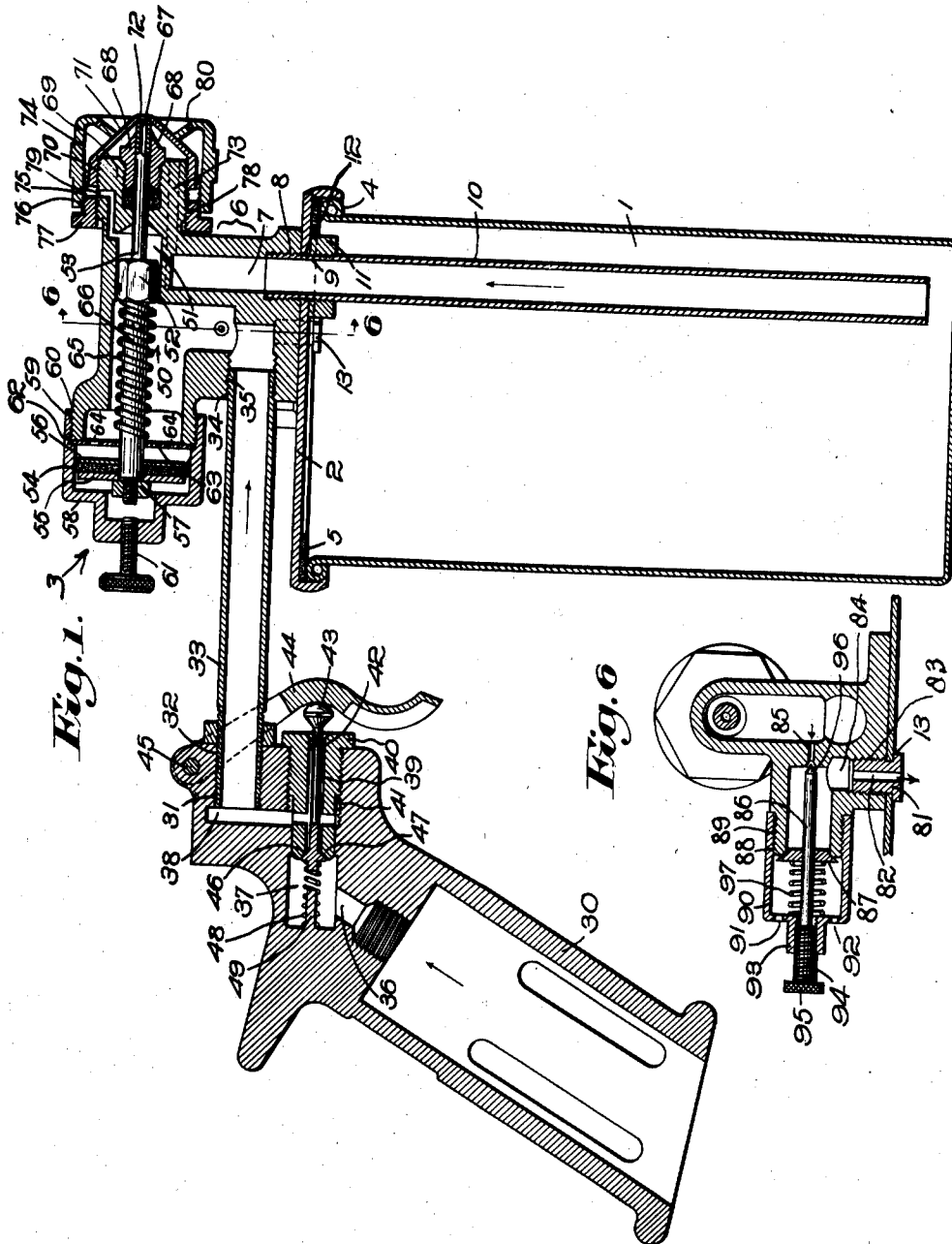


H. W. DAY.
 TOOL FOR APPLYING COATING.
 APPLICATION FILED OCT. 5, 1920.

1,401,397.

Patented Dec. 27, 1921.
 2 SHEETS—SHEET 1.

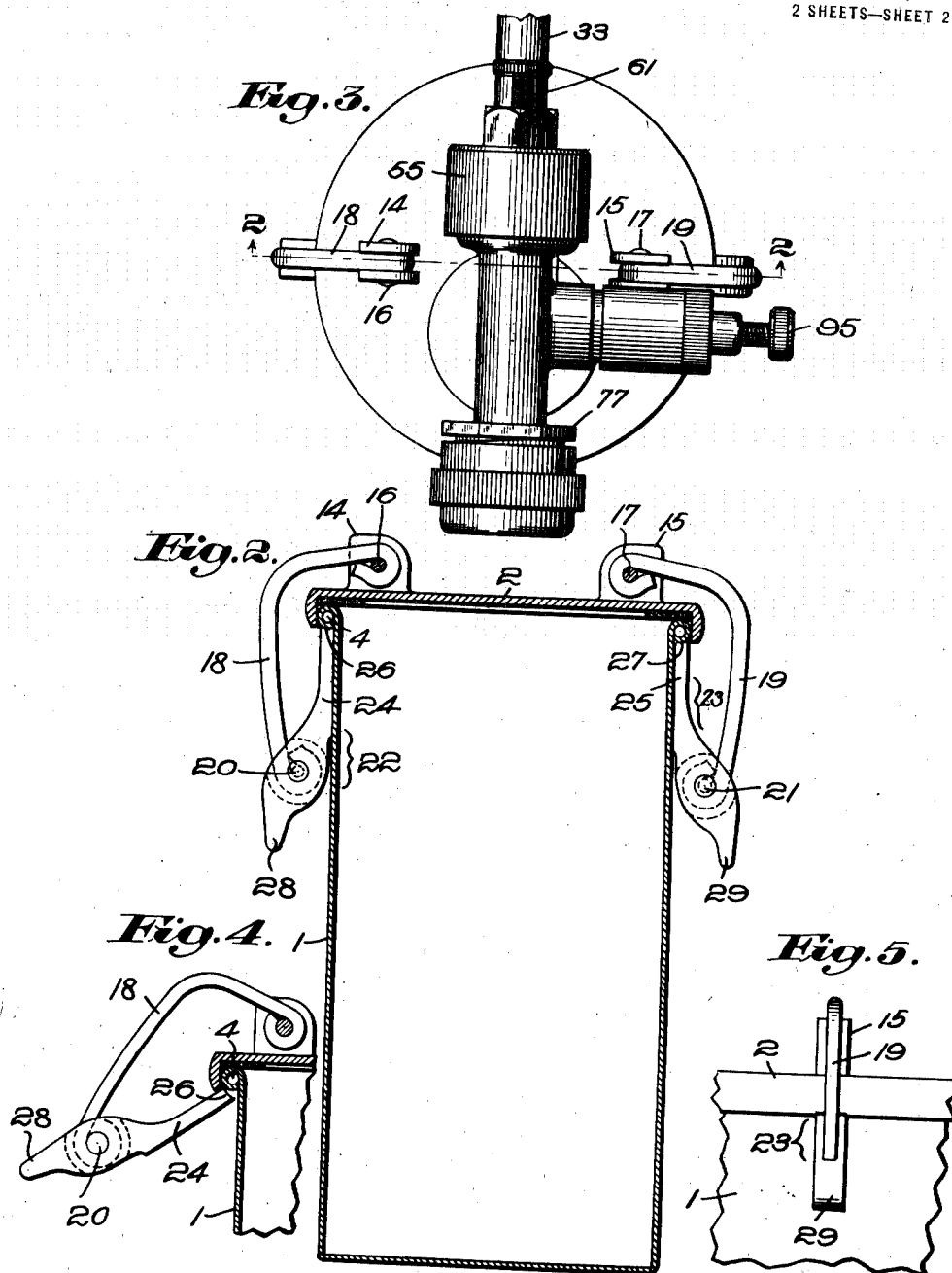


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UNITED STATES PATENT OFFICE.

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TOOL FOR APPLYING COATING.

1,401,397.

Specification of Letters Patent. Patented Dec. 27, 1921.

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To all whom it may concern:

Be it known that I, HERBERT W. DAY, a citizen of the United States, and a resident of Wollaston, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Tools for Applying Coating, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to tools or appliances for applying coating to surfaces, and in certain aspects thereof is an improvement upon the construction shown and the invention disclosed in my Patent No. 1,172,233, dated February 15, 1916.

The coating, if a liquid, may be a paint, japan, varnish or any other suitable coating medium, or it may be a solid in powdered form, and the material or surface to which it is to be applied may be of any character, such, for example, as wood, metal or other material.

An important object of the invention is to provide an industrial tool having a container for the coating material adapted to be readily and securely applied one to the other, so that the entire appliance may be used for work of all descriptions. Other objects of the invention will appear from the ensuing description.

Referring more particularly to the drawings, wherein I have represented a single embodiment of my invention:—

Figure 1 is a vertical longitudinal section through the tool, the container for the coating material and the cover;

Fig. 2 is a vertical section at right angles to Fig. 1 and taken through the container and cover, and showing the preferred form of means for detachably securing said parts together, the structure of the tool being partially indicated;

Fig. 3 is a plan view of the structure shown in Fig. 2, the paint gun or tool proper being indicated in outline merely; and

Figs. 4 and 5 are details respectively in vertical section and front elevation of the means for securing the container and cover together; and

Fig. 6 is a vertical section on the line 6—6 of Fig. 1 and looking toward the right in said figure.

The tool or appliance of my invention is adapted for use in many relations for ap-

plying a coating, but has found in practice peculiarly wide use as a so-called paint gun for applying paint to metallic, wooden and other surfaces. In the disclosed embodiment of the invention, the appliance comprises generally a paint or coating container 1, a cover 2 and a tool or paint gun proper 3.

The container 1 is of any suitable material such as metal or glass, and is adapted to be filled to the desired extent with paint or other coating material. It is provided with a suitable flange bead or rim 4 whereon is received a cover 2, a packing 5 preferably being employed to prevent leakage. The cover 2 is preferably metallic and is shown as of circular form and receives upon its upper face the body or casting 6 of the tool or paint gun proper, which if desired may be formed integral with the cover 2. Preferably, however, the two parts are structurally separate and are secured together in the following manner.

The body 6 is provided with a paint or coating passage 7, the lower end of which is threaded as indicated at 8 to receive the upper threaded end 9 of the paint pipe 10, a nut 11 being received upon the threaded part of the pipe 10 at the under side of the cover. This construction tightly secures the cover to the paint gun proper. The cover 2 is not only provided with an opening indicated at 12 for the reception of the paint pipe 10, but is provided with an opening indicated at 13 for the admission of air or other suitable fluid under pressure and constituting the motive agent for forcing the paint under suitable pressure to the point of ultimate discharge.

While any suitable means may be provided to secure the cover with the attached paint gun to the container, I desirably provide means whereby the said parts may be readily secured in a quickly detachable manner and yet in such a way as to prevent all liability of leakage. To this end, I provide the following means.

Formed or otherwise rigid with the upper face of the cover 2 are two sets of ears 14, 15 receiving pins 16, 17 upon which are pivoted metal links or wires 18, 19 of general inverted L shape, said links being bent at their upper ends to surround the pins 16, 17 and bent at their lower ends to surround pins 20, 21 upon which are pivotally mounted levers 22, 23 preferably of cast metal and

each having two arms, the upper arms 24, 25 being adapted when in functioning position to lie flatwise against the outer surface of the container 1 with the extreme and preferably concaved ends 26, 27 tightly engaging the under side of the rim or bead 4. The lower arms 28, 29 of said levers 22, 23 constitute manipulating ends or parts whereby the levers may be caused to assume either the locked position shown in Fig. 2 or the unlocked position shown in Fig. 4. The said two pairs of levers constitute clamps of a general toggle nature and effectively and tightly secure together the paint gun proper, the cover and the container.

Referring now more particularly to the structure of the tool proper, there is provided therefor a handle 30, which may be of pistol handle form so as to be readily grasped by the fingers and palm of one hand. The said handle is provided with a threaded socket 31 receiving the threaded end 32 of an air pipe 33, the opposite threaded end 34 whereof is tapped into a threaded passage 35 in the body 6 of the tool as clearly indicated in Fig. 1. In this or other suitable manner, the handle with its manipulating valve is secured to the body. The handle 30 is provided with a passage 36 adapted to be connected to a source of motive supply, such as air under pressure, and said passage 36 communicates with a passage 37 from which leads laterally a passage 38 in communication with the pipe 33. The passage 37 is threaded as indicated at 39 to receive a threaded plug 40 provided with an axial passage 41 wherein is positioned a valve 42 the head 43 whereof is adapted to be engaged by a suitable operating means such as the lever or trigger 44 pivoted at 45 upon the upper end of the handle 30. The valve 42 is provided with a valve head or member proper 46 adapted to be seated against the valve seat 47 by the action of a coiled spring 48 surrounding the valve stem and a pin or projection 49.

The construction and relation of parts are such that when the lever or trigger 44 is moved in a clockwise direction viewing Fig. 1, air is admitted past the valve head 46 and thence into the passages 38, 33. The pipe or passage 33 at its inner or right hand end viewing Fig. 1 is in communication with a chamber 50 within the body 6 of the paint gun. Interiorly said body 6 is recessed to provide a longitudinal or substantially axial chamber 51 receiving therein loosely and so as to permit the passage of air past the same, a nut or member 52 fast upon a tube or small pipe 53 which is of enlarged diameter toward its left hand end viewing Fig. 1, and at its extreme left hand end is provided with a piston head or disk 54 which may be formed of leather or like

non-metallic material providing a tight fit and suitable metallic plates 55, 56 with nut 57 to hold the parts together. The said piston head or disk is positioned within the chamber formed in a cap or member 58 interiorly threaded at 59 and received upon the threaded rear end of the body 6 of the tool. Desirably the rear end of the cap 58 is provided with a set screw 61 limiting the outward movement of the piston head or disk 54.

The cap 58 near its threaded end is recessed annularly as indicated at 62 to receive and hold against the end of the body 6 a diaphragm or plate 63 having preferably a plurality of openings 64 to permit the passage of air from the chamber 50 to the inner face of the piston 54. The tube 53 is surrounded at the enlarged portion thereof by a coiled spring 65 confined between the nut 52 and the diaphragm 63. The action of the said spring is to move the piston head 54 to the right viewing Fig. 1, against the action of the compressed air within the chamber 50 and in the space between the diaphragm 53 and said piston head. The said tube 53 is provided with a perforation 66 to admit air from the chamber 50 to be discharged at the right hand end 67 of said tube 53. At said right hand end the tube 53 is desirably received within a threaded plug 68 tapped into the head 69 of the body 6 of the paint gun.

The head 69 is exteriorly threaded as indicated at 70 for the reception of an interiorly threaded cap 71 having a central opening 72 that is in alinement with the opening or passage through the tube 53.

The construction and arrangement of parts are such that a film of paint or other coating material is permitted or caused to form at the inner face of the cap 71 between it and the end of the air tube 53, the said film in the operation of the device being constantly disrupted and constantly reformed substantially as set forth in my Patent No. 1,172,233. The paint or coating is supplied to the inner surface of the cap 71 through a passage 73 in the head 69 as indicated in dotted lines in Fig. 1, said passage 73 communicating with the passage 7 and the paint pipe 10.

In those cases where it is desired to secure a flattened stream or discharge of paint or other coating material, I provide means for discharging supplemental jets of air upon the discharged air and paint or coating material. For this purpose I desirably provide a supplemental cap 74 interiorly threaded as indicated at 75 and received upon the externally threaded parts 76 of a ring 77 which itself is interiorly threaded as indicated at 78 and is received upon a threaded prolongation or rear part of the head or body 6. Desirably the threads at the inner

and outer surfaces of the ring 77 are differential so as to permit suitable adjustment of the supplemental cap 74. The said cap 74 receives air through a passage 79 which is in communication with the chamber 51, and is provided with inclined apertures 80 through which the supplemental air jets are discharged upon the disrupted film of coating and the air issuing from the interior of the cap 71 and the tube 53.

It will be evident that when air is admitted past the valve 42, 46 through the pipe 33 and into the chamber 50, it enters the perforation 66 and passes out through the forward end 67 of the tube 53. At the same time the entering air passes through the perforations 64 in the diaphragm 63 and acting upon the piston head 54 moves the tube 53 axially to the left viewing Fig. 1, so as to permit the paint or other coating material to escape at the orifice 72. At the same time, the air finds its way along the surface of the nut 52 and passing through the chamber 51 and passage 79 escapes through the orifices 80 in the supplemental cap 74. When the valve 42, 46 is closed by the action of the spring 48, pressure having been released from the trigger or lever 44, the pressure of air within the chamber 50 and the communicating parts is reduced until the tension of the spring 65 acts to move the piston head 64 to the right viewing Fig. 1, thus bringing the right hand end of the tube 53 against the inner surface of the cap 71, thereby cutting off the flow of paint or other coating material.

Preferably, I provide means whereby when desired the air within the container 1 above the paint therein may be placed at atmospheric pressure. This may be desired at times, as, for example, when all the paint has been forced from the container 1 and where a further action might cause air to pass up through the tube 10 and more or less of a vacuum be created in the container 1. To that end, I preferably provide the following construction.

The opening 13 for the air in the cap 2 receives an exteriorly threaded nipple 81 shown most clearly in Fig. 6 and having an axial passage 82. The said nipple is tapped into a threaded passage 83 in the body 6 of the tool or paint gun proper. The said passage 83 is in communication with a chamber 84 which is in communication by means of a restricted passage 85 with the chamber 50 as indicated in Fig. 1, as well as in Fig. 6. The flow of air through the passage 85 is controlled by a valve 86 having a diaphragm or valve head 87 adapted to seat against the otherwise open end 88 of the chamber 84. The wall of said chamber 84 is exteriorly threaded at its outer end as indicated at 89 to receive the interiorly threaded cap 90 provided with openings 91 and having an in-

teriorly threaded axially open prolongation 93 which receives the threaded end 94 of the valve 86 shown as having a head 95 for adjustment.

In the operation of the device the valve 86 is in the position indicated in Fig. 6 so as to permit the air to enter the container 1 above the paint or other coating material therein. Said valve 86 may be closed to cut off the flow of air. When it is desired to admit air from the atmosphere into the container or in other words to establish air at atmospheric pressure within the chamber 84 and within the container 1, the cap 90 is unscrewed sufficiently to withdraw the valve head or diaphragm 87 from its valve seat,—that is, from the open end of the chamber 84,—whereupon air enters or it may be escapes from the openings 91, 92, thus establishing air at atmospheric pressure within the container 1, it being noted that while the valve head 87 is in its open or withdrawn position, the inner end or point 96 of the valve 86 closes the passage 85, said valve 86 being inwardly adjusted to this end.

Surrounding the right hand end of the stem of the valve 86 is a coiled spring 97 serving to hold the valve head 87 against its seat, but said spring is not of sufficient strength to seat the valve head 87 when the cap 90 has been sufficiently unscrewed.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a generic and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims—

1. Means for applying coating comprising in combination, a container for the coating material, a cover therefor, a coating gun or tool proper having passages for coating material, and a motive agent under pressure, a coating pipe secured to the coating gun or tool proper, said coating pipe extending through the cover and secured thereto, thereby securing the coating gun or tool proper to the cover, and means carried wholly by the cover for detachably connecting said cover to the container.

2. Means for applying coating comprising in combination, a container for the coating material, a cover therefor, a coating gun or tool proper having passages for coating material, and a motive agent under pressure, a coating pipe secured to the coating gun or tool proper, said coating pipe extending through the cover and secured thereto, thereby securing the coating gun or tool proper to the cover, and clamp means carried wholly by said cover for detachably connecting said cover to the container.

3. Means for applying coating comprising in combination, a container for the coating

material, a cover therefor, a coating gun or tool proper having passages for coating material, and a motive agent under pressure, a coating pipe secured to the coating gun or tool proper, said coating pipe extending through the cover and secured thereto, thereby securing the coating gun or tool proper to the cover, and lever clamp means carried wholly by the cover for detachably connecting the cover to the container.

4. Means for applying coating comprising in combination, a container for the coating material, a cover therefor, a coating gun or tool proper having passages for coating material, and a motive agent under pressure, a coating pipe secured to the coating gun or tool proper, said coating pipe extending through the cover and secured thereto, thereby securing the coating gun or tool proper to the cover, and toggle lever means carried wholly by the cover and adapted detachably to connect the same to the container.

5. Means for applying coating comprising in combination, a container for the coating material, said container having a bead or rim at its upper edge, but otherwise provided with a smooth surface, a cover therefor, a coating gun or tool proper having passages for coating material, and a motive agent under pressure, a coating pipe secured to the coating gun or tool proper, said coating pipe extending through the cover and secured thereto, thereby securing the coating gun or tool proper to the cover, wires pivoted oppositely upon the cover, and levers pivoted to the free ends of said wires, said levers each having an end to engage said rim or bead upon the container and a handle manipulating end.

6. Means for applying coating comprising in combination, a container for the coating material having a bead or rim at its upper edge and otherwise provided with a smooth outer surface, a cover for said container having a coating gun or tool with passages for coating material and a motive agent under pressure, and means carried wholly by said cover for detachably engaging said bead or rim, and thereby securing the cover in place, said means comprising ears rigid with the cover, metallic links bent into substantially inverted L form and pivoted to said ears, and a lever pivoted at the end of each of said links, each lever having one end adapted to engage the said rim or bead of the container and having another end constituting means to manipulate the lever.

7. A tool for applying coating comprising a body having passages therein for coating material and a motive agent under pressure and including a tubular member for the passage of the motive agent, said tubular member having a piston head, the tool having a chamber receiving said piston head, a diaphragm in said chamber perforated for

the passage of the motive agent, whereby the motive agent forces the piston in one direction, and a coil spring adapted to be compressed by the action of the motive agent against the piston head and acting to move the piston head in the opposite direction when the flow of motive agent is cut off.

8. A tool for applying coating comprising a body having passages for coating material and air under pressure, a hand valve for controlling the entrance of the air under pressure into the tool, a tubular valve stem mounted for reciprocating movement in an air chamber of the tool and having a piston head exposed to air pressure at one side thereof only, and spring means tending to move the piston head against the pressure of the air.

9. A tool for applying coating comprising a body having passages to admit coating material and air under pressure thereto, a hand valve for controlling the admission of the air into the tool, a hollow piston valve through which the air under pressure is permitted to escape at the nozzle of the tool, said valve having a piston head exposed to the action of the compressed air at one face thereof only, a coil spring surrounding the valve stem and tending to move the piston head in a direction to cause the piston valve to cut off the flow of coating material at the nozzle.

10. A tool for applying coating comprising a body having passages for the entrance of coating material and air under pressure and having a perforated cap for the discharge of the said coating material and air, a supplemental cap surrounding the first mentioned cap and having perforations for the supplemental discharge of air onto the discharged coating, a spindle valve movable axially of the tool and adapted to be seated at the perforation of the first mentioned cap to cut off the flow of the coating material therethrough, a piston head upon said valve exposed at one face only to the action of the air under pressure when admitted to the tool, said spindle valve having an enlargement past which air is permitted to flow to the openings in the supplemental cap, and a spring between said enlargement and the piston head acting in opposition to the pressure of air against the piston head.

11. A tool for applying coating comprising a container, a cover and a tool proper carried by the cover, means for admitting a motive agent under pressure to the container above the coating material therein, and means for establishing air at atmospheric pressure within the container above the coating material.

12. A tool for applying coating comprising a container, a cover and a tool proper carried by the cover, means for admitting a motive agent under pressure to the container

above the coating material therein, and valve means controlling the flow of the motive agent into the container by means of which air at atmospheric pressure may be established within the container above the coating material.

13. A tool for applying coating comprising a container, a cover and a tool proper carried by the cover, means for admitting a motive agent under pressure to the container above the coating material therein, a valve controlling the flow of the air under pressure into the container, and a cap detachably secured to the tool and carrying said valve, the construction being such that upon manipulation of the cap air may be established at atmospheric pressure within the container.

14. A tool for applying coating comprising a container, a cover and a tool proper 6 carried by the cover, means for admitting a motive agent under pressure to the container above the coating material therein, said body 6 having a chamber 84, a cap 90 25 received thereon, a valve 86 controlling the flow of air under pressure to the container, and a valve head 87 substantially as described.

15. Means for applying coating comprising in combination, a container for the coating, a cover therefor, a paint gun body secured to the cover and having passages for

coating material and for air under pressure and including an air pipe extending from said body, a handle secured to said pipe, 35 said handle having means for introducing air under pressure to said pipe, and a manually operable valve for said pipe carried by said handle, said pipe extending laterally.

16. Means for applying coating comprising in combination, a container for the coating material having a bead or rim at its upper edge, a cover for said container, a coating gun or tool proper having passages for coating material and a motive agent 45 under pressure, and means carried wholly by said cover for detachable engagement with said bead or rim, thereby detachably to secure the cover to the container.

17. Means for applying coating comprising in combination, a container having an annular bead or rim at its upper edge, a cover for the container, a coating gun or tool having passages for coating material and for a motive agent under pressure, said 55 coating gun or tool proper being fixedly secured to the said cover, and means permanently carried wholly by the cover and adapted detachably to engage said bead or rim, thereby detachably to connect the cover 60 to the container.

In testimony whereof, I have signed my name to this specification,

HERBERT W. DAY.