This invention is directed to improvements in the spray nozzles of spray guns. Spray guns for spraying heavy materials, such as underbody coating compositions, utilize a spray nozzle having a frusto-conical interior terminating in a mouth, the heavy material and air being forced through the nozzle under pressure. Because of the frusto-conical configuration of the spray nozzle it is difficult to obtain an even spray pattern. The spray nozzle is also rapidly worn by the abrasive action of the heavy material being forced therethrough which requires repeated replacement of the nozzles with consequent high cost. The wearing of the nozzle also accentuates the uneven spray pattern.

The principal object of this invention is to provide an inexpensive removable liner for the mouth of the spray nozzle of a spray gun for improving the spray pattern of the spray gun and for eliminating wear upon the spray nozzle and, hence, eliminating spray nozzle replacements and its consequent high cost. The inexpensive removable liner comprises a substantially cylindrical tube which is adapted to be received in the mouth of the spray nozzle and to extend therefrom. The inner end of the tube is flared to engage the frusto-conical interior of the spray nozzle for sealing and securing the liner in place in the spray nozzle. Such a liner presents a cylindrical path for the material forced therethrough and greatly improves the spray pattern. The liner by reason of its construction may readily be inserted in the spray nozzle and will fit spray nozzles of varying dimensions. The liner will take all of the wear and when it is worn it may be quickly removed and replaced.

Other objects and advantages of this invention will become apparent to those skilled in the art upon reference to the accompanying specification, claim, and drawing, in which:

Fig. 1 is a side elevational view of a spray gun equipped with the liner of this invention;

Fig. 2 is a front elevational view thereof;

Fig. 3 is a vertical sectional view taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a vertical sectional view taken substantially along the line 4—4 of Fig. 2; and

Fig. 5 is an enlarged perspective view of the liner of this invention.

Referring now to the drawing, a conventional spray gun is generally designated at 10. It includes a pistol grip 11, having a fitting 12 for connection to a source of air under pressure. Air under pressure applied to the fitting 12 is controlled by a control valve 13 and a throttle valve 14 in its passage to air ports 15 formed in a head 16. The head 16 is also provided with a fitting 17 through which the material to be sprayed is supplied. The supply of material is regulated by a valve 18 engaging a fitting 19 secured within the head 16. The fitting 19 has a central reduced port 20 through which the material to be sprayed flows under control of the valve 18. A suitable trigger 21 controls the valves 13 and 18. A nozzle 23 is removably secured to the head 16 by a ring 24, the nozzle having a frusto-conical interior surface 25 terminating in a mouth 26.

The construction of the spray gun 10 thus far described is conventional in the art. In operation the material to be sprayed is fed into the nozzle 23 through the port 20 and air entering the nozzle through the ports 15 is mixed with the material and the mixture is discharged under pressure through the mouth 26 of the nozzle. Because of the frusto-conical configuration of the nozzle an uneven spray pattern is produced and, because of the abrasive character of the material, the nozzle is quickly worn. The wearing of the nozzle also operates further to distort the spray pattern. In the use of the conventional spray gun it is unnecessary repeatedly to replace the nozzles. The nozzles being quite expensive, the replacement costs are high.

In accordance with this invention a liner 27 is provided for the spray nozzle. It comprises a substantially cylindrical tube 27 which is received in the mouth 26 of the nozzle, the outer diameter of the tube approximating that of the mouth and the tube having a substantially cylindrical bore. The inner end of the tube 27 is outwardly flared at 28 to engage the frusto-conical interior 25 of the spray nozzle. This flared end 28 of the tube operates to seal and secure the liner in place in the spray nozzle. Preferably the exterior of the cylindrical tube 27 is roughened or provided with a series of circumferential grooves and ridges so that it is readily adaptable for insertion in nozzles having different sized mouths. The cylindrical interior of the liner provides a cylindrical path for the material being sprayed and this cylindrical path provides a much more even spray pattern. All of the wear is taken by the liner and when the liner is worn it may be quickly removed and replaced. Of course, replacement of the inexpensive liner is much cheaper than replacement of the more expensive nozzle.

While for purposes of illustration one form of
this invention has been disclosed other forms thereof may become apparent to those skilled in the art upon reference to this disclosure and, therefore, this invention is to be limited only by the scope of the appended claim.

I claim as my invention:

In a spray gun, the combination of, a spray nozzle having a mouth and a frusto-conical interior surface, and a removable liner comprising a cylindrical tube having a cylindrical bore received in the mouth of the spray nozzle and extending therefrom and having its inner end outwardly flared and engaging the frusto-conical interior surface of the spray nozzle for sealing and securing the liner in place in the spray nozzle.

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