

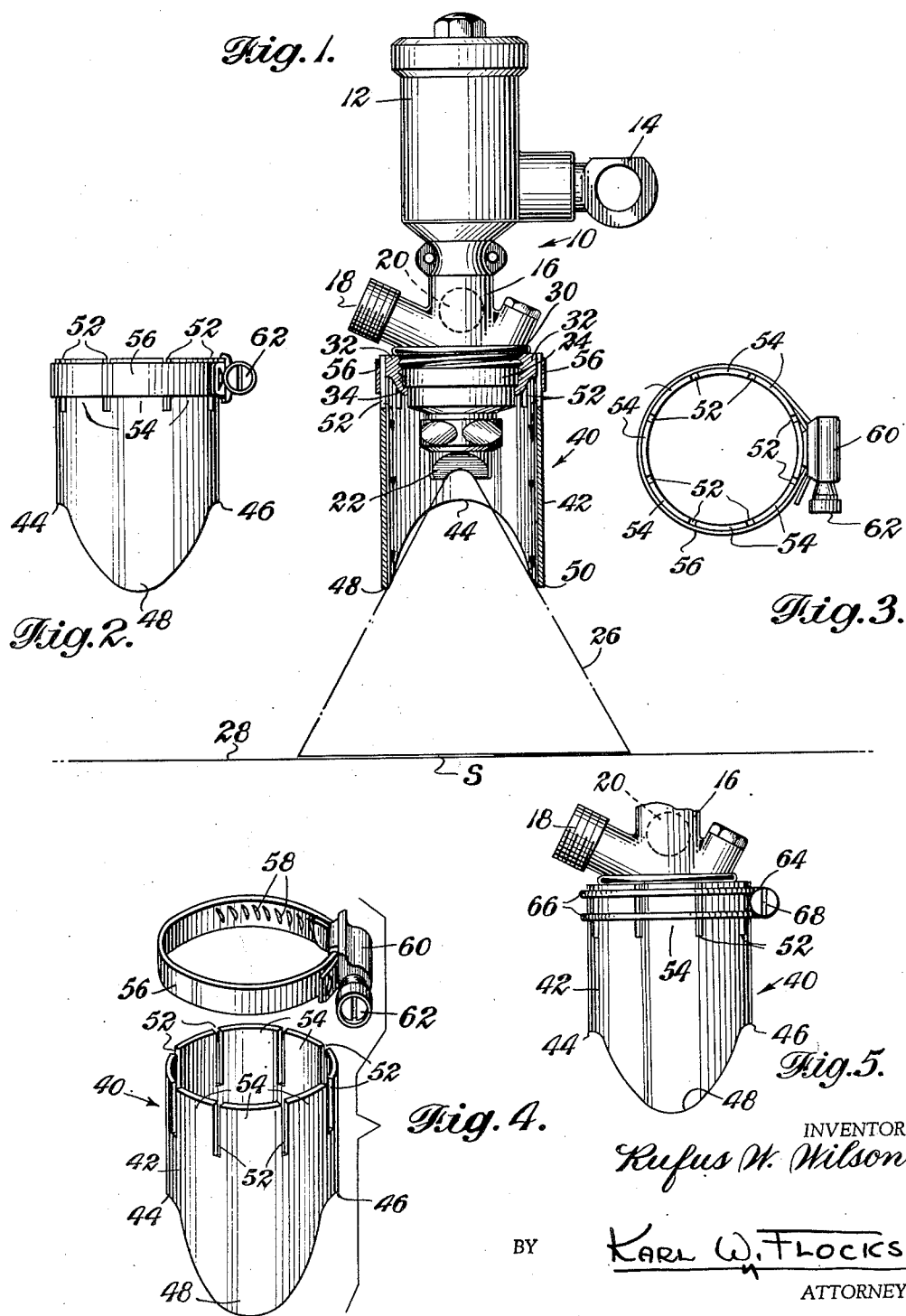
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SPRAYING APPARATUS

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## SPRAYING APPARATUS

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7 Claims. (Cl. 299—28.5)

The present invention relates to spraying apparatus. More particularly the present invention relates to a shroud that is adapted to be attached to a road marking spray gun.

The shroud described hereinafter is of the general character as that described in the copending application Serial No. 290,276, entitled "Gun Shroud."

The shroud attachment for the spraying apparatus described in the copending application is formed in a tubular configuration and is adapted to be secured to a conventional type road marking spray gun, directing the spraying material from the spray gun on to the road or surface to be marked in even distribution thereon. The tubular shroud defines the limits of the spray pattern ejected from the spray gun nozzle and the width of the marker will therefore be determined by the distance of the lower edge of the shroud from the surface to be marked. In practice, the spray gun, together with the shroud attachment, is secured on the traffic lane marking machine at a predetermined distance from the road, which distance is dependent upon the width of the marker desired. The machine is then propelled over the road, the spray gun directing a spray pattern downwardly onto the road surface.

The shroud described in the copending application is provided with curved lip sections which tend to prevent the accumulation of paint along the shroud sides, but in order to assure that undue blotching will not occur due to over accumulation of paint on the sides of the shroud, air admission means are provided for directing the paint mist which emanates from the paint spray back into the spray pattern. Prior to the instant invention, the air admission means was formed by either a special spacing element secured to the shroud and spray gun or by a special fitting that was adapted to mount the shroud in position on the spray gun. The shroud was thus secured to the spray gun by a force fit or was provided with a threaded portion that threadedly engaged a corresponding threaded portion on the spray gun, the air admission means being formed as part of the structure for securing the shroud on the paint gun.

It is therefore an object of the present invention to provide a spray gun attachment which is positively secured to the spray gun by external means and is furthermore provided with air admission means.

Another object of the present invention is to provide a shroud for a spray gun that is directly secured thereto and includes air admission slots that are preformed in the body of the shroud.

Still another object of the present invention is to provide a shroud for a spray gun that is formed with a plurality of air admission slots, the air admitted through the slots acting to prevent the accumulation of paint mist along the shroud interior walls.

Still another object of the present invention is to provide a shroud for a spray gun that is formed with a plurality of vertically extending slots, the slots defining a series of resilient sections which receive a clamping mem-

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ber for securely clamping the shroud to the spray gun.

Still another object of the present invention is to provide a road marking apparatus that includes a shroud, the shroud being secured to a spray gun and being adapted to concentrate spraying material ejected from the spray gun in even distribution on the road or pavement to be marked.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is an elevational view of the spraying apparatus embodied in the present invention, the shroud secured to the spray gun being illustrated in vertical section.

Fig. 2 is an elevational view of the shroud showing the clamping member secured thereto.

Fig. 3 is a top plan view of the shroud and clamping member shown in Fig. 2.

Fig. 4 is an exploded perspective view of the shroud and clamping member; and

Fig. 5 is a side elevational view of a modified clamping member securing the shroud to the paint gun.

Referring now to the drawings and particularly Fig. 1, the invention described herein is illustrated and includes a spray gun generally indicated at 10. It is understood that in operation the spray gun 10 is adapted to be secured by suitable means to a conventional traffic lane marking machine or the like. The spray gun 10 includes an air chamber 12 which houses an air operated needle valve (not shown). An inlet port 14 is connected to the air chamber 12 and directs air under pressure to a diaphragm located in the air chamber for operating the needle valve in the conventional manner. Located below the air chamber 12 and integrally joined thereto is a barrel 16 which has a paint inlet port 18 and an air inlet port 20 formed therein. The spraying material or paint is introduced into the spray gun 10 through the port 18 and passes through the needle valve (not shown) into the lower portion of the barrel 16 where it is atomized by air under pressure emitted through air inlet port 20 and is then ejected through a nozzle tip 22 that is joined to a lower nozzle portion 24 mounted on the barrel 16. The nozzle tip 22 is machined to discharge a fan-shaped pattern which is indicated at 26, and in the operative position is disposed generally perpendicular to a road surface indicated at 28. The fan-shaped pattern 26 is shown forming a stripe "S" on the road 28. In order to secure the nozzle portion 24 to the barrel 16, the barrel 16 is provided with a lower threaded portion 30 which is adapted to receive an internally threaded nut 32. The nut 32 is formed with an annular retaining rim 34 that engages a shoulder formed on the nozzle portion 24, and thus it is seen that when the nut 32 is tightened on the threaded portion 30 the nozzle portion 24 is drawn into firm engagement with the barrel 16.

In order to direct the paint spray emanating from the nozzle tip 22 on to the road 28 in a precise pattern and to form a clearly defined line, a shroud generally indicated at 40 is provided and is adapted to be mounted directly on the paint gun 10. The shroud 40 includes a body 42 which is a machined cylindrical tube of steel, bronze, plastic or other suitable material and is formed with a thin wall section and polished inner and outer surfaces.

The bottom of the shroud body 42 is cut away to form oppositely disposed concave sides 44 and 46 and oppositely disposed curved lip sections 48 and 50. The upper portion of the shroud body 42 is formed with a plurality of vertically extending slots 52 which define means for admitting air to the interior of the shroud and in addition defines a series of resilient sections 54 that are adapted

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to cooperate with a locking ring 56 to lock the shroud on the paint gun. As shown particularly in Fig. 3 eight slots are formed in the upper portion of the shroud body but it is apparent that a lesser or greater number of slots may be formed therein without departing from the spirit of the invention. The locking ring 56 is formed of a strip of resilient metal material and is provided with a plurality of openings 58 along the length of a portion thereof, the openings engaging a screw operated gear positioned in a housing 60. It is seen that rotation of the screw 62 which engages the gear in the housing 60 will close or open the locking ring as desired.

In operation, the shroud 40 is secured to the spray gun 10 by telescopically fitting the clamping ring 56 around the resilient sections 54 of the shroud body 42 and rotating the screw 62 to clamp the resilient sections into firm engagement with the retaining nut 32. The paint gun assembly is suitably positioned on a road spraying vehicle and paint is then admitted to the barrel 16 and controllably discharged from the nozzle 22 on to the road surface 28 in the fan-shaped spray pattern 26. The discharge end or lip sections 48, 50 of the shroud body successfully confine the spray pattern to a predetermined width, thereby enabling a clearly defined line to be sprayed on the road surface by the spray gun apparatus. Moreover, the pattern is unaffected by external air currents since the lip sections 48, 50 act as a baffle to protect the spray pattern from air disturbances caused by high-speed passing traffic. It is understood that the width of the spray pattern "S" may be varied by vertically adjusting the position of the spray gun 10 along with the attached shroud 40. If a narrow spray pattern is desired, the spray gun is moved closer to the road 28 while a wider spray pattern may be effected by lifting the spray gun to a higher position with respect to the road 28. However, the shroud 40 must always be maintained at a suitable distance from the road surface, thereby effecting a definite spray pattern under all conditions.

As the paint is discharged from the nozzle tip 22 on to the road surface 28, a fine mist collects along the inner surfaces of the shroud body 42. This mist, if allowed to remain on the inner surfaces of the shroud body 42, would subsequently drip off onto the road during the spraying operation and cause unsightly blotches thereon. Moreover, when the spraying operation is stopped momentarily, such as at street intersections, or shut down, the collected spray would drip off the shroud, thereby marring the appearance of the finished marked line. The cut-away sides 44, 46 are limited in surface area and thereby prevent the paint mist emanating from the nozzle tip 22 from collecting thereon. However, the curved lip sections 48, 50, which define the width of the spray pattern, are continuously subjected to the paint mist and would ordinarily collect a prohibitive amount of mist which would result in the objectionable blotching. The vertically extending slots 52, which are formed in the upper portion of the shroud body 42, provide convenient openings for the admission of air from the surrounding atmosphere. The incoming air which is sucked into the slots by the vacuum created by the discharging paint forms an air curtain which moves downwardly along the inner surfaces of the shroud body 42, as shown by the arrows in Fig. 1. It is apparent that the air curtain, as it moves downwardly along the shroud body inner surfaces, carries the mist circulating therearound back into the spray pattern, thereby eliminating the possibility of mist collection and subsequent dripping onto the road.

Referring now to Fig. 5, a modified clamping member 64 is illustrated and is shown securing the shroud 40 on the body 16 of the paint gun 10. The modified clamping member 64 includes a pair of circular metal bands 66 which are provided with appropriate means for receiving a nut 68 and a screw (not shown) to enable the clamping member to be tightly drawn into engagement with the

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resilient sections 54 defined by the vertical slots 52. It is seen that the slots 52 provide access for air to the interior of the shroud 40, the air being drawn into the shroud for the purpose of forming a downwardly descending air curtain, thereby preventing the accumulation of paint mist on the shroud interior walls. The clamping member 64 defined by the bands 66 firmly engages the resilient sections of the shroud and thus secures the shroud to the paint gun 10. Although only two modifications of clamping rings are disclosed herein, other means for clamping the shroud to the paint gun, while providing for the introduction of air into the shroud interior, may be utilized without departing from the spirit of the invention.

It is apparent that the slots 52, which define the resilient sections 54 and therefore have the double purpose of aiding in securing the shroud 40 on the paint gun 10, in addition to forming air admission means, may be varied in length or width depending upon the particular requirements of the shroud to be used.

It will be obvious to those skilled in the art that various other changes may be made without departing from the spirit of the invention and, therefore, the invention is not limited to what is shown in the drawings and described in the specification, but only as indicated in the appended claims.

What is claimed is:

1. In paint spraying apparatus, a paint gun, a shroud comprising a tubular body having a plurality of vertically extending slots formed therein to define a series of resilient sections, a locking ring engaging said resilient sections to lock said shroud on said paint gun, said slots further defining openings for the admission of air to the interior of said shroud, said air forming an air curtain as it moves downwardly within the shroud and directing paint mist emanating from the nozzle of the paint gun back into the paint spray pattern.

2. In paint spraying apparatus, a paint gun, a shroud secured to said paint gun, said shroud comprising a tubular body having a plurality of slots formed in the upper portion of the walls thereof, said slots providing for the admission of air into the shroud interior, said air forming an air curtain to prevent paint mist from collecting on the shroud walls, and means engaging said body and positioned over a portion of each of said slots for securing said shroud to said paint gun.

3. In paint spraying apparatus, a paint gun, a shroud, means for securing said shroud to said paint gun, said shroud comprising a tubular body having a plurality of vertically extending openings formed in the body thereof and extending through the upper edge thereof, said openings defining means for admitting air to the interior of said shroud, said air forming an air curtain for directing paint mist collecting on the shroud walls back into the paint spray pattern, said vertically extending openings defining a series of resilient sections, said resilient sections cooperating with said securing means to lock said shroud on said paint gun.

4. In paint spraying apparatus, a shroud comprising a tubular body having a plurality of vertically extending slots formed in the upper portion thereof, said slots defining a series of resilient sections therebetween and further defining means for admitting air into the interior of said shroud, and means for securing said shroud to a paint gun, said securing means including a clamping member engaging said resilient sections for drawing said resilient sections into firm engagement with said paint gun.

5. In paint spraying apparatus, a paint gun for spraying a paint stream therefrom, a shroud operatively secured to said paint gun for confining the paint stream emanating therefrom in a predetermined pattern, said shroud comprising a tubular body having a plurality of slots formed in the end thereof that is secured to said paint gun, a portion of each slot defining an air inlet opening for admitting air into the interior of said shroud, said air form-

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ing an air curtain as it moves downwardly within said shroud and directing paint mist collecting on the shroud inner wall back into said paint stream, said slots further defining a series of resilient sections formed in said tubular body and means overlapping said resilient sections and slots for securing said shroud to said paint gun, said securing means drawing said resilient sections into firm engagement with said paint gun.

6. In paint spraying apparatus, a paint gun for spraying a paint stream therefrom, a shroud operatively secured to said paint gun for confining the paint stream emanating therefrom in a predetermined pattern, said shroud comprising a tubular body having a plurality of slots formed in the end thereof that is secured to said paint gun, said slots defining a series of resilient sections in said tubular body, and locking means extending around said body and overlapping said resilient sections and slots, said locking means drawing said resilient sections into firm engagement with said paint gun, a portion of each slot being uncovered and defining an air inlet opening for admitting air into the interior of said shroud, said air forming an air curtain as it moves downwardly within said shroud for directing paint mist collecting on the shroud inner wall back into said paint stream.

7. In paint spraying apparatus, a paint gun having a

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nozzle for ejecting a spray of paint therefrom, a shroud comprising a cylindrical body enclosing said nozzle, means engaging the upper end of said shroud for securing said shroud to said paint gun, the lower edge of said shroud extending substantially below said nozzle for confining the spray of paint to a predetermined pattern, a series of slots formed in the upper portion of said shroud to define a plurality of projecting finger-like elements, said finger-like elements engaging said paint gun, said slots defining means for admitting air to the interior of said shroud, said air forming an air curtain for directing paint mist collecting on the shroud walls back into the paint spray pattern.

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