E. B. BREWSTER.

AIR BRUSH.

APPLICATION FILED MAR. 17, 1919.

1,316,937. Patented Sept. 23, 1919.

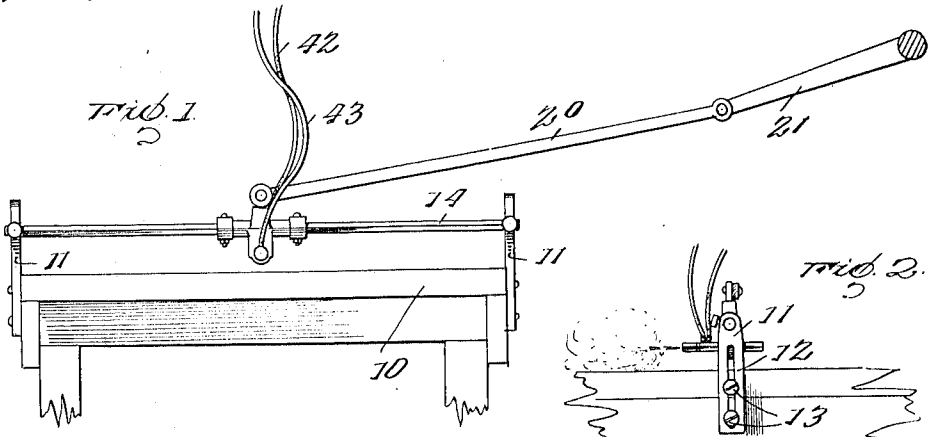


Fig. 1.

Fig. 2.

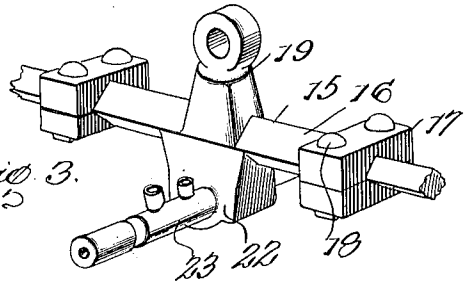


Fig. 3.

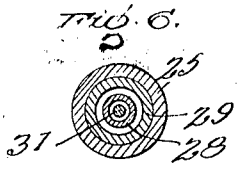


Fig. 6.

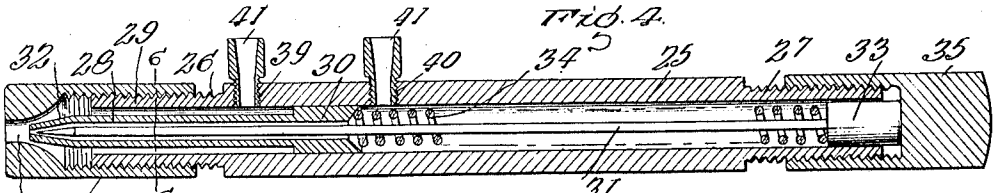


Fig. 4.

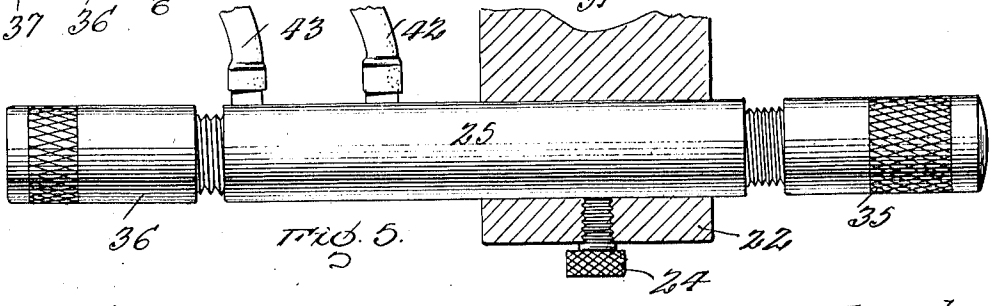


Fig. 5.

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UNITED STATES PATENT OFFICE.

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AIR-BRUSH.

1,316,937. Specification of Letters Patent. Patented Sept. 23, 1919.

Application filed March 17, 1919. Serial No. 283,060.

To all whom it may concern:

Be it known that I, ERNEST B. BREWSTER, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Air-Brushes, of which the following is a specification.

This invention has relation to air brushes and means for supporting the same, and has for its primary object to provide an air brush of an improved construction whereby a spray of color medium may be obtained by which a uniform color may be imparted to any surface without spattering or causing the color to collect in spots.

Another object of the invention is to provide an air brush in which the color is fed thereto by gravity and controlled by a needle valve and in which the air flows from the brush in advance of the color, thereby producing a vacuum to assist flow of the color and also insuring the mixture of air and color only outside of the brush.

Another object of the invention is to provide an air brush of a more simple construction than similar devices heretofore provided, permitting the facile cleaning thereof and having an extremely simple adjusting means for the air and color.

Another object of the invention is to provide a support for the air brush of my invention whereby the air brush may be moved back and forth across a surface to impart to the latter a uniform shade of color.

Another object of the invention is to provide a support for my improved air brush whereby embossed paper may have imparted thereto a novel color effect consisting of means for supporting the brush at an acute angle relative to the surface of the paper so as to cause the color to collect on one side of the raised portions of the embossed paper, the support being adjustable to vary the angle and vertical height to secure different effects.

In addition to the foregoing, this invention comprehends improvements in the details of construction and arrangement or parts, to be hereinafter described and particularly set forth in the appended claims.

In the accompanying drawings in which similar and corresponding parts are designated by the same characters of reference throughout the several views in which they appear,

Figure 1 is a view in front elevation of a coloring machine constructed in accordance with my invention.

Fig. 2 is a view thereof in side elevation.

Fig. 3 is a detail view in perspective of the air brush support.

Fig. 4 is a view in longitudinal section of my improved air brush.

Fig. 5 is a view thereof in side elevation, and

Fig. 6 is a transverse section taken on the line 6—6 of Fig. 4.

With reference to the drawings, 10 indicates a table having a pair of upstanding standards 11 secured to the sides thereof, each standard having a vertical slot 12 formed therein in which to receive screws 13 which secure the standard to the sides of the table. The upper ends of the standards support a transversely extending square rod 14, having its ends rounded to journal in the standard. Mounted upon the rod 14 is a carriage 15 consisting of a pair of angular plates 16, one to engage each side of the rod, the ends of the angle bars 16 being enlarged as at 17 whereby bolts 18 may be entered therethrough to secure the angle bars together. Formed upon the upper bar 16 is an extension 19 having an apertured enlargement whereby one end of a link 20 may be connected thereto, the other end of the link being connected to a crank arm 21 which is rotated by any suitable means not shown. Depending from the lower angle bar 16 is an enlargement 22 having an aperture in which to receive an air brush indicated generally at 23. A set screw 24 enters the enlargement to secure the air brush in place.

With particular reference to the air brush it will be seen that the same consists of a tubular casing 25 having both ends reduced and threaded as at 26 and 27, the latter constituting the rear end of the air brush. Located interiorly of the casing is a tubular nozzle 28 of a diameter to define an annular space 29 thereabout and having the inner end enlarged as at 30 to snugly fit the interior of the casing. The forward end of the nozzle is reduced in diameter and ex-

tends beyond the end of the casing as shown. A needle valve is provided in the form of a relatively long thin rod 31 having its forward end pointed as at 32 to be located within the reduced end of the nozzle 28, while its opposite end is provided with an enlargement 33 which snugly fits the bore of the casing 25 so as to centralize the rod 31 at all times. A coiled spring 34 is encircled about the rod 31 and engages at one end against the enlargement 30 of the nozzle and at its opposite end against the enlargement 33, thus urging the needle valve rearwardly and toward an open position. A threaded cap 35 is applied to the rear reduced portion 27 and the same engages the enlargement 33 of the needle valve whereby rotation of said cap will cause the needle valve to travel forwardly and thus vary the aperture at the forward end of the nozzle. The cap 35 thus constitutes an adjusting element for the needle valve. Applied to the forward reduced end 26 is a second cap 36 which may also be termed a nozzle, since an opening 37 is provided in its forward end, said opening gradually enlarging rearwardly and adapted to receive the forward end of the nozzle 28 in spaced relation thereto. It will be obvious that by rotating the cap 36 the distance between the nozzle 28 and the walls of the opening 37 may be varied. A pair of openings 39 and 40 are formed in the sides of the casing 25, one opening communicating with a space around the nozzle 28, while the other opening communicates with the interior of the casing rearwardly of said nozzle 28. Any suitable connections 40 may be inserted into the openings whereby a flexible conduit such as a piece of tubing may be applied thereto to conduct the material to the air brush.

The essential object of the apparatus shown in Figs. 1, 2 and 3 is to color or tint either plain or embossed paper, and to that end the paper is laid upon the table 10 and caused to travel thereacross at a uniform rate of speed. The color to be applied is placed at any suitable elevation and conducted by means of a tube 42 to the opening 40 in the casing of the air brush, whereupon the color flows through the nozzle 28. At the same time air under pressure is conducted through a tube 43 into the forward opening 39 of the air brush and flows around the nozzle 28 and issues through the constricted opening 37 of the nozzle 36. The amount of color to be discharged is regulated by rotating the cap 35 which results in a variation of the amount of aperture of the nozzle 28. The exit of the air pressure through the opening 37 effects the creation of a partial vacuum within the nozzle 36 whereby to draw the color from the nozzle 28 and cause the same to issue from the air brush in a fine cloud. The amount of air pressure may be varied by rotating the nozzle 36 which will cause the nozzle 28 to enter the opening 37 to a greater or less extent. While the coloring is issuing from the air brush the crank arm 21 is set in motion causing the carriage to travel from one side of the table to the other thereby depositing the color upon the paper in a uniform manner. It will be apparent from Fig. 2 that the color may be directed at an acute angle relative to the surface of the paper. This method is employed when embossed paper is to be colored in which event the color is deposited upon one side of the raised portions of the paper thereby producing a novel effect. It will be apparent that by loosing the set screws which secure the rod 14 to the standard the rod and consequently the carriage may be rotated so as to vary the angle of the air brush relative to the surface of the paper. In this manner different effects can be secured when embossed paper is used.

Thus it will be seen that I have provided a novel form of apparatus for supporting an air brush whereby paper may be tinted in a uniform manner and whereby various effects may be produced. It will be also apparent that I have provided an air brush of a new and novel construction which is characterized by its extreme simplicity both in details of construction and operation. It will be apparent that the air brush may be readily cleaned since it comprises but two parts which are readily disconnectible one from another. Other novel points of advantage will be apparent to those skilled in the art to which this invention appertains.

While I have illustrated and described my invention with some degree of particularity, I realize that in practice various alterations therein may be made. I therefore reserve the right and privilege of changing the form of the details of construction or otherwise altering the arrangement of the correlated parts without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In an air brush, a tubular casing having a pair of longitudinally spaced openings, a relatively long nozzle mounted in spaced relation interiorly to the casing, an enlargement on the rear end of the nozzle disposed between the openings to define forward and rear chambers, a needle valve rod extending through the casing and into the nozzle, a coiled spring surrounding the nozzle to urge the needle in an open position, a cap and screw threaded upon the rear end of the casing and engaging the needle rod to urge the same forward against the tension of the spring, and a cap screw threadedly engaged upon the forward end of the casing

and having an aperture to partly receive the nozzle said cap being in communication with the forward chamber to receive the air.

2. A paper coloring machine including a table, a pair of supports one at each side thereof, adjusted for vertical movement, a rod mounted in said support for rotation, means for securing the rod in an adjusted position, a carriage mounted to slide upon the rod, means for moving the carriage back and forth, and an air brush mounted upon the carriage.

3. A paper coloring machine including a table, a rod mounted above the table to extend transversely thereof, a carriage in the form of a pair of meeting members to embrace the rod, means for securing the members together, a link pivotally connected at one end to the carriage, a crank arm pivotally connected to the opposite end of the link, an aperture extension depending from the lower embracing member, an air brush extending through said aperture, and means for securing the air brush therein.

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST B. BREWSTER.

Witnesses:

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