve and the paint valve.

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