Feb. 8, 1944. F. W. GUIBERT 2,341,036

SPRAYING APPARATUS

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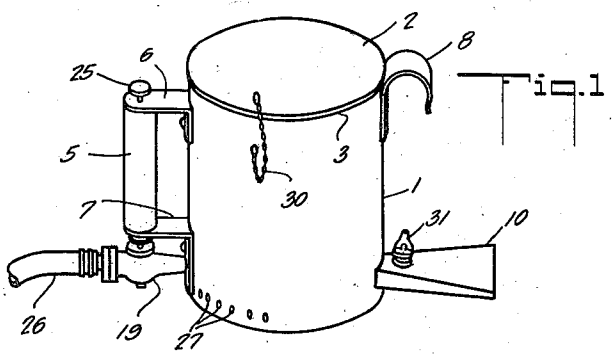

Fig. 1

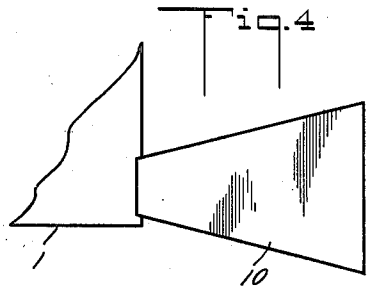

Fig. 4

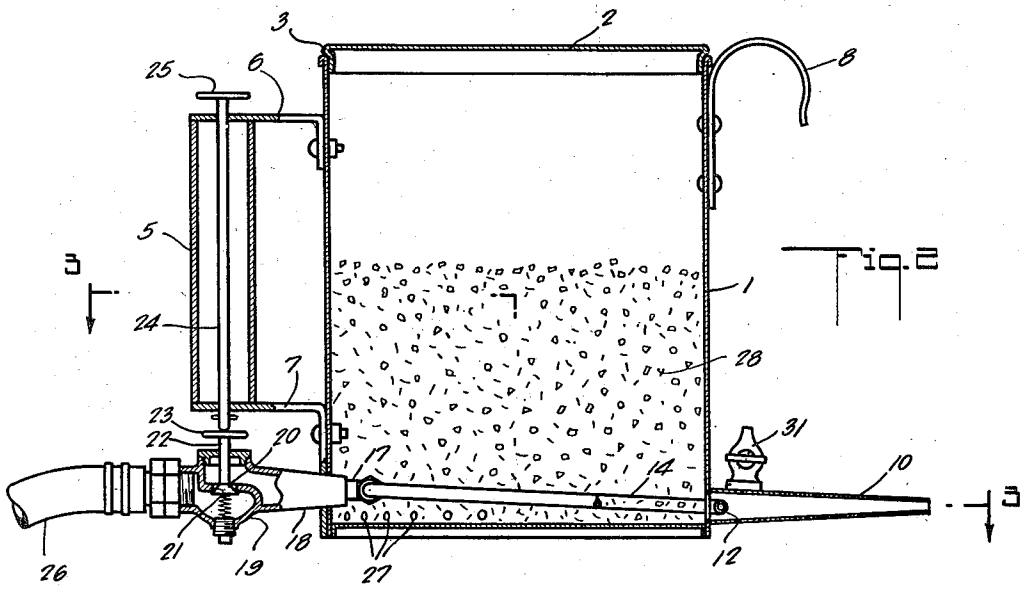

Fig. 2

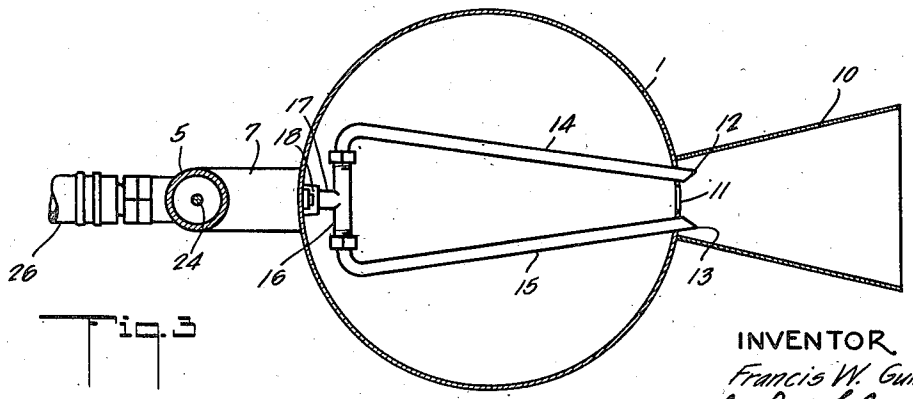

Fig. 3

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SPRAYING APPARATUS

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3 Claims. (Cl. 91—45)

This invention relates to apparatus for spraying dry materials onto a surface to which they adhere, for producing decorative effects. Such materials may be mica, or other mineral matter, as color, silica, or the like. The surface is usually formed by a fresh coat of paint, or other sticky material.

Apparatus to spray such materials has heretofore been heavy and not readily portable, due to the fact that the pressure for producing the spray was applied to the container. Further, such an arrangement requires that that closure for the charging opening of the container must be securely fastened. Thus the supply of material in the container can not be easily renewed.

It is an object of this invention to provide spraying apparatus for such work which is light and easily manipulated.

It is another object of this invention to provide such apparatus wherein the need for securely fastening the closure to the container is eliminated, thus making the refilling of the container a simple matter.

It is still another object of this invention to provide a spraying apparatus wherein it is optionally possible to prevent the air blast from carrying material out of the container; that is, to make possible the use of the air blast for removing undesired material from the surface being operated upon.

In using such apparatus with some materials, the materials have a tendency to pack or arch adjacent the outlet of the container, thus preventing their proper discharge; and this is especially true with mica flakes, or other light materials.

It is a still further object of this invention to provide spraying apparatus having a novel means for agitating the material to prevent such packing.

This invention possesses many other advantages, and has other objects which may be made more easily apparent from a consideration of several embodiments of the invention. For this purpose there are shown a few forms in the drawing accompanying and forming part of the present specification. These forms will now be described in detail, illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of the invention is best defined by the appended claims.

In the drawing:

Figure 1 is a perspective view showing the spraying apparatus;

Fig. 2 is a transverse axial section of the apparatus of Fig. 1 on an enlarged scale;

Fig. 3 is a cross section as seen on plane 3—3 of Fig. 2; and

Fig. 4 is a fragmentary side elevation showing a modified form of the invention.

In the present form of the invention, the device incorporates a container 1 of light sheet metal, and which may be cylindrical. It is provided with a cover 2 which is not necessarily air tight and is merely held in place by a depending lip 3, so as to be easily removable and permit loading of the container with mica or other decorative material which it is intended to distribute by the apparatus. For ready manipulation, the container 1 may be provided with a handle structure 5, mounted on the container by brackets 6 and 7.

To permit the device to be suspended from any appropriate support, such for example as a rung of the ladder on which the operator may be standing, a hook member 8 is secured to the container 1 adjacent the upper edge of the container.

Adjacent the lower edge of container 1, substantially diametrically opposite to handle 5, is a discharge nozzle 10. Nozzle 10 is of rectangular cross section, having a relatively long and narrow outlet. The walls of the nozzle are inclined, so that adjacent the container the nozzle is narrower. The nozzle 10 communicates freely with the interior of the container through an opening 11.

An air blast is used for drawing the material from container 1 into the nozzle 10 and then discharging it from the nozzle. To form this air blast, a pair of jets 12 and 13 are provided. Pipes 14 and 15, forming these jets extend across the lower portion of the container, and enter nozzle 10 on opposite sides of opening 11. Pipes 14 and 15 converge towards the nozzle so that the streams of air discharged by jets 12 and 13 meet within the nozzle. This produces a very effective suction within the nozzle as well as causing the discharged material to be uniformly distributed through the nozzle orifice and to be discharged with a uniform velocity. As the air blasts from openings 12 and 13 meet at the base of nozzle 10, there is a tendency for the air to be directed transversely against the top and bottom walls of the nozzle 10. However, these walls serve effectively to confine the air stream in a general horizontal direction and to change the course of the air in alinement with the nozzle opening.

The ends of pipes 14, 15 within container 1 are joined by a T fitting 16, the branch 17 of which is connected to an extension 18 of control valve 19. Valve 19 is of that general type wherein a spring pressed closure member 20 serves to prevent passage of air through a ported seat 21, an operating stem 22 extending out of the valve and terminating in a thumb button 23. Such valves are commonly known as "blow-gun" valves.

Valve 19 is located directly beneath handle 5,

which is made hollow to accommodate an operating rod 24 engaging thumb button 23. Rod 24 has a similar thumb button 25 at its upper end. The handle 5 may be grasped by the fingers of one hand, the thumb being used to operate the valve 19. Thus, the device may be manipulated by one hand, leaving the operator's other hand free. A flexible hose 26 of suitable length serves to connect valve 19 with an appropriate source of compressed air

An important feature of the apparatus is that the container 1 is never subjected to the air pressure used for discharging the material 28 placed in the bottom of the container 1. Thus the container can be made of light material, so that it can be conveniently handled. Further, this obviates the need of cover 2 being secured in an air tight manner. It merely rests on the top of the container and is readily removable when the container is to be refilled. A chain 30 is provided to prevent the cover 2 being separated from the container 1 and possibly lost.

To permit air to enter the container 1 in response to the ejector action of jets 12 and 13 in nozzle 10, a plurality of small openings or ports 27 are provided in the wall of the container 1 near its bottom. These obviate any danger of the container 1 collapsing due to creation of a vacuum therein.

Further, some of the materials which the apparatus is to be used with, for instance mica, have a tendency to pack around the outlet. The air entering through ports 27 serves effectively to agitate the material 28 and prevent any packing or bridging, thus ensuring a free discharge into the nozzle in response to the suction therein.

It may be desired at times to provide an air blast, which carries no material, as for instance when it is desired to remove an excess of deposited material from a surface. This can readily be done by providing a small valve 31, which optionally serves to place the interior of the nozzle 10 in communication with the surrounding air. Thus if valve 31 is open, the air blast from jets 12, 13 will merely draw air through valve 31 and discharge it, instead of drawing material through opening 11 from the container 1. This valve may also be used to control the amount of material which a blast of given strength will carry, since by partially opening it, the suction on opening 11 will be reduced.

As shown, the nozzle orifice extends in a direction perpendicular to the axis of the container, that is, in a horizontal direction when the spray is in use.

It may be desirable to have the nozzle opening extend in some other direction. This can be readily done. Thus, as shown in Fig. 4, the nozzle opening is parallel with the container axis, so that the opening extends in an approximately vertical direction when the apparatus is in use.

What is claimed is:

1. In a device of the character described, a container, a discharge nozzle, a gaseous ejector jet in said nozzle, means to connect the nozzle to the container to draw material from the container and discharge it from the nozzle, control means for said jet, means for continuously maintaining the container at substantially atmospheric pressure, and means for admitting air at atmospheric pressure to said nozzle to reduce the suction of said jet.

2. In a device for discharging divided material, a container forming a space for the accommodation of the material, an ejector including a discharge nozzle having a passage with a restricted discharge opening, means forming a pair of converging air jets in said nozzle, means forming an opening of fixed size between the container and the nozzle, means controlling said jets, means regulating the suction produced by the jets in the nozzle, said last mentioned means acting independently of the means controlling the jets, and means to admit air at atmospheric pressure freely to the space in the container adjacent the nozzle.

3. In a device of the character described, a container open to atmospheric pressure, an air operated discharge nozzle in one side of the container, a handle opposite the nozzle for supporting the container, said nozzle and said handle being integral with the container, a valve for controlling admission of air to said nozzle, and operating means for the valve extending through the handle.

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