

May 30, 1950

A. H. BARNES ET AL
APPARATUS FOR APPLYING PAINT

2,509,954

Filed Feb. 11, 1946

FIG. 1.

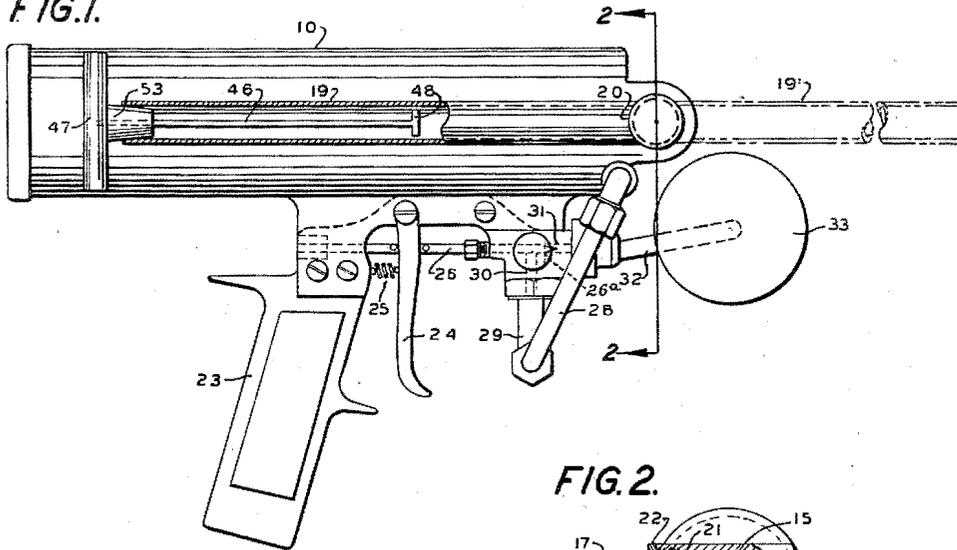


FIG. 2.

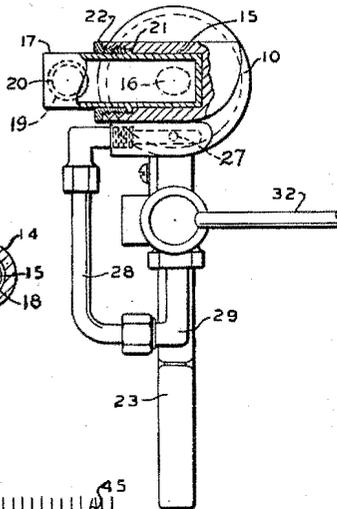


FIG. 3.

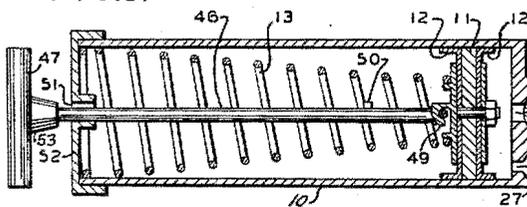
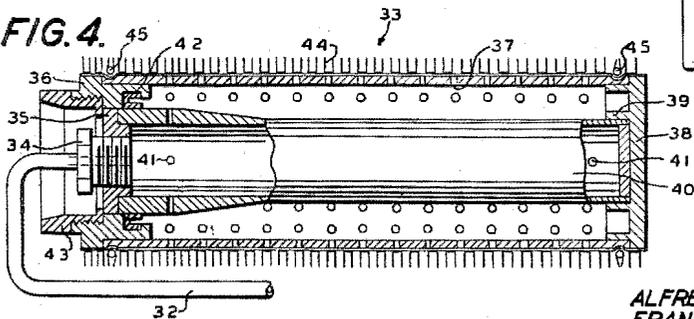


FIG. 4.



ALFRED H. BARNES
FRANK GROSSE
INVENTOR.

Paul W. Brugman.
ATTORNEY

UNITED STATES PATENT OFFICE

2,509,954

APPARATUS FOR APPLYING PAINT

Alfred H. Barnes, Glendale, and Frank Grosse,
Los Angeles, Calif., assignors, by mesne assign-
ments, to Rubberset Company, Newark, N. J.,
a corporation of New Jersey

Application February 11, 1946, Serial No. 646,774

7 Claims. (Cl. 91—62.5)

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This invention relates to apparatus for applying paint to walls, floors and other surfaces, and more particularly to apparatus in which the paint is supplied to and spread by a roller.

The purpose of the invention is to provide an apparatus which permits the covering of extensive surfaces with paint in a continuous operation, without dipping the roller into a paint supply, and which is self contained and free from tubes for supplying paint or air from fixed sources.

The invention will best be understood with reference to the attached drawings of an illustrative embodiment thereof, in which

Fig. 1 is a side elevation of the assembled device with a portion of the filling tube shown in section;

Fig. 2 is an end elevation of the apparatus, as on the line 2—2 of Fig. 2, the filling valve being shown in section.

Fig. 3 is a longitudinal section through the paint supply barrel, and

Fig. 4 is a longitudinal section through a preferred form of the applicator roller.

Referring to the drawings, 10 is a reservoir or supply barrel for the paint to be spread. This element should be truly cylindrical and smooth inside and should be as light as possible; e. g., it may be made of a light weight metal or a suitable hard plastic.

Within the reservoir is a piston 11 provided with cup leathers or other packing 12—12 and with an open coil spring 13 urging the piston toward the right or discharge end of the barrel.

At this end of the barrel 10 a boss 14 is bored out to form a pocket 15 communicating with the interior of the barrel 10 through a port 16. Within this opening is closely fitted a sleeve 17 having both its ends closed and having a side opening 18 so positioned as to register with port 16 when the filling tube 19, which is projected from the sleeve 17 at 20, is turned to the extended position indicated by dotted lines in Fig. 1. The sleeve 17 may conveniently be retained in pocket 15 by means of a circumferential rib 21 and a nut 22.

The barrel 10 is mounted on a pistol grip 23 carrying a trigger 24 which is urged away from the grip as by means of a spring 25. Movement of the trigger 24 toward the grip 23 actuates a valve needle 26 which controls the flow of paint from the reservoir 10 to the roller 33 through a channel comprising port 27, tubular connections 28 and 29, bores 30 and 31 and a tube 32 coupled to the roller. Upon release of the trigger 24, the flow of paint from the reservoir to the tube

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32 is cut off as the needle valve 26 obstructs the entrance to the bore 30 and its conical end engages a conventional seat 26^a.

This combination of hand grip, trigger and valve is conventional in paint spray guns and is subject to considerable variation in detail, the essential being that communication be established through the channel 27—32 connecting the barrel or reservoir 10 with the roller 33 when the trigger 24 is retracted and that it be cut off when the trigger 24 is released.

The preferred form for the spreading roller indicated at 33 in Fig. 1 is illustrated in Fig. 4. In this figure the supply tube 32 has its end remote from the barrel 10 permanently fixed in a nut 34 which is screwed into a disc 35, this disc being finished on its outer edge to provide a bearing for the end ring 36. The roller 33, which may be of perforated metal tubing as indicated at 37 or of stiff wire mesh or other relatively rigid foraminous material, is provided with a closure plate 38 fixed in its opposite end, this plate having a circular, inwardly projecting rib 39 forming a seat for the end of an inner tube 40. This inner tube, on which the roller proper is free to rotate when moved along a solid surface, is provided with a few perforations 41 to allow the passage of paint into the perforate shell 37 of the roller 33.

The inner tube 40 is nonleakably attached to bearing disc 35 and leakage between the tube 40 and roller 33 is prevented by a U-section ring gasket 42. The bearing disc 35 is retained removably within the roller 33 by a nut 43 screwed into end ring 36 to which the roller 33 is attached.

In this structure, the inner tube 40 is fixed in position as regards the supply tube 32 and rotatably supports the roller 33 at both ends. It is also possible to branch tube 32 and introduce the branches into each end of the roller, but the method of support shown in the figure is preferred as leaving one end of the applicator roller clear for working into right angle corners.

Paint entering the inner tube 40 through supply tube 32, under the pressure created by spring 13, flows through perforations 41 into the interior of perforate tube 37. The outer covering of the roller 33 is a tube 44 formed of some permeable and flexible material such as hair felt, a thick wool felt or, preferably, a deep pile carpet. The outer tube 44 is retained at its ends by spring rings or wire ties indicated at 45.

The filling tube 19 pivots in pocket 15 so that it may be extended out to the dotted line posi-

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tion 19' (Fig. 1) and back to a position parallel and closely adjacent to the reservoir, as at 19. In position 19', ports 16 and 18 are in register and, while in that position, the reservoir 10 may be filled by dipping the end of the tube 19 into a container of paint (not shown) and retracting piston 11. This retraction is accomplished by means of a pull rod 46 having a hand grip 47 and a T 48 at the opposite end. The T 48 is inserted under a hook 49 formed on the face of the piston 11. It is desirable to provide the pull rod 46 with a projection 50 (Fig. 3) which will pass through an opening 51 in the outer head 52 and engage the outer surface of the head when the rod is turned slightly, thus holding the piston 11 in retracted position while the filling tube 19 is being folded back to the position in which the valve is closed. The opening 51 is also large enough to permit the passage of the T 48 therethrough.

As soon as communication between the filling tube 19 and the reservoir 10 is interrupted the pull rod 46 may be unhooked and withdrawn, and may be laid aside or may be inserted in the filling tube (after draining out the paint contained in it), a flexible stopper 53 serving to retain the rod 46 in position and also to prevent any drip of paint from the end of the tube 19 while the contents of the reservoir 10 are being applied. The unhooking of the pull rod 46 permits the spring 13 to come into play and apply the pressure (which need only be very slight) which feeds the paint to the applicator roller 33.

The capacity of the reservoir 10 may be varied at will but will usually be about that of the reservoir of a spray gun, more or less one quart. The device is advantageous over the spray gun in that it creates no spray and may be used in confined spaces. It is advantageous over both spray guns and other forms of roller applicator internally fed in that it requires no tubing for the supply of air or paint, is completely self contained and requires no accessories whatever. It is highly advantageous over the forms of roller applicator which require to be dipped into the paint supply in that the supply to the roller is continuous and is under complete control through the trigger actuated valve, thus permitting the application of an even coating of any desired thickness.

The usefulness of the disclosed structure is not limited to the exact form of roller applicator shown but may be used to advantage with any form of roller which is internally supplied with the paint to be spread.

We claim as our invention:

1. A paint spreading device comprising: a handle; a reservoir for paint mounted on said handle; a feed tube attached to said handle and a permeable spreading roller revolvably mounted at the end of said feed tube; means providing a channel affording communication between one end of said reservoir and said feed tube and a manual valve positioned in said channel arranged to control the flow of paint through said channel; a piston slidably mounted in said reservoir; resilient means urging said piston toward the end of said reservoir with which said channel communicates; a pivoted filling tube communicating with said reservoir and arranged to be moved into a position adjacent and alongside of said reservoir when not in use and into a position extending away from said reservoir when in use; valve means connected with said filling tube arranged to interrupt said communication when said tube is in said adjacent position; a pull rod detachably

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engaging said piston to retract the same when refilling said reservoir; and means for retaining said pull rod within said filling tube when detached from said piston.

2. A paint spreading device comprising: a barrel providing a reservoir for paint; a feed tube communicating with one end of said barrel; a paint applying roller revolvably mounted on said feed tube and arranged to communicate therewith to receive paint therefrom, said barrel having a cylindrical chamber at said one end thereof and having a port establishing communication between said chamber and the interior of said barrel; a hollow cylindrical sleeve rotatably mounted in said chamber; a filling tube carried by said hollow sleeve and communicating with the interior thereof, said hollow sleeve having a port arranged to register with said first-mentioned port only when said hollow sleeve is in a predetermined angular position relative to said chamber; and means in said barrel for drawing paint thereinto through said filling tube when the ports in said barrel and hollow sleeve are in registration.

3. A paint applying and stippling roller which comprises a handle member, a conduit rigidly connected with said handle member and formed to provide a free ended portion extending transversely across the end of said handle member and spaced from said end, a roller shell removably mounted on said portion of said conduit and having a free outer end, said portion of the conduit and said roller shell having passages for the delivery of paint to the outer surface of said roller, said roller shell and conduit portion having cooperating bearing and journal surfaces enabling said roller shell to rotate freely on said portion, said portion having also a surface arranged to be engaged by a surface on said roller shell to determine the relative axial positions of said portion and said roller shell, and a retaining member freely shiftable along and rotatable on said portion adjacent the inner end of said roller, said roller shell and said retaining member having inter-engaging means adapted in conjunction with said surfaces to hold said roller shell against axial movement on said portion, said retaining member having a finger engageable part exterior of said roller for turning said member relative to the roller.

4. A paint applying and stippling roller which comprises a handle member, a conduit rigidly connected with said handle member and formed to provide a free ended portion extending transversely across the end of said handle member and spaced from said end, a roller shell removably mounted on said portion of said conduit and having a free outer end, said portion of the conduit and said roller shell having passages for the delivery of paint to the outer surface of said roller, said roller shell and conduit portion having cooperating bearing and journal surfaces enabling said roller shell to rotate freely on said portion, said portion having also a surface arranged to be engaged by a surface on said roller shell to determine the relative axial positions of said portion and said roller shell, and a nut freely shiftable along and rotatable on said portion adjacent the inner end of said roller and having threaded engagement with said roller shell, said nut having a finger engageable part for turning the same, the nut acting in conjunction with said surfaces to retain said roller shell against axial movement on said portion.

5. A paint spreading device comprising; a

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reservoir for paint; a feed tube communicating with one end of said reservoir; a paint applying roller revolvably mounted on said feed tube and arranged to communicate therewith to receive paint therefrom; a piston slidably mounted in said reservoir; resilient means urging said piston toward the feed tube end of said reservoir; a filling tube shiftably connected to and communicating with said reservoir adjacent the feed tube end thereof and arranged to be moved to a position adjacent and alongside of said reservoir when not in use and to be moved to an extended position during refilling of the reservoir; valve means carried by said filling tube adjacent its point of connection with said reservoir and operable manually in conjunction with the shifting thereof to said extended position to control the intake of paint through said filling tube; and means connected to said piston to retract the same to effect refilling of said reservoir through said filling tube.

6. A paint spreading device comprising: a reservoir for paint; a feed tube communicating with one end of said reservoir; a paint applying roller revolvably mounted on said feed tube and arranged to communicate therewith to receive paint therefrom; a piston slidably mounted in said reservoir; resilient means urging said piston toward the feed tube end of said reservoir; a filling tube pivoted on and adapted to communicate with said one end of said reservoir; valve means in the pivot of said filling tube rotatable therewith as said filling tube is rocked from an active position to an inactive position, said valve means being arranged to provide said communication when said filling tube is disposed in said active angular position relative to said reservoir and to interrupt said communication when said filling tube is disposed in said inactive angular position; and means for retracting said piston to effect refilling of said reservoir through said fill-

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ing tube when said filling tube is disposed in said active angular position.

7. A paint spreading device comprising: a reservoir for paint; a feed tube communicating with one end of said reservoir; a paint spreading roller revolvably mounted on said feed tube and arranged to communicate therewith to receive paint therefrom; a piston slidably mounted in said reservoir; resilient means urging said piston toward the feed tube end of said reservoir; a filling tube pivoted on and adapted to communicate with said one end of said reservoir; valve means in the pivot of said filling tube rotatable therewith as said filling tube is rocked from an active angular position to an inactive angular position, said valve means being arranged to provide said communication when said filling tube is disposed in said active angular position relative to said reservoir and to interrupt said communication when said filling tube is disposed in said inactive angular position; and means connected with said piston for retracting said piston to effect refilling of said reservoir through said filling tube when said filling tube is disposed in said active angular position, said last-named means including an element which is arranged to cooperate with the open end of said filling tube to form a closure therefor.

ALFRED H. BARNES.
FRANK GROSSE.

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