Sept. 8, 1953 J. C. SHOTTON 2,651,545

PAINT SPRAY ATTACHMENT DEVICE

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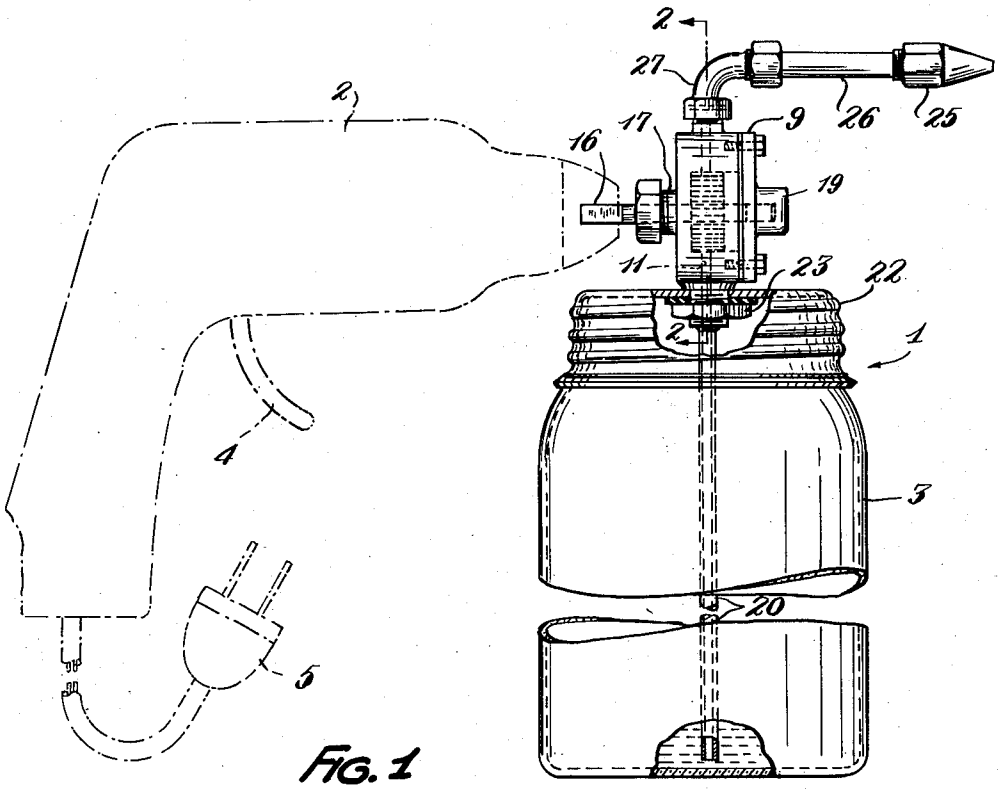

FIG. 1

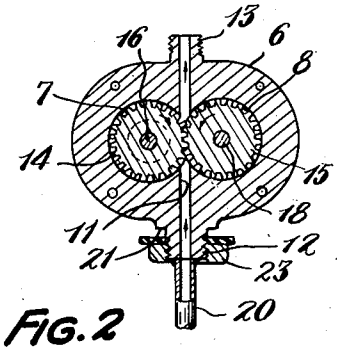

FIG. 2

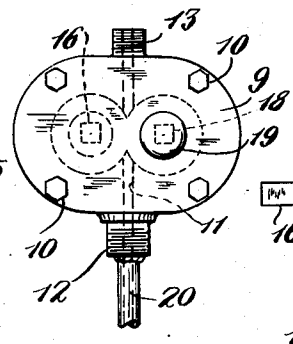

FIG. 3

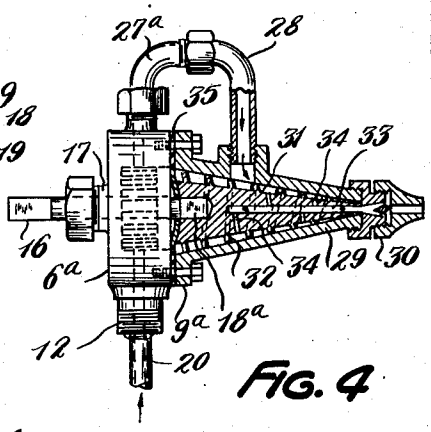

FIG. 4

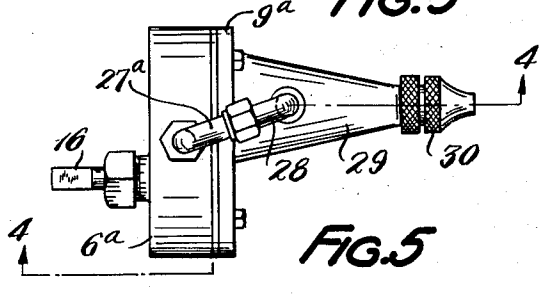

FIG. 5

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PAINT SPRAY ATTACHMENT DEVICE

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5 Claims. (Cl. 299—97)

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This invention relates to paint spraying apparatus, especially to an attachment paint spray unit which is especially suited for engagement with a driven shaft for actuating and operating the spray device.

Heretofore there have been various types of paint spray units provided for use by the average home owner so that the painting operation presumably was simplified and facilitated. Due to the cost of such paint spray means, and to the size and weight of the painting apparatus, it has generally been the custom in the past that home owners normally would not buy paint spraying devices but would apply the small quantities of paint that they use around the home by hand. However, nearly all of such home owners have some kind of a portable electric power tool, such as an electric drill.

Some efforts have been made heretofore to provide an electric sprayer device but these articles have not been very satisfactory in the amount of paint and types of paint that can be deposited thereby.

It is the general object of the present invention to provide a paint spray attachment which can be secured to and can be driven by a driven rotatable shaft, such as one on an electric drill device.

Another object of the present invention is to provide a relatively uncomplicated, inexpensive paint spray attachment mechanism of sturdy construction.

Yet another object of the invention is to provide a portable paint spray unit that can be readily secured to and released from fixed relationship with the driving chuck of an electric drill.

A further object of the invention is to provide a paint spray device which will effectively and efficiently spray large quantities of any type of a paint composition.

Yet another object of the invention is to provide a paint spray device that is readily adapted to have a booster pressure unit associated with the paint spray member when desired.

Another object of the invention is to provide a light weight, easily carried paint spray device that is adapted for use with conventional driving means and paint receiving containers.

The foregoing and other objects and advantages of the invention will be made more apparent as the specification proceeds.

Reference should now be had to the accompanying drawings wherein several presently best known embodiments of the invention are illustrated, and wherein:

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Fig. 1 is a side elevation, partially broken away and shown in section of a paint spray device of the invention shown engaged with a paint container and with a drive member being associated therewith;

Fig. 2 is a fragmentary vertical section taken on line 2—2 of Fig. 1;

Fig. 3 is a side elevation of the right side portion of the device of Fig. 1;

Fig. 4 is a fragmentary vertical section taken on line 4—4 of Fig. 5; and

Fig. 5 is a plan of a modification of the attachment of the invention.

In order to simplify comparison between similar parts in the drawings and specification, corresponding numerals will be used on such similar parts in both the specification and the drawings.

Reference now should be had to the details of the structure shown in the drawings, and a paint spray attachment unit of the invention is indicated in general by the numeral 1, which attachment is shown in association with a conventional electric drill 2 and with a suitable paint receiving container, such as a mason jar 3. The electric drill 2 has a suitable trigger control 4 provided therefor and has an electric plug 5 provided for connecting the drill to a suitable source of electrical energy.

The attachment unit includes a frame or body block 6 which has a pair of substantially tangent arcuate or circular recesses 7 and 8 formed therein and extending to one face edge thereof. This recessed surface of the frame 6 is provided with a cover plate 9 that is suitably removably secured thereto by cap screws 10. The frame 6 also has a bore 11 extending substantially vertically therethrough and connecting with the arcuate recesses 7 and 8 at the intersecting portions thereof. A threaded downwardly extending boss 12 and a similar upwardly extending boss 13 are usually formed integrally with the frame 6 for purposes that will hereinafter be explained.

As an important element of the present invention, some positive type of pump means are associated with the frame 6 and are shown as comprising a pair of gears 14 and 15 the teeth of which mesh with each other and with such gears 14 and 15 being snugly received in the recesses 7 and 8 to form a gear pump. The gear 14 is journaled in the recess 7 by means of a shaft 16 that protrudes from a positioning boss 17 that extends from one side of the frame 6 whereas the gear 15 is positioned by a shaft 18 which is suitably journaled in the frame 6 and protrudes from the recess surface thereof with such shaft 18 extending through the cover plate 9 into a suitable receiv-

ing boss 19 provided in such cover plate for sealing the shaft 18 in the apparatus of the invention.

In order to draw paint up into the frame 6, a suitable suction tube 20 is welded or otherwise secured to the lower end of the bore 11 that is formed in the frame 6. A shoulder 21 is formed on the frame 6 at the base of this boss 12 so that means can be provided in the attachment unit of the invention for readily securing same to a portable paint container. These means normally comprise a container top 22 that is received on the boss 12 and seats against the shoulder 21, being retained in such position by a lock nut 23 which may have a gasket or washer associated therewith for sealing the connection between the container top 22 and the boss 12. Normally this suction tube 20 will extend down to the lowest portion of the mason jar 3.

Discharge of paint passing through the attachment unit of the invention may be effected by use of a conventional nozzle 25 which connects to the upper end of the bore 11 by means of a tube 26 and a fitting 27. Thus paint can be positively drawn up from the mason jar 3 and be forced from the nozzle 25 when the shaft 16 is suitably engaged with the driving chuck of the electric drill 2 or other portable power member with which the paint spray attachment unit of the invention is used.

In case it is desired to have a boosted pressure outlet from the spray attachment of the invention, the modification of the invention shown in Figs. 4 and 5 may be used. In this instance the principal components of the attachment unit shown in Figs. 1 through 3 will be used and they may include a frame 6a that is provided with a discharge fitting 27a which connects to a discharge elbow 28. In this embodiment of the invention, a cover plate 9a is provided that engages with one side portion of the frame 6a and which has a conical boss 29 provided thereon. A conventional nozzle 30 is adjustably secured to the end of the conical boss 29 for discharge of paint from the device of the invention. Paint is supplied to the interior of the conical boss 29 by the elbow 28 which connects thereto. Positioned within the boss 29 is a conical plug 31 which has a spiral conveyer 32 suitably formed on the periphery thereof. This conical plug and conveyer formed thereon are received snugly within the conical boss 29 and are supported on a shaft 18a which extends from one of the gear means (not shown) in the gear pump device and which shaft 18a is driven whenever the device is operated by a suitable actuation means. The conical plug 31 is also provided with a bore 33 that extends a portion of the length thereof from the small end of such plug and which has a plurality of axially spaced, substantially radially directed feed holes or conduits 34 formed therein that connect the surface of the conical plug 31 to the bore 33. Hence on rotation of the gear pump means, paint will be drawn up through the bore in the frame 6a and be discharged through the elbow 28 into the interior of the conical boss 29. Since the conical plug 31 will also be rotating at this time, any paint forced into the conical boss 29 will similarly be ejected therefrom at a boosted pressure since the paint receiving area, or volume within the conical boss 29 will be constantly decreasing due to the forced movement of the paint toward the smaller or discharge end of the boss 29. The bore 33 in the plug 31 connects to the nozzle 30 which can be adjusted to any desired position to produce the desired spray of liquid paint particles.

A suitable gasket 35 may be positioned between the cover plate 9a and frame 6a of the unit shown in Figs. 4 and 5.

The shaft 16 can be readily fixedly engaged with a positioning and driving member such as the driven chuck of the drill 2 in any conventional manner to form a unit of the drill and sprayer device.

The gears 14 and 15 are of such width that they intersect the entire cross section of the bore 11. If the gears do not readily draw paint up into the tube 20 to the gears, the container 3 could be inverted one or more times to prime the gear pump and aid in sealing same.

It should be appreciated that in the spraying devices of the invention, the discharge material comprises liquid paint and has no conveyor gas or material diluting such paint so that an effective and thorough painting action can rapidly and readily be produced by use of the sprayer attachment means of the invention.

It should be noted that the paint sprayer unit of the invention can be relatively inexpensively manufactured and sold but yet that a dependable painting action can easily be achieved thereby. The unit is light weight and readily portable so that the objects of the invention are achieved.

While several complete embodiments of the invention have been disclosed herein, it will be appreciated that modifications of these particular embodiments of the invention may be resorted to without departing from the scope of the invention as defined by the appended claims.

Having thus described my invention, what I claim is:

1. A paint sprayer attachment unit comprising a container cap, gear pump means secured to said cap, a discharge tube connected to said pump means, a suction tube connected to said pump means, a discharge nozzle, and booster means connecting said discharge tube to said nozzle.

2. An attachment as in claim 1 wherein said booster means comprises a spiral conveyer member, means for driving said member from said gear pump means, and a confining sleeve for said member, said member having a discharge bore connecting to said nozzle.

3. A paint sprayer attachment unit comprising a container cap, gear pump means secured to said cap, a discharge tube connected to said pump means, a suction tube connected to said pump means, a discharge nozzle, and booster means connecting said discharge tube to said nozzle, said booster means including a shaft connecting to and protruding from said gear pump means, a conical screw conveyor member engaged with and driven by said protruding shaft, and a conical confining sleeve positioned around said conveyor member, said discharge nozzle being connected to the apex of said confining sleeve in communication with said conveyor member to receive liquid discharged thereby, said discharge tube connecting to the base portion of the said conveyor member to receive liquid pumped therefrom.

4. A paint sprayer attachment unit comprising a container cap, gear pump means secured to said cap and having a protruding drive shaft, a discharge tube connected to said pump means, a suction tube connected to said pump means, a discharge nozzle, and pressure booster means connecting said discharge tube to said nozzle; said booster means including a shaft connecting to and protruding from said gear pump means, a pressure producing member engaged with and driven by said protruding shaft, and a confining

member positioned around said pressure producing member.

5. A paint spray device for attachment to a driven member, said device comprising a metal block frame having a pair of substantially tangent cylindrical recesses provided therein in one side thereof, a cover plate over the recesses in the said frame, a pair of gears one of which is positioned in each of said recesses with the gears being in mesh to provide a gear pump, a coupling shaft journaling one of said gears in one of the recesses in said frame and extending therefrom for engagement with a driven member, a container top secured to said frame for engagement with a paint container, a discharge nozzle connected to said gear pump means to receive paint therefrom, a suction tube connected to said gear pump means to supply paint thereto and extending an appreciable distance through said container top for immersion in any paint in a container secured to said top, a second shaft journaling the second of said gears in the other of said recesses and protrudes from said frame,

a conical conveyor member engaged with and driven by said second shaft, a conical confining sleeve positioned around said conveyor member, a discharge nozzle connected to the apex of said confining sleeve in communication with said conveyor member to receive liquid discharged thereby, and means connecting the base portion of said conveyor member to said gear pump means to receive paint pumped therefrom.

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