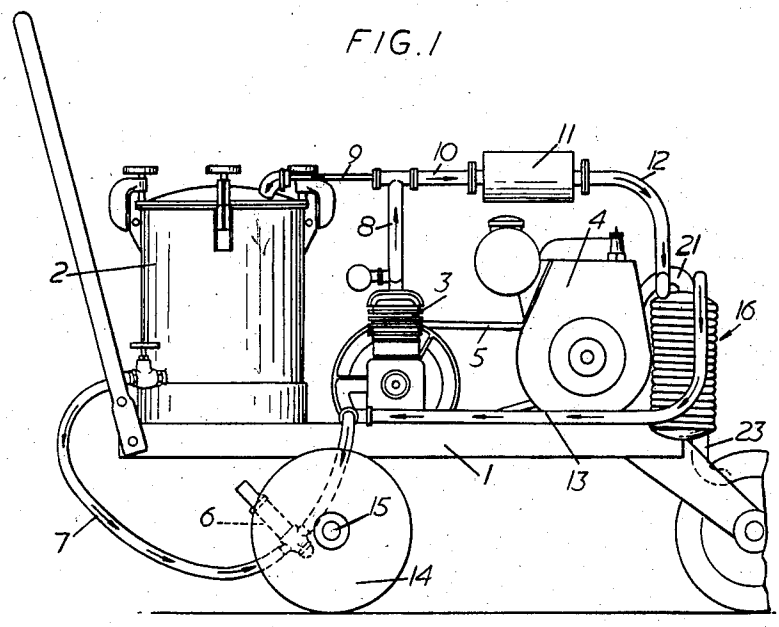
Nov. 18, 1958 S. H. WHITE ET AL 2,860,918

LIQUID SPRAY APPARATUS

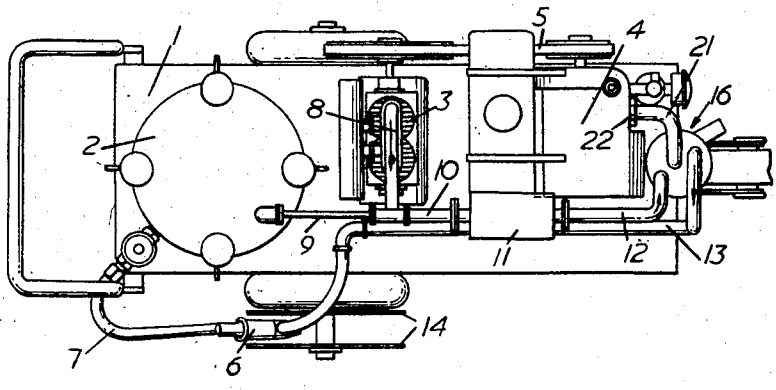
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FIG. 1



1174
X1181
X1130
X1118

FIG. 2



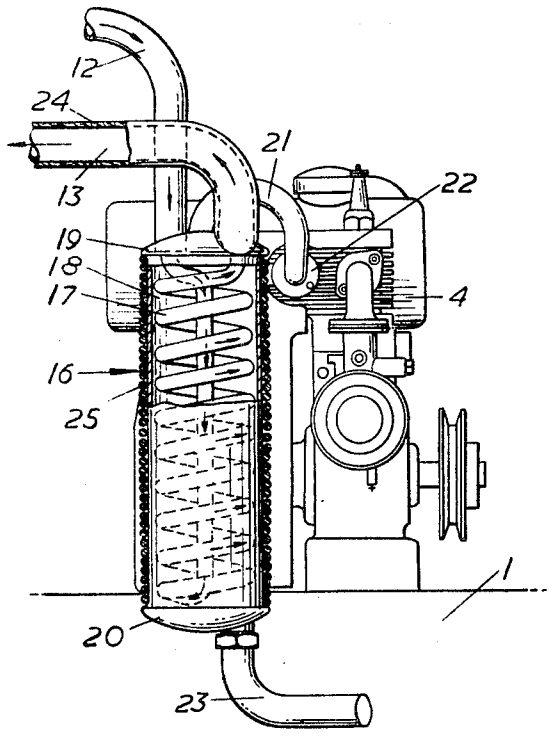
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LIQUID SPRAY APPARATUS

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FIG. 3.



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United States Patent Office 2,860,918
Patented Nov. 18, 1958

2,860,918

LIQUID SPRAY APPARATUS

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Application October 4, 1955, Serial No. 538,496

2 Claims. (Cl. 299—86)

This invention has reference to improvements in and relating to liquid spray apparatus, such as paint spray apparatus, comprising a container for the liquid to be sprayed, a spray gun adapted to receive the said liquid, a compressor, an internal combustion engine for driving the compressor, and means for conveying air from the compressor to the spray gun.

The principal object of the present invention is the provision of spray apparatus wherein the spray gun and liquid fed thereto are economically heated thereby resulting in greater fluidity of the liquid and better atomisation thereof, and wherein the pressure of the air is economically increased.

In accordance with the invention the apparatus includes means for transferring heat from the internal combustion engine to the air fed to the gun, said means comprising a heat exchanger through which the air is passed and which is arranged to be heated by the exhaust gases from the engine.

It will be appreciated that the heat transferred from the exhaust gases to the compressed air increases the pressure of the air delivered to the gun, the heated air heats the liquid at the moment of spraying and makes heat available at the point where pressure drops and as a result temperature would otherwise drop considerably, namely at the delivery nozzle of the gun.

The preferred way of carrying out the invention as applied to a transportable apparatus will now be described with reference to the accompanying drawings wherein:

Fig. 1 is a side view of the apparatus;

Fig. 2 is a plan view, thereof; and

Fig. 3 is a detail showing, more particularly, the heat exchanger.

The apparatus shown comprises a wheeled platform 1 on which are mounted a liquid container 2, an air compressor 3, an internal combustion engine 4 adapted to drive the compressor by means of a belt 5, and a spray gun 6. A pipe 7 conveys liquid from the container 2 to the gun 6. The compressor supplies air to the container through a pipe 8 and a branch 9 for the purpose of producing pressure in the container to assist the flow of liquid to the gun. The compressor also supplies air to the gun. The means for conveying the air from the compressor to the gun comprises the pipe 8, a branch 10, an air receiver 11 and pipes 12 and 13. The apparatus shown is intended particularly for marking lines on roads, tennis courts and the like. For this reason the spray from the gun is directed downwardly of a gap between two spaced stencil wheels 14 mounted on a wheel axle 15.

In accordance with the present invention means is provided for heating the compressed air before it discharges from the gun. In the example shown the heating means comprises a heat exchanger 16 having a passage provided by a tortuous pipe 17 for the through flow of the compressed air and a passage provided by a cylinder or container 18 for the through flow of hot

gases, said pipe 17 being located in the container and being included in the means for conveying air from the compressor 3 to the gun 6 in that it is in series with the pipes 12 and 13. The container 18 is closed at its top and bottom by dished plates 19 and 20. Pipes 12 and 13 enter and leave the container through the top plate 19. Hot exhaust gases from the engine are delivered to the container 18 by way of a pipe 21 connected at one end to the exhaust outlet 22 of the engine and at the other end to the top plate 19, said pipe 21 opening to the interior of the container 18. The gases exhaust from the container 18 after passing through it from top to bottom by way of an exhaust pipe 23 mounted on the bottom plate 20. The pipe 13 is preferably provided with lagging 24, Fig. 3, in order to conserve the heat in the air flowing along the pipe. The container is lagged at 25.

It will be readily understood that once the engine 4 is warm the hot exhaust gases in passing through the container 18, heat the pipe 17 and this pipe in turn heats air flowing through it to the gun. Hence the pressure of the air delivered to the gun is increased, the heated air heats the liquid at the spray gun, thus increasing the fluidity of the liquid and making heat available at the point where pressure drops, namely at the delivery nozzle of the spray gun. As a result of the invention, therefore, improved atomisation of the liquid is obtained.

Although the invention is shown herein as applied to a line marker, the apparatus may be of the kind wherein the gun is on a flexible pipe and is adapted to be held in the hand for use in spraying different articles.

What we claim is:

1. Liquid spray apparatus comprising a container for liquid to be sprayed, a spray gun connected with said container for receiving liquid therefrom, a compressor, an internal combustion engine drivingly connected with said compressor, means connecting said compressor and said spray gun for supplying air under pressure to said spray gun for atomizing the liquid as it is discharged by said gun, and a heat exchanger connected with the exhaust of said engine, said connecting means including means for conveying compressed air from the compressor to the container, means for conveying compressed air from said compressor to said heat exchanger to be heated by the exhaust gases in said heat exchanger and means for conveying the heated compressed air from the heat exchanger to the spray gun to heat the liquid within the gun and increase the fluidity of the liquid as it is sprayed.

2. Liquid spray apparatus comprising a container for liquid to be sprayed, a spray gun connected with said container for receiving liquid therefrom, a compressor, means connecting said compressor with said container for supplying air under pressure to said container to force liquid from said container under pressure to said spray gun, an internal combustion engine drivingly connected with said compressor, means connecting said compressor and said spray gun for supplying air under pressure to said spray gun for atomizing the liquid as it is discharged by said gun, and a heat exchanger connected with the exhaust of said engine and interposed in said last mentioned connecting means for heating the air supplied to said gun to heat the liquid within the gun and increase the fluidity of the liquid as it is sprayed.

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