April 21, 1931. A. H. DOWNS 1,802,141

PAINT SPRAYING DEVICE

Filed Jan. 23, 1928

Fig. 1.

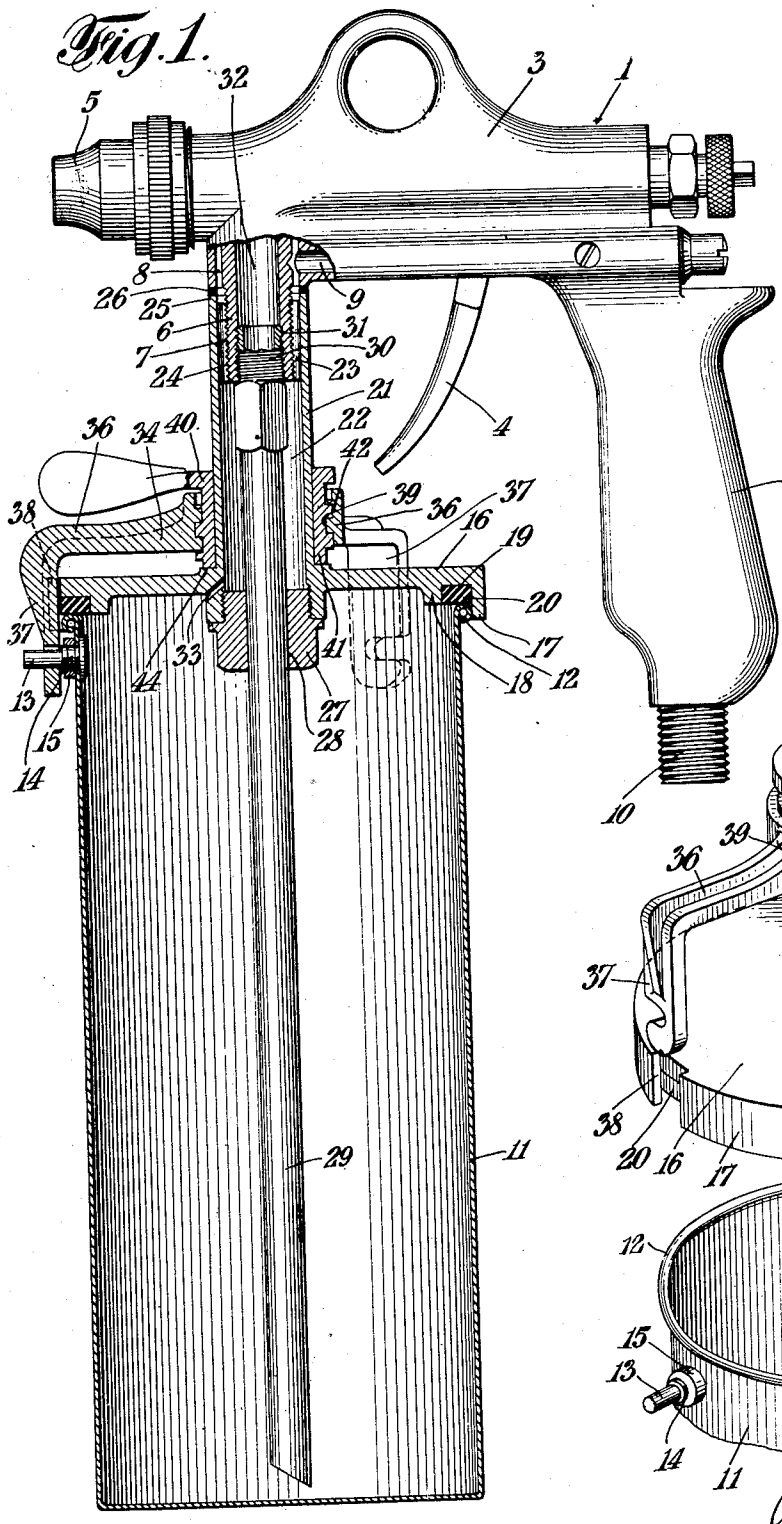
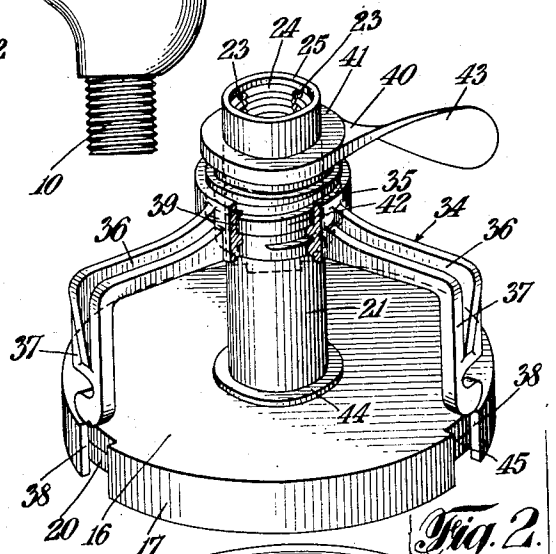
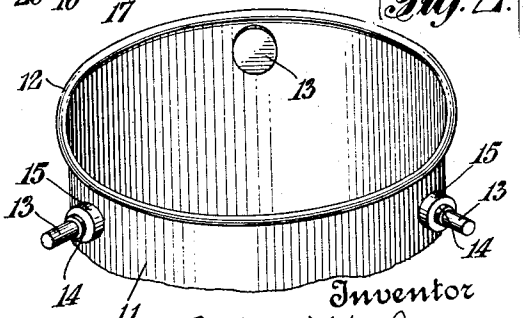


Fig. 2.





Inventor

Austin H. Downs

By his Attorneys

Prindle, Wright, Neal & Bean

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UNITED STATES PATENT OFFICE

AUSTIN H. DOWNS, OF NEWARK, NEW JERSEY, ASSIGNOR TO ECLIPSE AIR BRUSH COMPANY, INC., OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY

PAINT-SPRAYING DEVICE

Application filed January 23, 1928. Serial No. 248,726.

This invention relates to improvements in paint spraying devices and more particularly to devices which are of the cup gun type, that is which include the gun or paint spraying instrument itself with an attached container for the liquid to be sprayed.

The principal object of this invention includes the provision of a new form of construction where the container or cup, as it is sometimes called, may be quickly and readily and securely attached to and detached from the paint spraying gun or instrument in such a way that a relatively high pressure of air may be used in the cup to force the liquid therein through the liquid ports or passages in the gun or paint spraying instrument to the point of atomization and application.

Another object of this invention is the provision in a construction of this kind of a lid or cover for the cup or container, the lid or cover, while being permanently fixed in position and connected to the gun, may nevertheless be detached therefrom in case of necessity, and means associated with the lid or cover for securely fastening and clamping the same on top of the cup or container to securely close the same and permit the application of relatively high pressure thereto.

Further objects of the invention include improvements in details of construction whereby this connection may be quickly and readily made without the necessity of accurate adjustment and at the same time permit the application of air pressure to the contents of the cup or container, and the discharge of the liquid therefrom when the liquid valve in the gun or paint spraying instrument is open.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, this invention consists in the construction, combination and arrangement of parts hereinafter described and then sought to be defined in the appended claims, reference being had to the accompanying drawings forming a part hereof and which show, merely for the purpose of illustrative disclosure, a preferred embodiment of my invention, it being expressly understood, however, that various changes may be made in practice within the scope of the claims without digressing from my inventive idea.

In the drawings—

Figure 1 represents a view of a paint spraying gun or instrument with an attached cup or container, the major portion of the gun being shown in side elevation, the cup or container and the mechanism whereby it is attached to the gun being shown in vertical section.

Figure 2 is an exploded view in perspective showing the upper portion of the cup or container and the top or lid for the same, together with the connections whereby it is attached to the gun, and the fastening and securing means whereby the top or lid of the cup or container is fastened or secured in proper position thereon.

Referring now to the drawings and first to Figure 1, the numeral 1 designates a paint spraying gun or instrument of the type shown and described in my pending application for patent, Serial No. 161,066, filed Jan. 14, 1927, the details of which, except as they relate to the attachment to the cup or container, form no part of the present invention. This gun has a handle portion 2, a barrel portion 3, trigger 4 and the discharge nozzle 5. Near the nozzle portion of the gun is provided a downward extension 6 having its lower end externally screw-threaded as at 7 to receive the connection through the cup or container hereinafter described. Surrounding the upper portion of this extension 6 is a vertical annular air passage 8 which connects with a horizontal air passage 9 and also with another air passage in the barrel leading to the nozzle (not shown). The air passage 9 leads to a valve construction in the barrel (not shown) and thence to an air inlet connection 10 at the lower end of the handle of the gun. This form of air passage is disclosed in another pending application of mine, Serial No. 126,507, filed August 2, 1926, which eventuated in Patent 1,706,875, dated Mar. 26, 1929.

The cup or container is designated generally by the reference character 11 and may be of any form and shape and is regulated in size only by the ability of the operator to handle

the gun and the attached container with the weight of liquid therein. In the form shown this container is cylindrical in shape, having its top open and provided with the beaded or otherwise reinforced edge 12. Near its top edge and extending outwardly therefrom are provided a plurality of studs or projections 13, which in the disclosure take the form of headed rivets having the screw-threaded portion 14 and the washers 15 secured on the outside. The stud or projection is, therefore, reduced in size from that of the washers 15, which constitute shoulders in the assembly.

The lid or cover for the cup or container, of course, corresponds in shape to the open top of the container. It is designated generally by the reference character 16, having the depending outer edge 17 and an inner annular flange 18, the two flanges 17 and 18 cooperating to provide a seat 19 to receive a suitable packing or washer material 20, this material being placed so as to fit upon and receive the beaded upper edge 12 of the cup or container. This lid or cover has a vertical extension in the form of a tube or sleeve 21, which is adapted to be secured to the downward extension 6 of the gun or paint spraying instrument by means of a screw-threaded connection. This tube or sleeve is formed of substantially thick material having the bore or passage 22 formed therein and leading into this passage are a plurality of smaller passages 23 which are adapted to communicate with the vertical annular air passage 8 in the downward extension 6 of the gun or paint spraying instrument. In the upper portion of this tube or sleeve 21 is provided the internally screw-threaded portion 24, which engages the screw-threaded portion 7 of the downward extension 6 of the gun or paint spraying instrument and the upper edge 25 of the tube or sleeve 21 is adapted to extend above the internally screw-threaded portion 24 and form an annular rim which engages washer member 26 interposed between the outer portion of the downward extension 6 of the gun and the annular rim of the tube or sleeve 21.

A nut member 27 having a bore or opening 28 therethrough is screwed into the lower end of the tube or sleeve 21 of the lid or cover from its under side closing the passage or bore 22 therethrough and forming a bushing to receive and guide the liquid post or tube 29. This liquid post or tube 29 has its upper end screw-threaded as at 30 for attachment to the internal screw-threads 31 formed on the inner surface of the liquid passage 32 in the downward extension 6 of the gun. This post or tube when attached in position to the screw-threaded engagement referred to extends downwardly to a point near the bottom of the cup or container 11, as indicated in Figure 1 of the drawing. The lid or cover is provided with a plurality of ports or passages 33 for connecting the inside of the cup or container with the bore or passage 22 of the tube or sleeve 21, these ports or passages 33 being preferably provided by boring through the lid or cover just above the nut member 27. This construction, therefore, permits the application of air pressure to the liquid contents of the cup or container from the air passage 9 to the air passage 8 in the extension 6, through the openings or passages 23 in the upper end of the tube or sleeve 21 through the bore or passage 22 of the tube or sleeve 21, and thence through ports or passages 33. The liquid in the cup or container subject to this pressure will be forced upwardly through the fluid post or tube 29 and through liquid passage 32 and discharged through the nozzle when the liquid valve in the gun is opened.

The means of connecting the lid or cover to the cup or container will now be described. This includes the spider or frame 34 which is composed of a central annular hub 35, from which radiate a plurality of substantially horizontal arms 36, the ends of which are bent downwardly as at 37 and are notched as at 38 to provide a hook or pin receiving means. The inside of the central annular hub is formed with a flat and large screw-thread 39 which forms a cam construction. It is adapted to receive the actuating member 40 which is in the form of a substantial sleeve 41 having a bore of sufficient size to easily receive the tube or sleeve 21. This substantial sleeve 41 has its outer surface provided with a flat and vertical screw-thread 42 complementary to the screw-thread 39 previously described, and is also provided with the operating finger or arm 43 which extends laterally therefrom. The substantial sleeve 41 is of considerably greater length than the depth of the annular hub 35 so that it may be screwed into and through the same with the lower edge of the substantial sleeve projecting substantially beyond the bottom edge of the annular hub 35 and into engagement with a portion of the cover or lid 16. This cover or lid is provided with a slightly raised bearing surface 44, with which the bottom edge of the substantial sleeve 41 is adapted to contact. The sides of the lid or cover are provided with a plurality of notches or recesses 45 to receive the depending portions 37 of the arms 36.

The parts are adapted to be positioned as indicated in the drawing in Figure 2. The spider or frame 34 with the substantial sleeve positioned therein slides down upon the tube or sleeve 21 until the spider or frame rests upon the raised bearing surface 44, at which point the downward extension 37 of the arms 36 will extend below the top edge of the cup or container with the recessed portions 38 in line with the studs or projections 13. The ro-

tion of the lid or cover in the proper direction will cause engagement with the studs or projections 13 by the recessed ends of the arms 36. Then a rotation of the sleeve 41 by means of the actuating finger or arm will cause the same to move downwardly relative to the spider or frame and through the hub thereof until the lower end of the sleeve 41 engages the raised bearing surface 44 of the lid or cover 16. Further application of pressure will force the lid or cover downwardly and tightly so that the washer or packing 20 bears tightly against the upper edge of the cup or container. At the same time the spider or frame will be pulled upwardly due to the can action of the screw-threads 39 and 42 and this movement transmitted to the cup or container itself through the arms of the spider or frame and the studs or projections 13. This results in a very secure attachment of these parts together. Of course, a movement of the sleeve 41 in the opposite direction will result in quick release of the parts and by a slight rotation of the lid or cover relative to the cup or container, it may be removed from the can or container and the supply of the liquid in the latter replenished.

It is, therefore, seen that a simple and effective mechanism is provided whereby the cup or container may be readily detached from the complete gun assembly for the purpose of cleaning or replenishing the supply of liquid therein, and then may be quickly and readily and securely fastened in position in such a way as to permit the application of a relatively high air pressure thereto. The joints are all tight and secure and the connection is sufficiently strong to prevent breakage or injury. The parts are all readily detachable one from the other, which is another obvious advantage.

What I claim is:—

1. In combination in an apparatus of the character described, a paint spraying instrument having air passages and liquid passages, a container for the liquid to be applied by said instrument, a lid or cover for said container having an extension adapted to be connected to said air and liquid passages in said instrument, and means surrounding said extension for clamping said lid or cover to said container.

2. In combination in an apparatus of the character described, a paint spraying instrument having air passages and liquid passages, a container for the liquid to be applied by said instrument, a lid or cover for said container having an extension adapted to be connected to said air and liquid passages in said instrument, and means surrounding said extension for clamping said lid or cover to said container, said means including a holding element adapted to engage said container and a cam element adapted to engage said holding element and also said lid or cover to tightly force the lid or cover on said container and hold same thereto.

3. In combination in an apparatus of the character described, a paint spraying instrument having air passages and liquid passages, a container for the liquid to be applied by said instrument, a lid or cover for said container having an extension adapted to be connected to said air and liquid passages in said instrument, and means surrounding said extension for clamping said lid or cover to said container, said means including a holding element adapted to engage said container and a cam element adapted to engage said holding element and also said lid or cover to tightly force the lid or cover on said container and hold same thereto, said holding element being in the form of a frame or spider having a plurality of depending arms adapted to engage portions of said container and said cam element being in the form of a rotatable sleeve having cam engagement with said frame or spider.

4. In combination with a container for liquid to be sprayed, a lid or cover for said container having an extension adapted to be secured to a paint spraying instrument, a container having a plurality of projections, means for holding the lid or cover on said container, said means including a frame or spider having a plurality of arms formed so as to engage said projections on said container, and a cam element engaging said frame or spider and also said lid or cover so as to force said lid or cover against said container and to apply a pulling force on said projections on said container through said arms.

5. In combination with a container for liquid to be sprayed, a lid or cover for said container having an extension adapted to be secured to a paint spraying instrument, a container having a plurality of projections, means for holding the lid or cover on said container, said means being positioned about said extension and movable with reference thereto, said means including a frame or spider having a plurality of arms formed so as to engage said projections on said container, and a cam element engaging said frame or spider and also said lid or cover so as to force said lid or cover against said container and to apply a pulling force on said projections on said container through said arms.

6. In combination with a container for liquid to be sprayed, a lid or cover for said container having an extension adapted to be secured to a paint spraying instrument, a container having a plurality of projections, means for holding the lid or cover on said container, said means being positioned about said extension and movable with reference thereto, said means including a frame or

spider having a plurality of arms formed so as to engage said projections on said container, said frame or spider having a central hub, a cam element in the form of a sleeve positioned in said hub and having a screw-threaded engagement therewith and adapted to extend through said hub to engage said lid or cover whereby a rotating movement of the cam element in one direction will tightly hold the lid or cover on the container and movement in the other direction will afford release.

7. In combination, in an apparatus of the character described, a container adapted to be attached to a paint spraying instrument and to supply liquid thereto for spraying, including a container body, a lid or cover therefor, the lid or cover having a sleeve extension adapted to be attached to the paint spraying instrument, said container body having a plurality of projections and releasable holding means for clamping the lid or cover to the container body including a frame or spider having a central hub with a plurality of arms radiating therefrom, each arm having a downward extension and formed so as to engage said projections on the container body, said hub being positioned about said sleeve extension, an actuating member adapted to fit about said sleeve extension and within said hub and having a cam engagement with said hub whereby a movement of said actuating member will result in movement of the frame or spider and connected arms and the application of force to the projections on the container body, said actuating member being adapted to project through the hub and engage said lid or cover.

8. In combination, in an apparatus of the character described, a container adapted to be attached to a paint spraying instrument and to supply liquid thereto for spraying, including a container body, a lid or cover therefor, the lid or cover having a sleeve extension adapted to be attached to the paint spraying instrument, said container body having a plurality of projections and releasable holding means for clamping the lid or cover to the container body including a frame or spider having a central hub with a plurality of arms radiating therefrom, each arm having a downward extension and formed so as to engage said projections on the container body, said hub being positioned about said sleeve extension, an actuating member adapted to fit about said sleeve extension, and within said hub and having a cam engagement with said hub whereby a movement of said actuating member will result in movement of the frame or spider and connected arms and the application of force to the projections on the container body, said actuating member being adapted to project through the hub and engage said lid or cover, said cam engagement being provided by large, flat, complementary screw-threads on the actuating member and hub of the frame or spider, respectively.

9. In combination in an apparatus of the character described, a container adapted to be attached to a paint spraying instrument and to supply liquid thereto for spraying, including a container body, a lid or cover therefor, said lid or cover having a sleeve extending upwardly therefrom and adapted for attachment to said instrument, said lid or cover having openings affording communication between the interior of the container and said sleeve, a liquid conveying tube positioned within said container and having one end adapted for attachment to said instrument, said lid or cover being provided with means for receiving and guiding said liquid conveying tube, and means for removably clamping said lid or cover to said container.

10. In combination in an apparatus of the character described, a container adapted to be attached to a paint spraying instrument and to supply liquid thereto for spraying, including a container body, a lid or cover therefor, said lid or cover having a sleeve extending upwardly therefrom and adapted for attachment to said instrument, said lid or cover having openings affording communication between the interior of the container and said sleeve, a liquid conveying tube having one end adapted for attachment to said instrument, means for holding and guiding said liquid conveying tube within said sleeve and into said container, said lid or cover being provided with a washer receiving groove, a washer positioned in said groove and adapted to contact with the top of said container and means for clamping said lid or cover to said container.

11. In combination with a container for liquid to be sprayed, having an open end, a lid or cover for said container having an extension adapted to be secured to a paint spraying instrument so as to communicate with the air passage in said paint spraying instrument, said lid or cover having openings to afford communication between said extension and the interior of said container when the lid or cover is in position, so as to subject the contents of the container to the air pressure of said air passage, a liquid conveying pipe adapted to be connected at one end to the liquid passage of said instrument, means connected to said lid or cover for holding and guiding said pipe and positioning the pipe within the container when the lid or cover is in position, and clamping means for removably clamping said lid or cover to said container.

12. In combination with a container for liquid to be sprayed, having an open end, a lid or cover for said container having an extension adapted to be secured to a paint spraying instrument so as to communicate with the air

passage in said paint spraying instrument, said lid or cover having openings to afford communication between said extension and the interior of said container when the lid or cover is in position, so as to subject the contents of the container to the air pressure of said air passage, a liquid conveying pipe adapted to be connected at one end to the liquid passage of said instrument, means connected to said lid or cover for holding and guiding said pipe and positioning the pipe within the container when the lid or cover is in position, and clamping means for removably clamping said lid or cover to said container, said clamping means including a holding element adapted to engage the container, and a cam element adapted to engage said holding element, said lid or cover being formed with a flat bearing surface against which said cam element bears.

13. In a device of the character described, a container for liquid to be sprayed, lugs on the container, a lid provided with an extension adapted to be secured to a paint spraying instrument, a sleeve slidably mounted on said extension, a spider adapted to engage said lugs on said container and adapted to threadedly engage said sleeve, whereby rotation of said sleeve forces said lid against said container and applies a pulling force on said lugs on said container through said spider.

14. In a device of the character described, a container for liquid to be sprayed, lugs on the container, a lid provided with an extension adapted to be secured to a paint spraying instrument, a sleeve slidably mounted on said extension and provided with cam shaped grooves, and a spider adapted to engage said lugs on said container, and provided with projections adapted to be received by said cam shaped grooves whereby rotation of said sleeve forces said lid against said container by the interengaging of the grooves on said sleeve and said projections on said spider and applies a pulling force on said lugs on said container through said spider.

15. In a device of the character described, a container for liquid to be sprayed, lugs on the container, a lid provided with an extension adapted to be secured to a paint spraying instrument and having a bearing surface, a sleeve slidably mounted on said extension and adapted to abut said bearing surface, a spider adapted to engage said lugs on said container and adapted to threadedly engage said sleeve, whereby rotation of said sleeve forces said lid against said container and applies a pulling force on said lugs on said container through said spider.

16. In a device of the character described a container for liquid to be sprayed, lugs on the container, a lid provided with an extension adapted to be secured to a paint spraying instrument, a sleeve slidably mounted on said extension and provided with cam shaped grooves, a spider adapted to engage said lugs on said container and provided with spiral projections adapted to be received by said cam shaped grooves and a handle member on said sleeve for rotating said sleeve in either direction, whereby movement of said handle member in one direction causes rotation of the sleeve and forces said lid against said container by the interengaging of the grooves on said sleeve and the spiral projections on said spider and applies a pulling force on said lugs on said container through said spider.

17. In a device of the character described a container for liquid to be sprayed, a plurality of projections on the container, a lid provided with a tubular extension adapted to be secured to a paint spraying instrument, said lid also being formed with notches in its outer edges, a sleeve slidably mounted on said extension and a spider provided with arms adapted to engage said projections on said container, said arms being adapted to be received and guided by said notches in said lid, whereby rotation of said sleeve forces said lid against said container and applies a pulling force on said projections on said container through the arms of said spider.

In testimony that I claim the foregoing, I have hereunto set my hand this 9th day of January, 1928.

AUSTIN H. DOWNS.