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(71)(72) Applicants and Inventors: KENDERI, Tibor [HU/HU]; KENDERI, László [HU/HU]; Kelenhegyi út 49, H-1118 Budapest (HU).

(74) Agent: PATENTBUREAU DANUBIA; P.O. Box 198, Bajcsy-Zsilinszky út 16, H-1368 Budapest (US).

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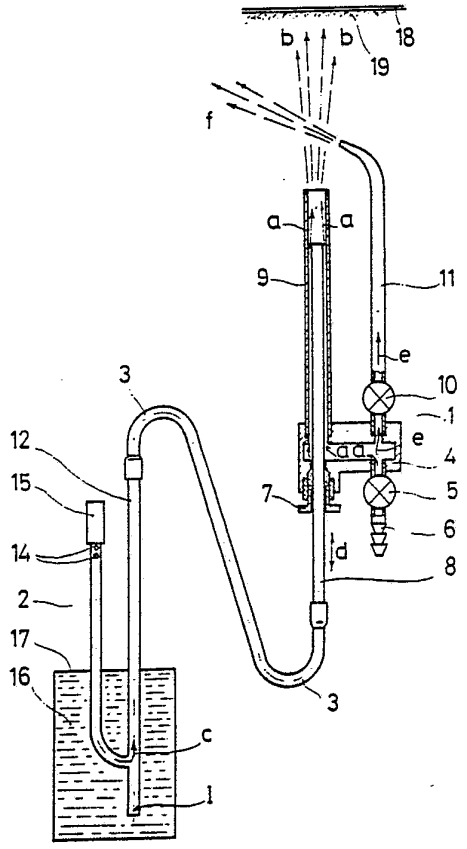
(54) Title: SPRAYING GUN

(57) Abstract

Spraying gun, in particular for applying and spraying, resp. dyestuffs, slurry and/or granular substances. The spraying gun according to the invention comprises a material feeding unit (2), a spraying head (1) consisting of a material charging pipe (8), a blast pipe (9) enclosing the charging pipe being in given case parallel therewith and mutually displaceable from controlling the material stream and thus the cone angle of the outlet stream, and an air-jet pipe (11) confining an angle with the direction of the outlet stream, and a pipeline (3) interconnecting the material feeding unit (2) and the spraying head (1).



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Spraying gun

Technical field

The invention relates to a spraying gun, in particular for applying and spraying, resp. dyestuffs, slurry and/or granular substances.

Background art

Different spraying, blowing devices, as e. g. dyestuff spraying guns, mortar throwers, sand blasting apparatuses are widely used in the industry. The guns and apparatuses, resp. developed for the most diverse purposes are meeting more or less the requirements. However, the known apparatuses have also well-known disadvantageous features. So e. g. in the case of dye sprayer operated with air-atomization only highly diluted dyestuffs can be used. Although airless spraying guns are well suitable for thicker dyestuffs, but a special quality of dyestuff is to be used and on the other hand said apparatuses are working at an overpressure of 120 to 160 at what is disadvantageous from several points of view.

It is characterizing for all the known spraying guns that spraying is possible in the direction of the longitudinal axis, i. e. straightly forward only. However, in practice one is often confronted with the task to coat the "backside" of pipes, cables, frame-works, etc. having been covered or concealed by a wall, i. e. surfaces ought to be coated which cannot be seen. This work is presently performed manually, using bend

brushes. The drawback of this forcible solution lies in that partly manual work is expensive and unreliable, in addition to this live labour does not stay always at disposal, in spite of the high prices. A further disadvantage lies in the fact that there are coating materials, so e. g. different slurries and dispersions, which cannot be applied on surfaces in the desired quality by using a brush.

The majority of the known spraying devices are discontinuously operated, accordingly automatic, continuous operation is not possible or one has to overcome considerable difficulties in this respect.

No spraying gun has become known up to now which would be equally suitable for spraying or blasting diluted and thick dyestuff, slurries containing rough particles or just dry particles, as e. g. corundum crashing onto the surfaces to be coated or cleaned.

Disclosure of Invention

The aim of our invention is to develop a spraying gun which is - beside the absolute elimination of said defficiencies - suitable for spraying or blowing detergents, diluted dyestuff, thick dyestuff, diverse fibrous materials or particles containing slurries in a straight direction or at a predetermined angle for coating surfaces or for blasting of dry particles, as e. g. sand or crushing corundum or for the completely dust free blowing of slurry formed with abrasive particles for cleaning or roughing given surfaces.

The aim set can be realized by using the spraying gun according to the invention. The spraying gun according

to the invention comprises a feeding unit, a spraying head consisting of a material charging pipe, a blast pipe enclosing the feeding pipe being in given case parallel therewith and mutually removable, for controlling the material stream and thus the cone angle of the outlet stream and an air-jet pipe confining an angle with the direction of the outlet stream, and a pipe line interconnecting the material feeding unit and the spraying head.

Brief Description of Drawing

The invention will now be described in detail by means of a preferred embodiment, by the aid of the drawing enclosed, showing the schematical side view of the spraying gun, partly in a sectional view.

Best Mode of Carrying out the Invention

According to the solution the spraying gun consists of three main parts: spraying head 1, material feeding unit 2 and the conveniently flexible pipeline 3 interconnecting the first mentioned two main parts. The essence of the spraying gun according to the invention lies in that it comprises a material feeding unit 2, a pipeline 3 connected to the material feeding unit, a preferably straight material charging pipe 8, being and connected to said pipeline, a blast pipe 9 enclosing the material charging pipe for the control of the outlet material stream and thus of the cone angle of the material issue expediently being displaceable mutually and parallelly therewith, as well as an air-jet pipe 11 confining an angle with the direction of the outlet stream serving for deflecting the direction of the said outlet stream.

The house connection 6 having been provided with the valve 5 is connected to the hollow body 4 of

the spraying head 1. The material charging pipe 8 and the blast pipe 9 concentrically enclosing it are also connected to the hollow body 4 by means of the stuffing box 7 and a sealing. The curved air-jet pipe 11 having a flattened end is also connected to the hollow body via the interconnected valve 10.

The material feeding unit 2 consists of the material suction pipe 12 and the pipe 13 for the false-air connected thereto. On the upper end of thepipe 13 for the false-air there are the air inlet bores 14. The free cross-section of said bores may be controlled by means of the locking cap 15 connected with a thread to the pipe 13 for the false-air. The material 16 to be sprayed is filled in the vessel 17.

The spraying gun operates as follows:

With a closed position of the valve 5 the apparatus is connected to the scource of the pressurized gas, e. g. compressed air by the aid of the hose-connection 6, while the valve 10 is kept in a closed position. The feeding unit 2 is immersed into the material 16 to be sprayed contained in the open vessel 17. After having opened the valve 5 the compressed air streams in the direction of the arrow a inducing a suction effect in the material charging pipe 8 (an ejector effect). Under the effect of suction the material 16 streams through the pipeline 3 and the material suction pipe 12. The material to be sprayed considerably accelerated and atomized in the blast pipe 9 is discharged in the direction of the arrows b and impacting on the surface 18 either forms the coating 19 or exerts a cleaning effect on the surface 18.

The suction effect, "ejector effect" ensuring the essence of the operation of the spraying gun can

be controlled in a most intensive manner beside the proper dimensioning of the spraying gun also by changing the pressure of the compressed air and its quantity fed into the apparatus, resp. Intensity of suction can be controlled also by displacing the material charging pipe 8 in the direction of the arrow b. By the displacement of the charging pipe 8 quality of the atomization of the spraying material and the cone angle of the spray jet can also be controlled.

The output of the spraying gun according to the invention can be increased to a multiple value also in the case of various dyestuffs, slurries and viscous substances if the substance to be sprayed ahas been fed into the material charging pipe 8 by means of a pump - not shown on the drawing - which can be connected to the pipeline 3. This embodiment has also the advantage that the spraying gun will become suitable also for the spraying of viscous substances which otherwise could not be fed into the device by means of the "ejector suction effect" itself as described above. This embodiment makes it also possible to feed the substance to be sprayed by means of a pump from a distance of about up to 20 m, for example on working sites which are difficult to access.

The quantity of the substances to be sprayed can be controlled infinitely by varying the free cross-sectional area of the air inlet bores 14 and by means of screwing in and out the locking cap 15 beside the expedient selection of dimensions of the material feeding unit 2. If more air will be admitted to pass through the pipe for the false-air 13, the said false-air, streaming in the direction of the arrow c, will reduce the intensity of suction at the end of the suction pipe 12,

consequently also the intensity of the stream of the spraying substance will decree and in extreme case even the streaming stops at all.

After having opened the air valve 10, the press air streaming starts through the air-jet pipe 11 also in the direction of the arrow c, afterwards it streams out with great velocity through the flattened end of the air-jet pipe as through a small opening and deflects the blowing stream in the direction of the arrow f and thus creates an "angular blowing".

The deflection of the blowing angle in the direction of the arrow f of the dyestuff, slurry, etc. streaming in straight direction of the arrow b makes possible not only the coating of the not visible back side of different pipe lines, cables and iron constructions but in a surprising not aforeseable manner creates a very fine secunder pulverization of the substance to be sprayed and thus secures a very fine uniform distribution thereof.

In case of certain applications, by way of example in very narrow places, the spraying gun may be operated without using cross-pulverizer, in such cases, however, the advantageous additional effects, as discussed above, do not occure.

Claims

1. Spraying gun for applying and spraying, resp. liquids and solid particular material, especially dyestuffs, slurry and/or granular substances, c h a r a c t e r i z e d in that it comprises a material feeding unit (2), a spraying head (1) consisting of a material charging pipe (8), a blast pipe (9) enclosing the charging pipe being in given case parallel therewith and mutually displacable for controlling the material stream and thus the cone angle of the outlet stream, and an air-jet pipe (11) confining an angle with the direction of the outlet stream, and a pipeline (3) interconnecting the material feeding unit (2) and the spraying head (1).

2. A spraying gun according to claim 1, c h a r a c t e r i z e d in that the material charging pipe (8) is straight and that the said charging pipe and the blast pipe (9) are parallelly and mutually displacable relative to each other.

3. A spraying gun according to claim 1 and 2, c h a r a c t e r i z e d in that the cross section of the pipeline (3) and the material charging pipe (8) is constant along their whole length.

4. A spraying gun according to any of claims 1 to 3, c h a r a c t e r i z e d in that a pipe for the false-air (13) is connected to the pipeline (3) or expediently to the material suction pipe (12) connecting the said pipeline with the open vessel (17).

5. A spraying gun according to any of claims 1 to 3, c h a r a c t e r i z e d in that a material feeding pump provided with a vessel is connected to the pipeline (3).

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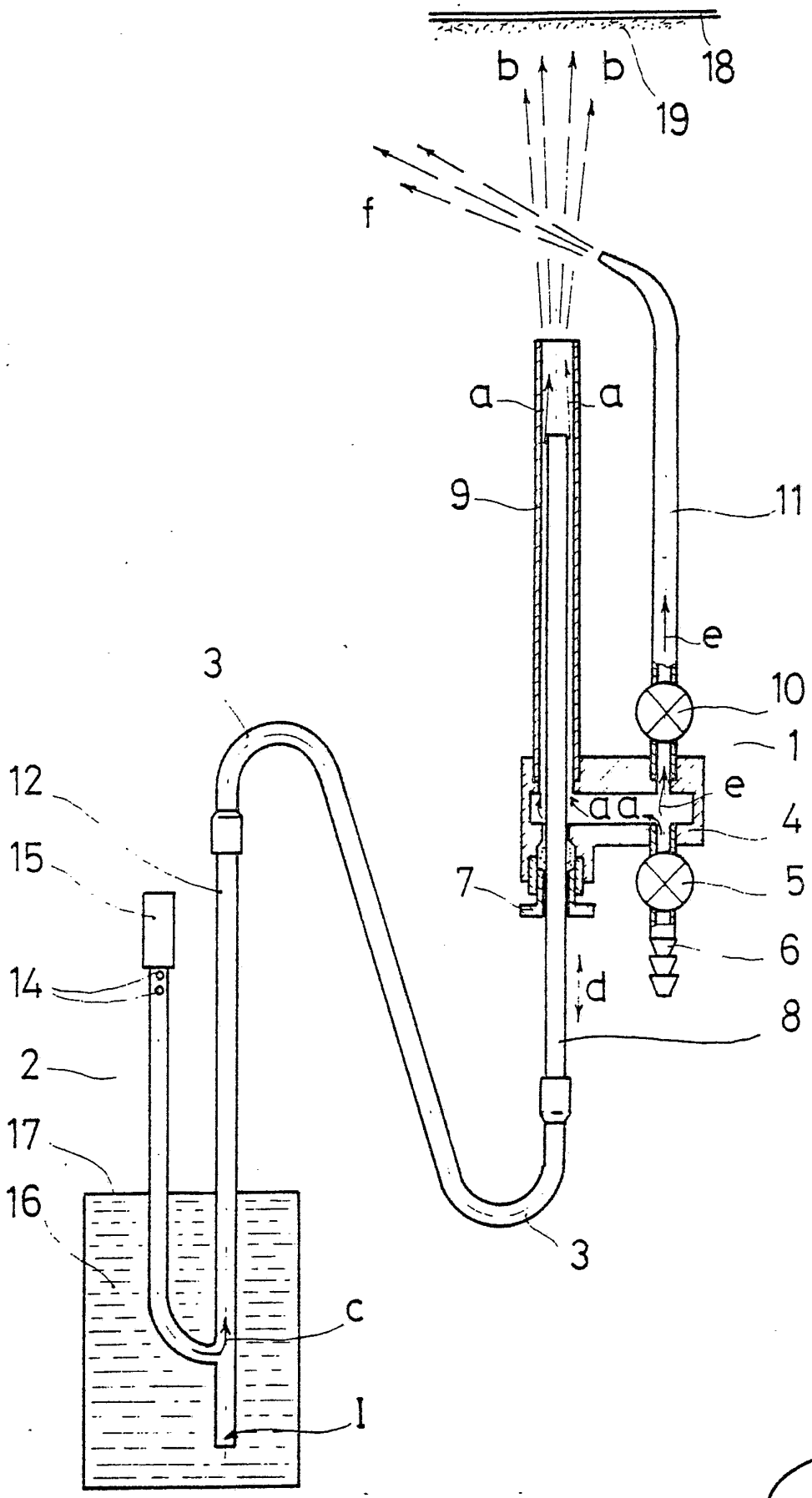

INTERNATIONAL SEARCH REPORT

International Application No PCT/HU83/00009

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC

B05B 7/30

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
IPC[3]	B05B 7/24, B05B 7/30

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [5]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category [6]	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
A	SU, A, 978932 (JU.V. Kodra et al), 07 December 1982 (07.12.82)	1-2
A	US, A, 3799450 (Clarence A. Braukman), 26 March 1974 (26.03.74)	4,5

[6] Special categories of cited documents: [15]

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IV. CERTIFICATION

Date of the Actual Completion of the International Search [2]	Date of Mailing of this International Search Report [2]
13 October 1983 (13.10.83)	09November 1983 (09.11.83)
International Searching Authority [1]	**Signature of Authorized Officer [20]**
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