

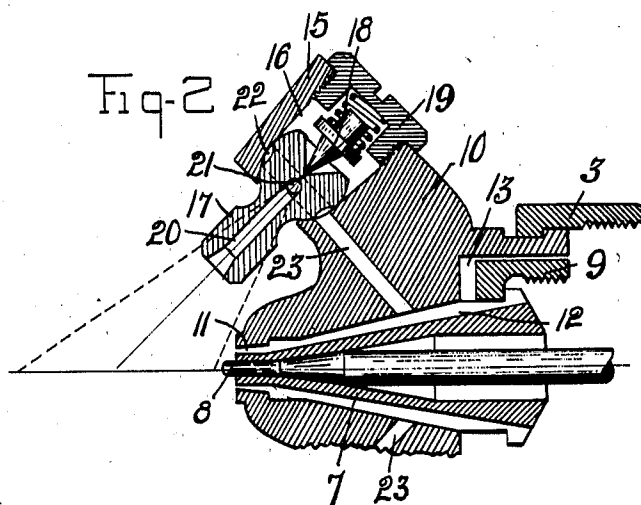
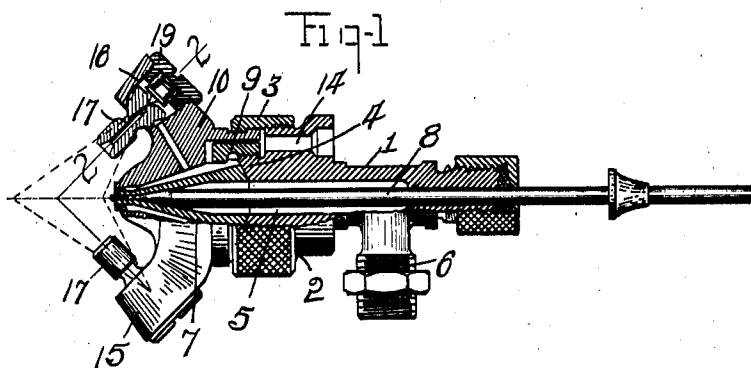
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SPRAY HEAD

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## UNITED STATES PATENT OFFICE

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## SPRAY HEAD

Application filed April 21, 1927. Serial No. 185,385.

This invention relates to spraying equipment, and particularly to spray-heads for air-brushes or spray-guns used for spraying surface coating materials.

It is common to provide such spray-heads with supplemental air discharge passages to effect a flattening of the main material laden air stream discharging from the spray-head so that a fan-shaped instead of a round spray stream is produced. In these spray-heads the supplemental air jets are directed in converging planes which intersect in the axial line of discharge of the spray stream so that as they impinge the opposite sides of said stream a flattening thereof is effected.

It is found desirable in practice to vary the force of discharge of the supplemental air jets against the main stream, so that the stream may be broadened a greater or less extent thereby. This has been accomplished by controlling the pressure of air discharge from the supplemental jets.

The object of the present invention is to control the force of discharge of the supplemental flattening air against the main stream by providing means whereby the inclination of the supplemental air streams with respect to the main stream may be varied so that the point of intersection of the former may take place at various points along the main stream axis within predetermined limits, thereby varying accordingly the force of impingement of the supplemental air streams against the main stream.

The invention is fully described in the following specification and one embodiment thereof illustrated in the accompanying drawings, in which,—

Fig. 1 is a side elevation of a spray-head embodying the invention with a part broken away, and Fig. 2 is a similar enlarged fragmentary section thereof.

Referring to the drawings, 1 designates the portion of a spray-gun body to which the spray-head is attached and which, with the spray-head, in the present instance, may be considered as the spray-head unit inasmuch as it is detachable as a unit from the spray-gun body proper. The assembled connection with a spray-gun body of such unit equipped

with a different construction of spray-head is illustrated in U. S. Letters Patent No. 1,613,588, dated Jan. 4, 1927.

The body member 1 is provided at its forward end with an enlargement 2 which is externally threaded, in the present instance, to permit the engagement therewith of a union nut 3. The forward end of the enlargement 2 is provided with an externally threaded nipple extension 4 concentric to the axis of said enlargement and having a bore 5 extending axially therethrough back into the member 1 and thence laterally through a nipple 6 adapted to be connected to a source of supply of the material to be sprayed.

The inner or material discharge nozzle 7 of the spray-head, in the present instance, is of substantially conical form with its small end terminating in a restricted discharge orifice and with its rear end seating against the nipple or forward extension 4 of the body member 1 with its bore in register with the bore 5 of said member. 8 designates the control valve for the discharge orifice of the nozzle 7. The nozzle 7 is held in the present instance, to its seat against the member 1 by a union nut 9, which threads onto the extension 4 and has shouldered engagement with an external flange on the rear end of the nozzle.

The outer or air discharge nozzle 10 of the spray-head is mounted over the nozzle 7 with its restricted air discharge orifice 11 encircling the discharge end of the inner nozzle and cooperating therewith to form a thin annular air discharge space so that the air discharging therefrom completely and uniformly envelops the stream of material discharging from the nozzle 7, as well understood in the art.

The nozzle 10 is conically seated on the nozzle 7 for rotary movements thereon and the nozzles are held in assembled relation by the engagement, in the present instance, of the union nut 3 with the inner end portion of the outer nozzle. The conical surface of the nozzle 7 is preferably provided with a set of four equi-distantly spaced longitudinally extending grooves 12, which when the nozzle 10 is seated on the inner nozzle, pro-

vide passages for supplying air to the discharge orifice 11 from a supply chamber 13 in the rear end of the outer nozzle which has communication through a passage 14 with a source of air pressure supply.

5 The nozzle 10 is provided on each of opposite sides thereof with a boss 15 having a chamber 16 therein which is opened at its forward side and is adapted to receive and hold a universally adjustable nipple 17 forming a supplemental air discharge jet. This nipple, in the present instance, has an enlarged spherical inner end portion seating in the adjacent end of the chamber 16 to adapt the nipple to have limited universal adjustment therein, and it is held to its seat in the chamber by a spring pressed pivot member 18 acting against a cap 19 closing the outer or rear end of the chamber. The inner end of the nipple 17 is recessed to its center to permit the pivot 18 to engage the nipple at its center of adjustment. The nipple has a discharge orifice 20 therein in communication at its inner end through one or more lateral passages 21 with an external circumferential recess 22 in the ball portion of the nipple. The recess 22 is in communication in any position of adjustment of the nipple, with a supplemental passage 23 in the nozzle 10 adapted to open at its opposite end into a registering air passage 12 of the head when the nozzle 10 is in proper position on the nozzle 7 for that purpose. The supplemental air discharge jets 17 are inclined with respect to the head axis so that the streams discharged therefrom converge and meet at some point along the axial line of discharge of the material laden stream from the head. By a tilting of the nipples 17 lengthwise of the head the point of meeting of the converging supplemental air streams may be shifted toward or away from the main discharge orifices, as indicated by the dotted lines in Fig. 1, so that the main stream may be flattened a greater or less extent by the supplemental jets, depending on the distance the point of meeting of the supplemental jets is from the spray-head. The passages 23 may be closed to the source of air pressure supply by turning the nozzle 10 on the nozzle 7.

It is sometimes desirable to laterally adjust the nipples 17 so that instead of the supplemental air streams striking the main stream in directly opposed relation, they will strike the main stream in laterally offset relation, thereby varying the plane of flattening of the main stream and the extent of flattening. This adjustment is permitted by reason of the universal mountings of the nipples.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes

without departing from the spirit of the claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A spray-head having provision for the discharge of a spraying stream therefrom, and nipples for directing supplemental fluid streams in converging relation against the main stream, said nipples being angularly adjustable to vary the angles of convergence.

2. A spray-head having provision for the discharge of a spraying stream therefrom, oppositely disposed air jet discharging members in communication with a source of air pressure supply and adjustable with relation to each other to direct air streams in impinging flattening relation against the main stream at various points lengthwise and transversely thereof.

3. A spray-head having provision for the discharge of a spraying stream therefrom, and a pair of oppositely disposed fluid discharge nipples in communication with a source of fluid pressure supply and adapted to direct their discharge against opposite sides of the spraying stream to flatten the same, said members being tiltingly adjustable lengthwise of the spraying stream to vary the position of impingement of their fluid streams against the spraying stream.

4. A spray-head having supplemental air discharge passages, and means associated with the outer end of each passage and universally adjustable to direct the air discharge therefrom in various positions along the axis of discharge of the main stream from the head.

5. A spray-head having concentric main discharge orifices for the material to be sprayed and a motive agent, and also having supplemental motive agent discharge passages, and discharge nipples at the outer ends of said supplemental passages adjustable with relation to each other to direct supplemental streams of the motive agent against the main spraying stream at various points lengthwise thereof.

6. In a spray-head, a pair of universally adjustable oppositely disposed supplemental air jet discharging members.

7. A spray-head having provision for the discharge of a spraying stream therefrom and universally adjustable nipples for directing supplemental fluid streams in converging relation against the main stream.

8. In a spray-head, a pair of oppositely disposed supplemental air jet discharging members independently adjustable to control the angle of convergence of the air discharged therefrom.

9. In a spray-head, a pair of oppositely disposed supplemental air jet discharging members having independent angular adjust-

ment to serve as valves for controlling the supplemental air discharge.

10. In a spray-head, a pair of oppositely disposed supplemental air jet discharging members separately adjustable about transverse axes to vary the angle of discharge of the supplemental air jets relative to a predetermined line.

11. In a spray-head, a pair of oppositely disposed supplemental air jet discharging members, each of said members having a rocking adjustment about a transverse axis.

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

GODFREY A. MUELLER.