R. P. MILLER AND C. J. BREMSER.

BRUSH.

APPLICATION FILED NOV. 12, 1917.

1,305,733.

Patented June 3, 1919.

Fig. 1.

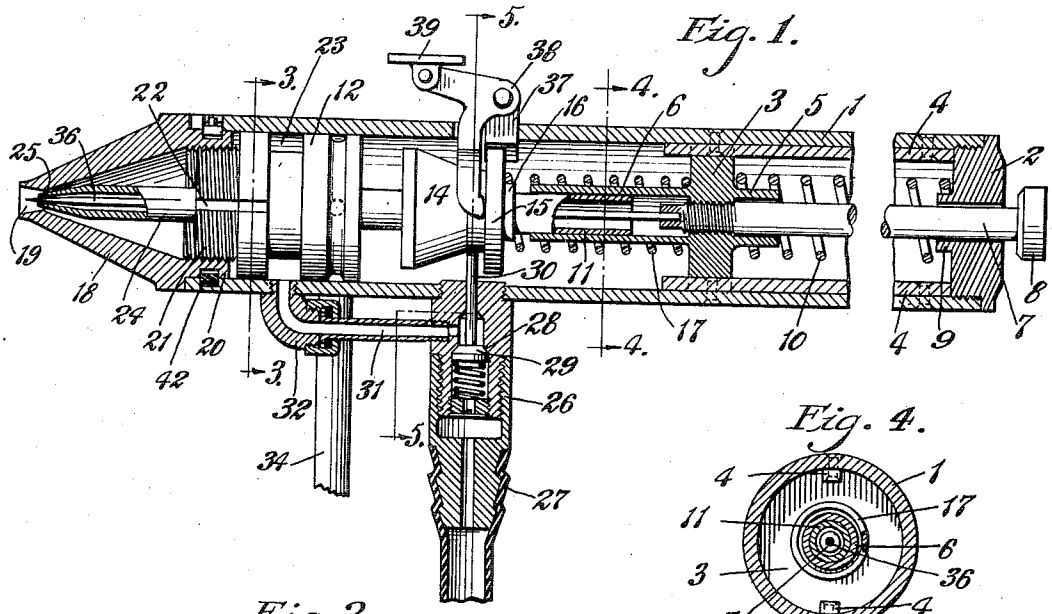


Fig. 4.

Fig. 2.

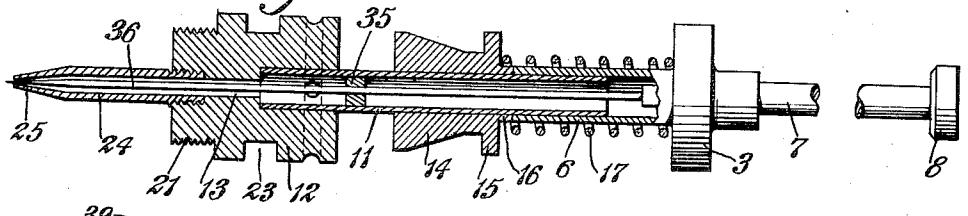


Fig. 3.

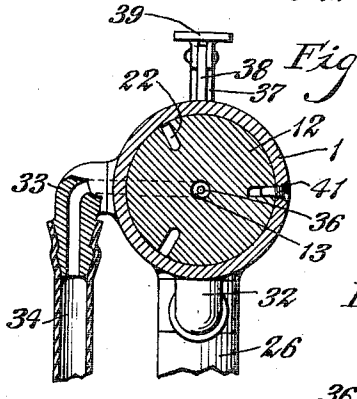


Fig. 5.

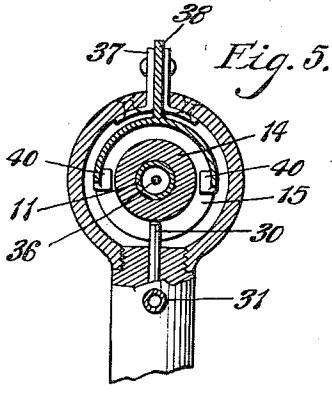
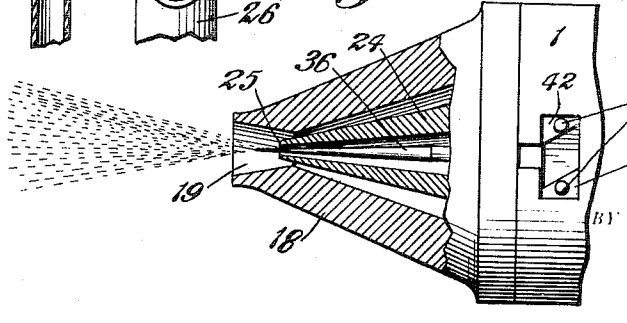


Fig. 6.



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BRUSH.

1,305,733. Specification of Letters Patent. Patented June 3, 1919.

Application filed November 12, 1917. Serial No. 201,509.

To all whom it may concern:

Be it known that we, ROBERT P. MILLER and CHARLES J. BREMSER, citizens of the United States, residing at the city of St. Louis, State of Missouri, have jointly invented a certain new and useful Improvement in Brushes, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

This invention relates generally to brushes and, more particularly, to a certain new and useful improvement in brushes of that class or type commonly known as air or spray brushes, the principal objects of our present invention being to provide a brush of the class or type stated so operable as to uniformly throw a smooth, even spray of paint, pigment, or the like, thereby obviating blotches in the work, the brush being simple in its construction, conveniently handled, and efficient in operation, and to improve generally upon, and simplify the construction of, brushes of the kind described.

With the above and other objects in view, our invention resides in certain novel features of form, construction, arrangement, and combination of parts, all as will hereinafter be described and afterward pointed out in the claims.

In the accompanying drawing,

Figure 1 is a longitudinal sectional view of an air or spray brush embodying our invention;

Fig. 2 is a somewhat similar view with the barrel or casing of the brush omitted;

Fig. 3 is a cross sectional view through the brush on approximately the line 3—3, Fig. 1;

Fig. 4 is a similar view on approximately the line 4—4, Fig. 1;

Fig. 5 is also a similar view on approximately the line 5—5, Fig. 1; and

Fig. 6 is an enlarged detail view, partly in side elevation and partly in section, of the nozzle end of the brush.

Referring now more in detail to the said drawing, in which like reference characters indicate like parts throughout the several views, 1 indicates the barrel or casing of the bush, which is preferably in the form of an elongated tube of suitable diameter internally threaded at its rear end to receive a centrally apertured end-cap or closure 2.

Slidably fitting within the rearward part of barrel or casing 1, is a disk 3 of suitable thickness, disk 3 being provided with diametrically opposite peripheral recesses accommodating correspondingly arranged diametrically opposite longitudinally-extending parallel guides 4—4 fixed to, and upon the inner surface of, barrel 1, as seen particularly in Fig. 1. Extending longitudinally of barrel 1 and projecting laterally from the opposite side faces of, and preferably integral with, disk 3, are alining tubular portions 5—6, disk 3 being formed or provided with a threaded aperture communicating and approximately in alinement with said tubular portions 5—6. Also extending longitudinally of barrel 1 with its outer or rear end slidably projecting exteriorly of said barrel through the aperture in end-cap 2, is a stem or needle-adjusting rod 7 preferably provided at its outer end with a head or button 8, stem or rod 7 fitting at its inner or forward end in said aperture of, and having threaded engagement with, the disk 3, as illustrated in Fig. 1. Coiled on stem 7 and interposed between disk 3 and cap 2 with its forward end seated on said tubular portion or extension 5 and its rear end seated on a short tubular extension 9 on cap 2, is a coiled spring 10 for purposes hereinafter appearing.

Extending longitudinally of casing 1 with its rear end sleeved within said tubular extension 6 of the disk 3, is a tubular member or needle-housing 11 having its forward end fitting within a cylindrical or port-member 12 adjustably fitting within casing 1 and longitudinally provided with a bore 13 communicating with, and preferably of reduced diameter relatively to, the bore of member 11.

Sleeved upon tubular member 11 intermediate the forward end of said disk-extension 6 and the port-member 12, is a somewhat truncated cone-shaped or valve-actuating member 14 provided or formed with a collar or annular flange 15 and a short rearwardly projecting tubular extension 16 adapted for engagement with the forward end of said disk-extension 6 for purposes hereinafter appearing. Coiled on said disk-extension 6 and interposed between disk 3 and the valve-actuating member 14 with its forward end seated preferably upon the extension 16 of member 14, is

a second coiled spring 17, also for purposes hereinafter appearing.

18 indicates the nozzle of the brush, which is substantially a hollow cone-shaped member having at its apex a flaring outlet or mouth 19 and provided or formed at its base with a tubular extension 20 of reduced external diameter to neatly and conveniently fit within the barrel or casing 1, as seen particularly in Fig. 1. Nozzle-extension 20 is internally threaded to detachably engage with a reduced externally threaded extension 21 on the port-member 12. The threads of extension 21 are interrupted by a plurality of ports 22 extending longitudinally of the member 12 and which communicate at their forward ends with the chamber of nozzle 18 and at their rear ends with a space or chamber 23 provided within casing 1 preferably by externally cutting away or reducing the member 12 intermediate its ends. The space or chamber 23, ports 22, and the chamber of nozzle 18 form substantially what I may term or designate the air-chamber of the brush. Extending longitudinally of the casing 1 and having preferably threaded engagement at its rear end with the reduced extension 21 of member 12, is a tubular member 24 forming substantially an extension of tubular member 11, the bore of member 24 communicating and being approximately in alinement with the bore 13 of member 12. This member 24 is contracted or somewhat cone-shaped at its forward end, as at 25, and projects normally at its said end into the mouth 19 of nozzle 18 and partially closes the same, there being normally, however, a clearance between the outer wall of portion 25 of member 24 and the inner end of said nozzle-mouth 19, so that the compressed air or other analogous fluid supply furnished to said air chamber, in escaping therefrom issues as a blast through said nozzle-mouth 19.

Threaded or otherwise suitably attached to casing or barrel 1, is a bored member or valve-housing 26 adapted for connection at its lower end with an air supply pipe or the like 27 leading to a source of compressed air or other suitable fluid supply, not shown. The housing 26 is provided with a suitable valve-seat, as at 28, and suitably mounted within the housing 26 to engage the seat 28 and thereby close the bore of member 26 to said source of supply, is a spring-pressed valve 29 having a stem 30 projecting up into barrel or casing 1 in coöperative or actuating position relatively to cone-member 14, as seen particularly in Fig. 1. Communicating above valve 29 with the bore of housing 26, is a pipe 31 suitably connected by a communicating elbow 32 with the chamber 23 of the barrel or casing 1.

Also suitably attached to casing or barrel 1, is a bored fitting or stem 33 adapted for engagement at its outer end with a flexible pipe or the like 34 leading to a source of paint, pigment, or the like supply, also not shown, the bore of the member 33 communicating through suitable registering ports in barrel 1 and member 12 with the bore of said member 11. A stopper or the like 35 is preferably fitted in said member 11 to the rear of the paint-port or duct in member 12, that part of the bore of tubular member 11 forward of the stopper 35, together with the bores of members 12 and 24, forming or constituting what we may term or designate the paint-chamber of the brush.

Extending longitudinally of the brush and housed within the members 11, 12, and 24, as seen particularly in Fig. 2, is an elongated needle or paint-chamber closing member 36 fixed at its rear end to the forward end of stem or rod 7 and normally projecting at its forward or pointed end through the mouth 25 of member 24 and into the mouth 19 of nozzle 18.

Suitably fixed preferably interiorly, and projecting exteriorly, of the casing or barrel 1, as shown particularly in Fig. 5, is a pair of spaced upstanding ears 37, pivotally mounted upon which is a trigger or brush operating-member 38. This member 38 is substantially in the form of a bell-crank lever, one leg or member thereof being provided with a finger-engaging piece 39 and the other leg or member thereof being bifurcated or forked to straddle conoidal member 14 and being provided with lugs or the like 40 adapted to engage said flange 15 of the member 14.

In use or operation, the parts of our brush are normally in the respective positions thereof illustrated in Fig. 1, the nozzle outlet 25 of the paint-chamber being closed by the needle 36 and the valve 29 yieldingly closing the air supply. On finger-piece 39 being depressed, the bifurcated member of lever 38 will be actuated rearwardly, whereupon member 14 will correspondingly be actuated rearwardly against the tension of said spring 17. On such rearward movement of the member 14, the valve 29, under the engagement of its stem 30 with the oblique or beveled face of member 14, will first be unseated to permit compressed air or other fluid from said source of supply to flow into the air-chamber of the brush, such air finding escape as a continuous blast from the brush through the nozzle-outlet provided between the nozzle-member 18 and the paint-chamber member 24. On the continued rearward movement of the member 14, tubular extension 16 of member 14 will engage with the forward end of disk-extension 6 and drive the same rearwardly against the tension of spring 10,

movement rearwardly of the disk-extension 6 and its disk 3 carrying therewith the needle 36 and thereby opening the nozzle-outlet 25 of the paint-chamber, whereupon under the continuous blast of air issuing from the air-chamber, the paint, pigment or the like supplied to the paint-chamber of the brush will, under the suction or vacuum produced by the escaping compressed air, be drawn as a spray from the paint-chamber, as indicated in Fig. 6. On pressure upon said finger-piece 39 being removed, somewhat or relatively heavy spring 10 will first act to return the needle 36 to its seat, closing the outlet of the paint-chamber, the member 14, in turn, being yieldingly returned to normal position under the tension of spring 17. On member 14 returning to such normal position, air-valve 29 again becomes seated, thereby closing off the air supply. Thus, in the use of the brush, air is first permitted to flow through the brush in advance of the opening of the paint-chamber and is also permitted to flow through the brush subsequently to cutting off the paint-supply, whereby the nozzle-mouth 19 is kept clear of paint or the like and blotches in the work, produced by lumps of paint or the like from the brush, prevented. The accumulation of paint in the nozzle of the brush is thus entirely obviated, our brush supplying when in use a uniform, even spray entirely devoid of lumps of paint or the like which might mar the work being done. The air-outlet from the air-chamber of the brush may be regulated by the position of the member 12, as will be evident; adjustment of member 12 forwardly may be such as to completely close said outlet, which, however, as stated, is normally open, and adjustment of said member rearwardly will increase the size of said outlet as may be desired. By adjustment of stem or rod 7 relatively to disk 3, the time of opening and closing of the paint-chamber of the brush may also be regulated, movement of the stem forwardly or rearwardly relative to the casing or barrel determining the position of the forward end of needle 36 relatively to the mouth 25 of the paint-chamber. Normally, however, as before stated, the parts of our brush are so adjusted that compressed air or other analogous fluid flows from the brush not only continuously while the paint-chamber is open, but also both in advance of the opening and subsequent to the closing of said paint-chamber, for the purpose above described.

A small screw or the like 41 is preferably threaded through casing 1 and into one of the air-ports 22 of member 12 to hold member 12 from moving rotarily relatively to the casing during the mounting of the nozzle 18 thereupon; and the nozzle 18 is preferably detachably locked to the casing 1 with member 12 in adjusted position by means of a split ring or the like 42. Normally, as seen in Fig. 1, the ring 42 fits in registering annular recesses in nozzle-extension 20 and casing or barrel 1 and thereby lockingly engages with the nozzle and casing. When the ends of the ring 42 are brought together, as by means of opposing pressure exerted on the finger-pins 43 fixed to the ring, the ring 42 will move wholly into the recess in said nozzle-extension, when the nozzle 18 may be rotarily moved relatively to the casing 1 and member 12 for repair or replacement, or for adjustment of the member 12.

We are aware that changes in the form, construction, arrangement, and combination of the several parts of our brush may be made and substituted for those herein shown and described without departing from the nature or principle of our invention.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A brush of the class described comprising, in combination, a casing, an air-chamber within the casing having a normally open nozzle-outlet and adapted for communication with a source of compressed air supply, a spring-pressed valve normally closing communication between the air-chamber and its source of supply, a paint-chamber within the casing having a nozzle-outlet in proximity to the nozzle-outlet of the air-chamber, a spring-pressed disk mounted for slidable movement in the casing, a needle attached to and movable with the disk and normally closing the outlet of the paint-chamber, and means for actuating the valve and disk to open communication between the air-chamber and its source of supply and open the outlet of the paint-chamber, said means including a spring-pressed conoidal member mounted for slidable movement within the casing and adapted to engage at an end with the disk and at its sloping face directly with the valve, and a depressible trigger pivoted upon the casing for actuating the conoidal member.

2. A brush of the class described comprising, in combination, a casing, an air-chamber within the casing having a normally open nozzle-outlet and adapted for communication with a source of compressed air supply, a spring-pressed valve normally closing communication between the air-chamber and its source of supply, a paint-chamber within the casing having a nozzle-outlet in proximity to the nozzle-outlet of the air-chamber, a spring-pressed disk mounted for slidable movement in the casing, a needle attached to and movable with the disk and normally closing the outlet of

the paint-chamber, and means for actuating the valve and disk to open communication between the air-chamber and its source of supply and open the outlet of the paint-chamber, said means including a stem on the valve, a tubular extension on the disk surrounding the needle, a spring-pressed flanged conoidal member mounted for slidable movement in the casing and adapted to engage at an end with said extension and at its sloping face directly with said stem, and a trigger pivoted upon the casing and having a forked extension adapted to engage the flange of the conoidal member for actuating the same.

3. A brush of the class described comprising, in combination, a casing, an air-chamber within the casing having a normally open nozzle-outlet and adapted for communication with a source of compressed air supply, a spring-pressed valve normally closing communication between the air-chamber and its source of supply, a stem on the valve, a spring-pressed conoidal member mounted for slidable movement within the casing and adapted, when actuated, to engage at its sloping face directly with said stem to unseat the valve to open communication between the air-chamber and its source of supply, and a trigger mounted upon the casing for actuating the conoidal member.

4. A brush of the class described comprising, in combination, a casing, an air-chamber within the casing having a normally open nozzle outlet and adapted for communication with a source of compressed air supply, a spring-pressed valve normally closing communication between the air-chamber and its source of supply, a stem on the valve, a spring-pressed flanged conoidal member mounted for slidable movement within the casing and adapted, when actuated, to engage at its sloping face directly with said stem to unseat the valve to open communication between the air-chamber and its source of supply, and a trigger pivoted upon the casing for slidably actuating the conoidal member, the trigger having a forked extension straddling the conoidal member and adapted for engagement with the flange thereof.

5. A brush of the class described comprising, in combination, a casing, a paint-chamber within the casing having a nozzle-outlet, a spring-pressed disk mounted for slidable movement in the casing, a tubular extension on the disk disposed longitudinally within the casing, a needle-housing within the casing having a portion sleeved within said extension, a needle normally closing the outlet of the paint-chamber, the needle having attachment to the disk and projecting longitudinally within the housing and extension, a spring-pressed flanged member mounted within the casing for slidable movement on the housing and adapted, when actuated, to engage at an end with an end of said extension to actuate the disk and its attached needle to open the outlet of the paint-chamber, and a trigger pivoted upon the casing for slidably actuating said member, the trigger having a forked extension straddling said member and adapted for engagement with the flange thereof.

6. A brush of the class described comprising, in combination, a casing, a paint-chamber within the casing having a nozzle-outlet, a needle for opening and closing said outlet, and means for adjusting the position of the needle relatively to the outlet, said means including a disk mounted for slidable movement within the casing and provided with a threaded transverse aperture, and a stem fixed on the needle and having a threaded portion disposed within said aperture for adjustable threaded engagement with the disk.

7. In a brush of the class described, the combination with a casing, a nozle adapted to fit upon the casing, and means including a member mounted for movement within the casing and adapted for adjustable threaded engagement with the nozzle for regulating the outlet thereof.

8. In a brush of the class described, the combination with a casing, a nozzle adapted to fit upon the casing, and means for regulating the outlet thereof, said means including a cylindrical member mounted for endwise movement within the casing and adapted for adjustable threaded engagement at an end with the nozzle, and an extension projecting from said member into the nozzle.

9. In a brush of the class described, the combination with a casing, of a nozzle adapted to fit detachably upon the casing, means for regulating the outlet of the nozzle, said means including a cylindrical member mounted for endwise movement within the casing and adapted for adjustable threaded engagement at an end with the nozzle, and an extension projecting from said member into the nozzle, and means for detachably locking the casing to the nozzle and in adjusted threaded engagement with said member.

In testimony whereof, we have signed our names to this specification.

ROBERT P. MILLER.
CHARLES J. BREMSER.