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HEATED PORTABLE SPRAY GUN

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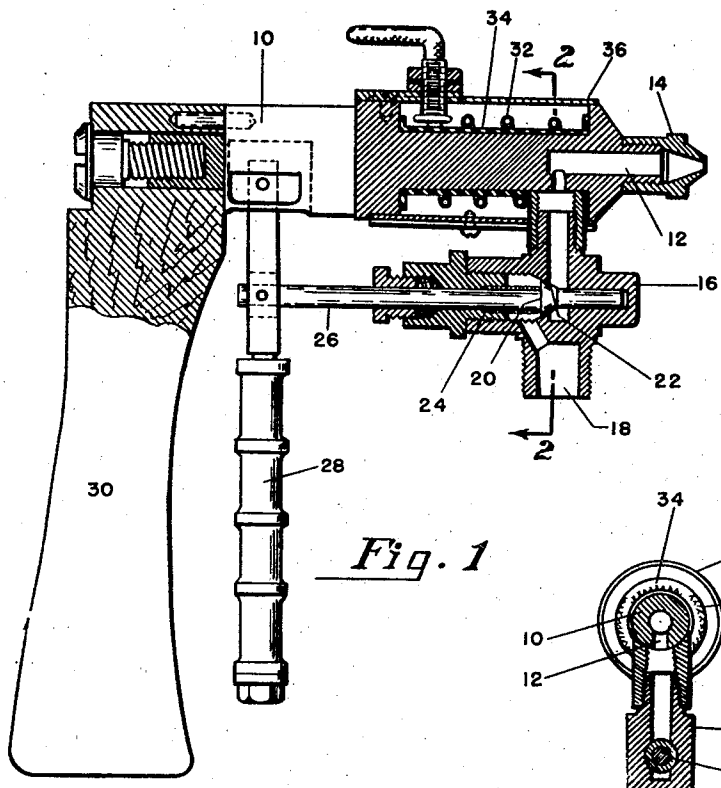


Fig. 1

Fig. 2

Inventor

ANTONIO S. PITRE, THEODORE M. LAVER,
MILTON MALOOF & ROBERT L. ROGERS.

By W. Glenn Jones

Attorney

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HEATED PORTABLE SPRAY GUN

Antonio S. Pitre, United States Navy, Theodore M. Lauer, Vallejo, Milton Maloof, Santa Rosa, and Robert L. Rogers, Oakland, Calif.

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This invention relates to a device for controlling the flow of material non-fluid at atmospheric temperatures and more specifically, to a gun for high-melting-point materials.

In general, it is an object of the invention to provide a device which is simple of construction, and quickly and readily manufactured of inexpensive common materials, which may be repaired by workmen at the place of operation, and which may be used with ease, safety and economy.

Another object is to provide a gun for high-melting-point materials such as hot plastic paints; and to provide such a gun in which the material delivered does not harden or, if the material does harden, which may be put to further use without being dismantled.

Another object is to provide a gun for hot plastic paints, which gun is suitable for the application of such paints in cramped quarters.

Other objects of the invention will, in part, be obvious, and will, in part, appear hereinafter.

The invention accordingly comprises articles of manufacture possessing the features, properties and relation of elements that will be exemplified in the articles hereinafter described, the scope of the application of which will be indicated in the claims.

For a better understanding of the invention, reference should be had to the following description taken in connection with the drawing in which

Fig. 1 is a side view in elevation, partly in section, and partly broken away, of a device embodying one form of the invention; and

Fig. 2 is a view, in section, the plane of section being indicated by the line 2—2 of Fig. 1, of the device shown in Fig. 1.

Guns for spraying materials above the atmospheric temperature of application have been subject to two important drawbacks. One was that from time to time, and for various reasons, the material to be delivered solidified in the gun. If the workman had to lay it down, the chances were that after a moment it would be found "frozen," the valve could not be moved and the nozzle was solid. In northern latitudes this occurred so often as to make such guns unusable as a matter of practice.

The other main drawback was that portable guns that could spray high-melting-point plastics or plastic paints were so large that on that account their use in certain fields of application was absolutely prohibited. In submarines, for example, space is filled wherever possible.

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The surfaces defining the few open spaces are close together and accessible only with difficulty. Although this presented a situation where spray rather than brush was obviously called for, still, because of the large size of the only guns to be had, practically all painting on submarines has had to be done by hand with a brush—this, despite the fact that paint applied by brush added five more tons of paint to a normal size present-day submarine than spraying would have required, and brush-applied paint is thicker, more brittle, has relatively poor adherence, and flakes worse. The adherence of paint in some instances is of vital importance. In a submarine, examplia gratia, flakes of paint must never be allowed to get into trim lines, strainers, trim pumps, or drain pumps because, if these latter become clogged with the flakes, the boat becomes incapable of diving or surfacing. As a result, certain submarine surfaces had to go unpainted, although they could have been reached by hand, because hand brushing gave later flaking and there was no gun that could deliver hot paint and that was small enough to be manipulated near the surfaces to be painted. Furthermore, the interiors of submarines sent to northern waters had to go without repainting no matter how badly they needed it, because it is impossible to brush on high-melting paints against cold metal.

The present gun does not have the above mentioned disadvantages. It is available at all latitudes. It is being used on the surfaces of all spaces that a hand can reach with a brush. It applies a hot paint which does not flake. It is being used on submarines, both exterior and interior surfaces. Also, it does not freeze.

In the drawing, 10 denotes a gun barrel or conduit means having therethrough a conduit 12, which enters on the underside near the discharge end and leaves axially at the front end. A nozzle 14 may be attached to the barrel to deliver the material from the conduit. A valve means or mechanism 16 is attached to the bottom of the barrel, and the end of a pasageway 18, through the mechanism, registers with the entrance of conduit 12. In the embodiment shown, an internally threaded tube depends from the barrel 10, and the valve mechanism is screwed therein. The opening and closing valve element 20 is movable axially toward and from the valve seat 22. Spring 24 tends to keep element 20 seated and the valve closed. The stem 26 of valve element 20 is pivotally connected to trigger 28 as by a pin or the like which is pivotally attached to

the barrel 10 as by a pin or the like. The trigger and handle 30, which are substantially at a right angle to the barrel, can be grasped in one hand. The handle is preferably removably secured to the barrel as by means of a screw, with a retaining pin, as shown, to prevent turning. The pivot pins or the like may be removed, and the valve means 16 may be readily unscrewed and detached from the barrel, when desired.

Means are provided which supply sufficient heat to maintain the material in the nozzle, barrel and valve in fluid condition, and these may be of any convenient type. The means shown comprise a resistance coil unit 32 wound around the barrel 10. The coil is separated from the preferably metallic barrel by insulation 34 and is covered by a removable casing 36. It is desirable that the unit be capable of maintaining the material passing through the gun at a temperature of at least 400° F. as there are coatings which do not adhere properly when applied at lower temperatures, although they may be fluid at somewhat lower temperatures. One end of heating unit 32 may be connected to the metallic valve 16 which may be connected to the heating element in the delivery tube described in the Patent No. 2,377,899 dated 12 June 1945, to Antonio S. Pitre and Earl Wilson for improvements in conduits. Or said one end may be connected directly to one side of a potential source.

The material is delivered into the opening 18 from a suitable supply source, through a flexible delivery tube, such for example, as is described in the aforementioned patent.

The heating and valve units are not linearly positioned in the direction of spray but are placed as laterally adjacent units, neither one having an end much farther from the handle than the other. Either unit may be demounted independently of the other. When the valve becomes clogged by some extraneous object, the valve can be quickly removed and cleaned while the heating unit keeps the rest of the gun warm.

The operation of the device will be clear from the foregoing description.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What we claim as new and desire to secure Letters Patent for is:

1. A portable, manually operable gun for delivering a material which does not flow at atmospheric temperature, said gun comprising grip means, barrel means extending from said grip means and having a conduit entering, and adapted for conducting material through the end of said barrel means, valve means in communication with said conduit and external to said barrel means, and heating means associated with said barrel means for heating by conduction contents of said conduit and said valve means, said valve means being demountable independently of said heating means.

2. A portable, manually operable gun for delivering a material which does not flow at atmospheric temperature, said gun comprising grip means, barrel means extending from said grip means and having a conduit entering, and adapted for conducting material through the end of, said barrel means, valve means in communication with said conduit and external to said barrel means, and heating means associated with said barrel means for heating by conduction contents of said conduit and said valve means, and trigger means near said grip means, said valve and trigger means being demountable independently of said heating means.

3. A portable, manually operable gun for delivering a material which does not flow at atmospheric temperature, said gun comprising grip means, barrel means extending from, and at about a right angle to, said grip means, said barrel means having a conduit entering near and adapted for conducting material through the end of said barrel means, valve means in communication with said conduit and external to said barrel means, and heating means associated with said barrel means for heating by conduction contents of said conduit and said valve means, said valve means being demountable independently of said heating means.

ANTONIO S. PITRE.
THEODORE M. LAUER.
MILTON MALOOF.
ROBERT L. ROGERS.

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