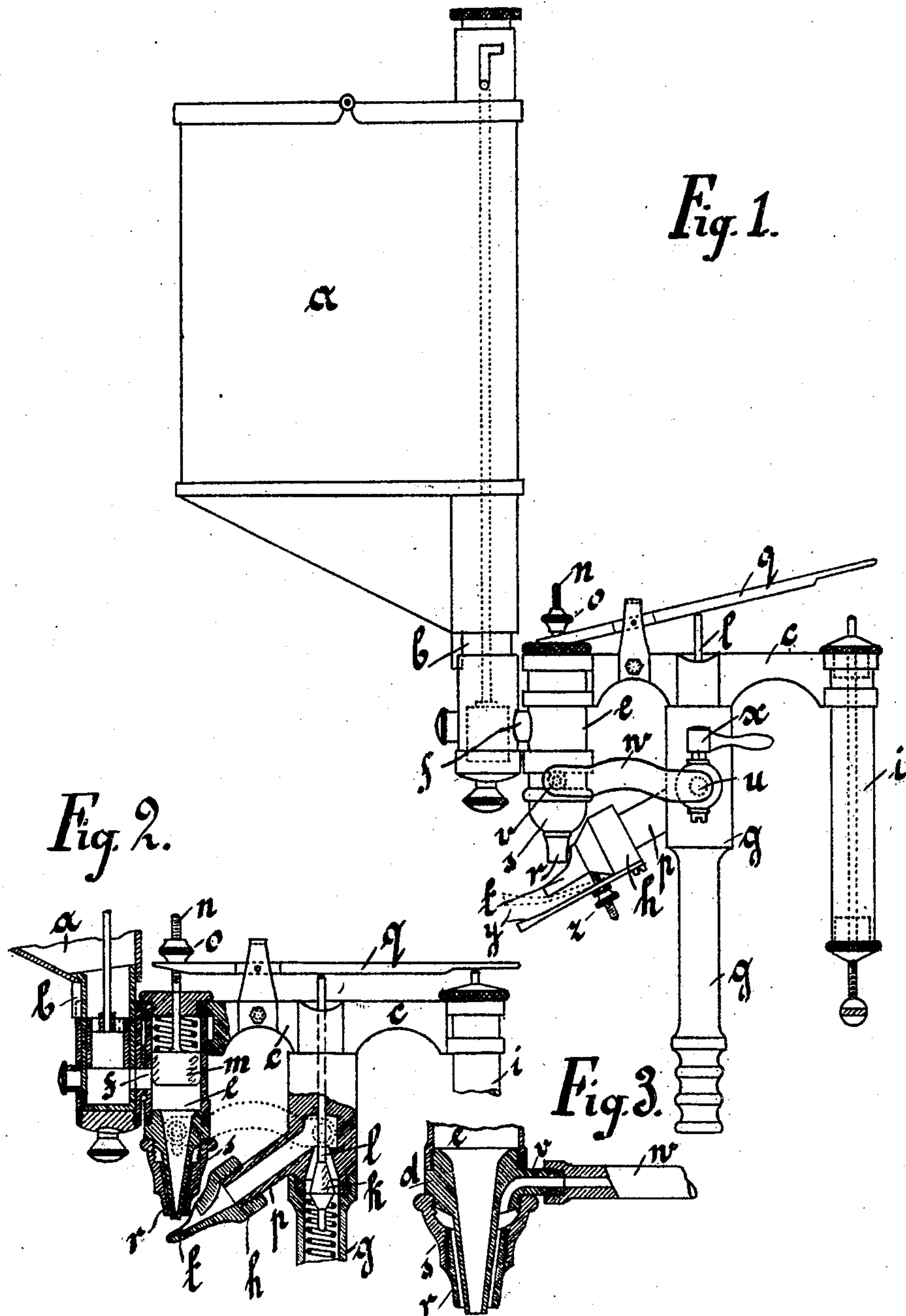


No. 835,888.

PATENTED NOV. 13, 1906.

H. MIKOREY.
COLOR SPRAYING APPARATUS.
APPLICATION FILED FEB. 26, 1906.



Witnesses:
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COLOR-SPRAYING APPARATUS.

No. 835,888.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed February 26, 1906. Serial No. 303,131.

To all whom it may concern:

Be it known that I, HANS MIKOREY, civil engineer, a subject of the German Emperor, and a resident of 13 Wartburgstrasse, in the city of Schöneberg, near Berlin, Kingdom of Prussia and German Empire, have invented a certain new and useful Color - Spraying Apparatus, of which the following is a specification.

10 This invention has reference to a color-spraying apparatus which is intended for use as a hand-operated apparatus for the coloring or dyeing of objects of any kind, the color or dye being admitted from a suitable receptacle into a nozzle and being sprayed or disintegrated by a current of air upon being delivered from said nozzle. As compared with the apparatus of this kind as heretofore employed the novelty of the invention resides, 20 substantially, in the fact of providing for a double spraying or disintegration of the color or dye by means of two air-nozzles, one of which surrounds the color or dye delivering nozzle, while the other nozzle is arranged at an angle relatively to the former or color-delivering nozzle. By this means the color or dye is first subjected to a preliminary spraying at the very moment of its escape, the jets of the color or dye obtained by this 30 preliminary disintegration being then subjected to another spraying operation and in the direction of the object or article to be dyed or colored, so that the spraying or disintegration is extremely fine. In view of this fact the apparatus is particularly adapted for thick or viscid colors or dyes. The spraying or deviating action may be increased by providing the last-mentioned air-nozzle with an abutting surface extending 40 below the first-mentioned air-nozzle and being of groove or gutter like shape and being capable of further extension by an adjustable spring-actuated plate, if desired, for the purpose of producing a deviation in any desired direction, the discharge-opening of the last-mentioned air-nozzle facing the said abutting surface, being then shaped as a flat slot. The air-current which is discharged from the 50 first-mentioned air-nozzle surrounding the

justed and controlled by means of a cock included in the corresponding air-conduit.

Upon the accompanying drawings a form of construction of the apparatus upon which 55 my invention is applied is shown by way of example, Figure 1 being a side view of the entire apparatus, Fig. 2 being a longitudinal section through part of the apparatus with the color-discharge and air-escape nozzle 60 opened, and Fig. 3 being a longitudinal section through the color or dye nozzle and through the air-nozzle surrounding the same.

In the apparatus illustrated, by way of example, on the drawings the arrangement is 65 such that the color-admitting passage, which communicates with the color-nozzle and the air-conduit, may be opened by depressing a lever *q*, common to both conduits, in such a manner that the air-conduit is first opened, 70 the color or dye conduit being opened after the air-conduit has been fully opened, so that a disintegrating or spraying air-current will already exist when the color or dye begins to be discharged. The color or dye 75 passes from the color or dye receptacle *a*, which is provided with a backwardly-sloping bottom, into the discharge-tubing *b*, connected thereto, and through the communicating passage *f* into the pipe *e*, to the lower end of 80 which the color or dye delivering nozzle *d* is screwed. Within the said tube *e* the piston-valve *m* is displaceably arranged, which is maintained in the normal and closing position by spring action and which controls the 85 communicating passage *f*, the said valve being acted upon by the above-mentioned lever *q* for the purpose of opening said passage, the lever *q*, with its fork-shaped arm, engaging the valve-stem *n* below an adjustable nut *o*, 90 which valve-stem *n* projects through the upper closing-stopper of the tube *e*. It is evident that when the lever, which is pivotally secured to the support or carrying-frame *c* of the entire apparatus, is depressed the valve 95 *m* is raised so as to open the passage *f* as soon as the forked end of the lever strikes against the nut *o*.

Upon the support or frame and parallel to the tube *e*, leading to the color-nozzle, an air- 100 admission pipe *g* is arranged, which may be connected by a flexible tubing with an air-

pump or with some other source of compressed air. The upper part of said air-conduit is normally kept closed by a spring-actuated miter or cone-shaped valve *k*, the stem *l* of which projects through the upper closed end of the pipe and through the support *c* and abuts against the lower edge of the lever *q* and in such a manner that the fulcrum of said lever is situated between the two valve-stems *n* and *l*. Thus the lever *q* will act upon both valves when the lever is depressed and, as already stated, in such a manner that it causes first the opening of the air-valve *k*, and then it causes also the opening of the color or dye valve *m*, the valve being opened more or less and sooner or later, according to the adjustment of the nut *o*. In order to enable the operator to get a better hold of the apparatus, a handle *i* is provided on the support *c*, so that the operator can catch hold of the handle with his four fingers, while he can use his thumb for the operation of the lever *q*.

From the air-pipe *g* and immediately above the valve-seat of the valve *k* a short tubing *p* is branching off, arranged at an acute angle in relation to the color or dye tube *e* and to the front end of which an air-nozzle *h* is screwed, which extends close to the mouth of the color-nozzle *d*. The latter is surrounded by another air-nozzle *r*, so as to constitute an inclosing sleeve for the said color-nozzle, which is connected to the air-nozzle by means of screw-cap *s*, into which the color-nozzle *d* is screwed, the screw-cap in its turn being also screwed to the air-nozzle *n* in such a manner that a free annular space is left between both nozzles, through which space the air admitted to the said nozzle is free to escape. The first-mentioned air-nozzle *h* is provided with a gutter-shaped deviating-surface at its end, which is preferably effected by the cutting off of the upper part of the nozzle, the said surface being extended as far as underneath the mouth of the double nozzle *d r*. By suitably increasing the thickness of the wall of the nozzle in its upper part the bore of the nozzle opens out into the gutter in form of a flat slot, so that the escaping air will pass immediately in contact with the gutter.

Underneath the gutter *t* a spring-actuated plate *y*, attached to the nozzle *h* and constituting, so to speak, a "continuation" of the gutter, may be provided, if desired, the said plate *y* projecting somewhat beyond the extremity of the gutter and being preferably gutter-shaped at its front end also by bending the edges upward correspondingly. By means of a small set-screw *z* the angle which the spring-actuated plate *y* forms with the gutter *t* may be varied at will, as will be immediately apparent from the illustration

given in dotted lines in Fig. 1 of the drawings.

The admission of air into the air-nozzle *r*, which surrounds the color or dye nozzle, takes place according to the illustration by a branch pipe leading off from the air-pipe *g*. With this end in view another short piping *u* leads off from the air-pipe *g*, and preferably, also, above the miter-valve *k*, which piece of piping *u* is connected, by means of a rubber tubing *w* or the like, with a similar short piping *v* at the upper end of the color-nozzle. The bore of the pipe *v*, Fig. 3, extends into the solid part of the wall of the nozzle, where it communicates with a bore arranged substantially at right angle thereto, which opens out into the ring-shaped space between the color or dye nozzle and the surrounding air-nozzle and the screw-cap *s*, respectively. A cock *x* is arranged in the passage communicating with the air-nozzle *r*, so that the air-current flowing to this nozzle may be controlled and shut off independently of the main air-conduit *g*.

After the apparatus has been connected to a source of compressed air and after the receptacle *a* has been filled with the dye or color and after the cock *x* has been opened according to requirements an air-current will flow out from the nozzle *h* and another air-current from the nozzle *r* as soon as the lever *q* is depressed, while color or dye is discharged from the nozzle *d*. The color or dye is disintegrated immediately upon leaving the nozzle, whereupon the thus-disintegrated coloring-matter as soon as it gets within reach of the air-current of the nozzle *h* is subjected to an additional disintegration or spraying and is deviated from its course in the direction of the article to be colored or dyed. The disintegration is twofold and in immediate succession, and therefore exceedingly fine. By providing the nozzle *h* with a gutter-shaped deflecting or deviating surface and with the slotted opening the air-current issuing from this nozzle is concentrated, and by this means the spraying and deflecting action in the desired direction is aided. Besides, when the spring-acting plate *y* is employed in the manner above described the angle of deflection of the sprayed color or dye may be varied at will and different from the angle imparted to it by the nozzle *h* and the gutter *t*.

By regulating the cock *x* it is possible to have a more powerful or weaker current of air issue from the nozzle *r*, or the said air-current may be entirely suppressed, so that then the apparatus will be operated by the spraying or disintegration being effected only once. It is evident that the supply of air to the nozzle *r* may also be provided directly from a suitable source instead of by a branch

pipe from the pipe *g* without deviating from the spirit of this invention. It is preferable to construct the apparatus in such a manner that all its parts may be readily detached 5 and taken to pieces for the purpose of cleaning and interchanging the same, as is the case in the construction illustrated by way of example.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. Color-spraying apparatus, comprising means for disintegrating or spraying the coloring-matter twice by means of two air-nozzles, one of which surrounds the color-discharge 15 nozzle while the other is arranged at an angle thereto, so that the coloring-matter, after having been submitted to a preliminary disintegration immediately on its escape from the color-delivering nozzle, is disintegrated 20 again.

2. Color disintegrating and spraying apparatus, comprising a color-delivering nozzle, an air-nozzle surrounding the same, another

air-nozzle at an angle thereto and provided with a gutter-shaped deflecting-surface extending below the color-delivering nozzle, the 25 nozzle-opening, facing said surface being slotted.

3. Color disintegrating and spraying apparatus, comprising a color-delivering nozzle, 30 an air-nozzle surrounding the same, another air-delivering nozzle at an angle thereto, an abutting plate connected to the latter, a spring-acted plate attached to the nozzle below the abutting plate and projecting beyond 35 the nozzle, the said spring-plate being adjustable in any desired direction for the purpose of deflecting the disintegrated coloring-matter in any desired direction.

In witness whereof I have hereunto signed 40 my name, this 9th day of December, 1905, in the presence of two subscribing witnesses.

HANS MIKOREY.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.