UNITED STATES PATENT OFFICE.

ABNER PEELER, OF FORT DODGE, IOWA, ASSIGNOR TO LIBERTY WALKUP AND CHARLES WALKUP, OF SAME PLACE.

PAINT-DISTRIBUTER.

Application filed October 1, 1881. (Model.)

To all whom it may concern:

Be it known that I, ABNER PEELER, of Fort Dodge, in the county of Webster and State of Iowa, have invented certain new and useful Improvements in Pigment-Distributors; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to an improvement in devices for distributing pigments, the object being to apply to surfaces of any character all kinds of liquid coloring-matter in a state of extreme attenuation.

My invention further consists in the combination, with a reciprocating needle arranged and adapted to feed a quantity of liquid pigment to its point at every stroke, of devices for projecting a jet of air against the needle and atomizing the liquid pigment.

My invention further consists in the combination, with a reciprocating needle and a grooved or trough-shaped liquid-pigment receptacle, of devices for projecting a jet of air against the point of the needle and atomizing the liquid pigment.

My invention further consists in the combination, with a liquid-pigment receptacle, a fan, and a needle connected therewith, of devices to project a jet of air both upon the fan and upon the needle.

My invention further consists in the combination, with a reciprocating needle, a pigment-receptacle, and a fan, of a supply-pipe adapted to carry compressed air to the fan and needle, and an air-pump in connection with said supply-pipe.

My invention further consists in certain details of construction and combinations of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a top view of my pigment-distributor. Fig. 2 is a reverse view thereof; and Fig. 3 is a view, partly in elevation and partly in section, of the air pump and chamber.

A represents a hand-piece, of any size, material, and construction, to which the several parts of my improved pigment-distributor are secured.

B is a supply-pipe, through which compressed air is forced from any desired source to the small pipes C and D, which branch from its upper extremity, and which respectively conduct jets of air to the fan E and to the point of the needle F.

A receptacle, G, designed to receive and contain the pigment to be distributed, is mounted upon a support, H, secured to the hand-piece A. The groove I on the front face of the said receptacle is adapted to receive the needle F, which is retained therein by a staple, J, or by any equivalent device. As this groove forms the deepest portion of the receptacle, the coloring-matter introduced therein will gravitate toward it and supply the feeding-needle F until exhausted. The receptacle is not necessarily confined to the spoon-like form shown in the drawings, as it is apparent that many other shapes may be resorted to, if desired, which will fill the same function equally well. The form shown is, however, excellently adapted for the purpose, inasmuch as the pigment can be readily introduced into it and as easily removed when desired to employ a pigment of another color. This last is a valuable feature, for in the transition from one color to another all artists' tools should be perfectly clean.

The fan E, which is pivotally secured to an arm, K, projecting rearwardly from the said receptacle G, is rapidly revolved by an air-jet, which issues from the pipe C, and which im-
pinges against its cup-shaped arms $L$. Any other form of fan adapted to be revolved by an air-current may, however, be employed in lieu of the one shown. The needle $F$ acts as a vehicle for carrying forward and allowing minute quantities of pigment in the receptacle to be subjected to the action of an air-jet issuing from the pipe $D$. To this end it is reciprocated in the receptacle and before the mouth of the said pipe, which should be located at right angles to it. This is accomplished by securing its rear end to the fan just to one side of the axis thereof. The union between the fan and the needle may be effected in several different ways. The rear end of the needle may be bent at right angles to it and the bent portion inserted in a socket, $M$, located close to the axis $N$ of the fan; or the fan may be provided with a wrist-pin and the needle adapted to be connected therewith. Still again, the needle may be reciprocated by the fan by providing the latter with a crank-shaft and attaching the rear end of the neede to thereto.

In order that the device may be perfectly under the control of the operating artist, the supply-pipe $B$ is provided with a valve adapted to be operated by the hand. It consists of a plate, $O$, pivotally secured to the hand-piece $A$, the lower end of the said plate being adapted to impinge against and force into the aperture $P$ a portion of the flexible pipe $Q$, through which the air is conducted to the pipe $B$. A shallow groove, $R$, extends from the aperture to the lower end of the pipe $B$, and thus insures the ready passage of air from one pipe to the other. The valve is normally closed by the action of a spring, $S$, which is readily overcome and the valve opened by a slight pressure of the finger of the hand holding the hand-piece. As this pressure may be applied and released as often as need be, the valve is made perfectly responsive to the wish of the artist.

The air-pump designed to be used with my pigment-distributor is adapted to be worked by foot-power. It consists of a standard, $T$, to which an upright cylindrical air-chamber, $U$, is secured. A cylinder, $V$, has communication with the said chamber $U$ through an aperture, $W$, located in the chamber $X$, which is the lower of the two chambers into which the said cylinder is divided by the perforated disk $Y$.

A piston-rod, $Z$, suitably packed, is adapted to be reciprocated in the upper chamber of the cylinder $V$ by power transmitted from the foot-pedal $C'$ through a pitman, $D'$. As the piston descends it will force a column of air into the lower chamber, $X$, and in so doing overcome the force of the spring $E'$, which normally supports a disk, $F'$, in contact with the perforated disk $Y$, and thus prevents the escape of compressed air from the chamber $U$ through the chamber $X$ into the chamber in which the piston itself is located. When the said disk $F'$ is depressed the air carried before the piston will flow into the chamber $X$, and then into the air-chamber $U$. The moment the piston completes its stroke, the pressure being removed from the spring $E'$, it will react and hold the disk $F'$ against the perforated disk $Y$. A short pipe, $G'$, is secured to the top of the chamber $U$ for the attachment of the flexible pipe $Q$, which conducts the air to the supply-pipe $B$ of the distributor. The particular value of the air-chamber $U$ lies in the fact that the compressed air is supplied to the pipe $B$ in a more even current than could be obtained by its connection directly with the cylinder $V$.

Having fully described my invention in detail, I shall now proceed to explain its modus operandi. Let it be first supposed that the air-chamber is filled with air under pressure, and that a suitable quantity of color has been introduced into the pigment-receptacle. If, now, by a slight pressure of the finger, the valve in the supply-pipe is opened, a current of air will flow through both of the pipes $C$ and $D$, respect 90 ively actuating the fan and reciprocating the needle and projecting a jet across the space in front of the needle and at right angles to the path in which it reciprocates. In the reciprocal movement of the needle its point is drawn within and immersed in the pigment in the receptacle, a small quantity of which will adhere to it. When, now, the needle is thrown forward its point will divide the air-jet issuing from the pipe $D$, and the adhering color will be blown from its opposite sides thereby and carried to any object within convenient range of the jet. The quantity of color adhering to the needle is so small and its atomization so perfect that the individual particles of color are hardly discernible upon the object upon which they are thrown. It will therefore follow that with my distributor and with one pigment colored effects may be produced which will descend from the palest tints capable of being produced by the extreme attenuation of the color through all of the intermediate tints down to the depth of color formed by the paint in mass. As the tone of the different effects will depend upon the length of time that the jet is directed to any one point, exquisitely graded shading may be produced by its careful manipulation.

In polychromatic painting, in the prosecution of which it is often necessary in order to obtain the desired tints to apply one pigment upon the surface of another color, my distributor will be of great value, as after it has been used to apply the pigment the pigment-receptacle may be cleansed and another color introduced into it and distributed upon the color first applied. In this way a blending of color may be produced almost unattainable in brush-painting. In painting portraits, either in color or in sepia, and in finishing solar prints the device may also be used to excellent purpose on account of its adaptation to produce those soft
and delicate tints which this class of work demands. In fact, in all situations requiring delicate coloring my device will be found a great aid in the application thereof.

I would have it understood that I do not limit myself to the exact construction shown and described, but hold myself at liberty to make such slight changes and alterations as fairly fall within the scope and spirit of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a reciprocating needle arranged and adapted to feed a quantity of liquid pigment to its point at every stroke, of devices for projecting a jet of air against the needle and atomizing the liquid pigment, substantially as set forth.

2. The combination, with a reciprocating needle and a grooved or trough-shaped liquid-pigment receptacle, of devices for projecting a jet of air against the point of the needle and atomizing the liquid pigment, substantially as set forth.

3. The combination, with a reciprocating needle and a liquid-pigment receptacle, of an air-jet tube arranged at right angles to the point of the needle, and apparatus for projecting a jet of air against the needle-point, substantially as set forth.

4. The combination, with a liquid-pigment receptacle, of a fan and a needle connected with the fan and adapted to be reciprocated thereby, substantially as set forth.

5. The combination, with a liquid-pigment receptacle, a fan, and a needle connected therewith, of devices to project a jet of air both upon the fan and upon the needle, substantially as set forth.

6. The combination, with a liquid-pigment receptacle, of a fan, a needle adapted to be reciprocated in the receptacle by attachment to the fan at a point near the axis thereof, and devices to project a jet of air both upon the point of the needle and upon the periphery of the fan, substantially as set forth.

7. The combination, with a reciprocating needle, a pigment-receptacle, and a fan, of a supply-pipe branching at its upper end into two pipes respectively adapted to project a jet of air upon the fan and the point of the needle, substantially as set forth.

8. The combination, with a reciprocating needle, a pigment-receptacle, and a fan, of a supply-pipe adapted to convey jets of air upon the fan and needle, and a valve adapted to regulate the passage of air through the supply-pipe, substantially as set forth.

9. The combination, with a reciprocating needle, a pigment-receptacle, and a fan, of a supply-pipe for carrying air-jets to the fan and needle, a flexible pipe attached to the lower end of the supply-pipe and communicating therewith through an aperture in the side thereof, and a spring-pressed plate adapted to compress the flexible pipe, substantially as set forth.

10. The combination, with a reciprocating needle, a pigment-receptacle, and a fan, of a supply-pipe adapted to convey compressed air to the fan and needle, and an air-pump in connection with said supply-pipe, substantially as set forth.

11. The combination, with a reciprocating needle, a pigment-receptacle, and a fan, of a supply-pipe adapted to convey compressed air to the fan and needle, an air-chamber connected with said pipe, and an air-pump for forcing air into the said chamber, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ABNER PEELED.

Witnesses:
L. WALKUP,
J. M. DERING.