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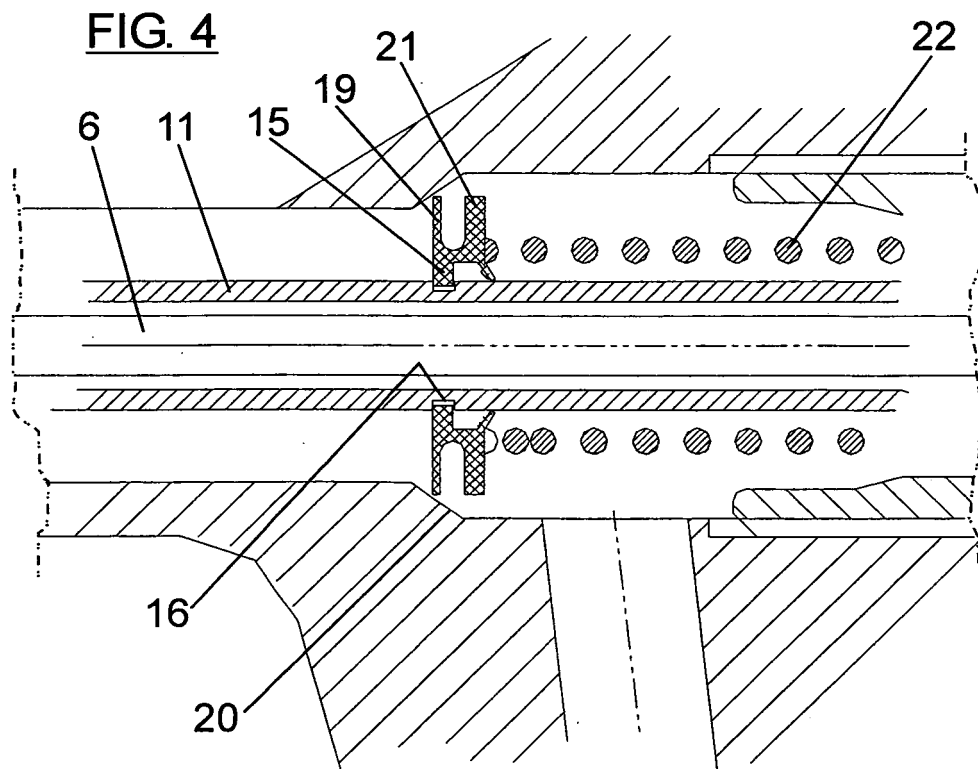
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(54) **Aerographic spray gun**

(57) Aerographic spray gun, in which the discharge of the liquid to be pulverized is controlled by a needle (6) activated by a trigger, whose needle has a single-piece bushing (11) mounted thereon, which can be moved with the needle and carries a valve constituted by an annular

part, which inwardly determines an anchoring rigid front wall (15) on a peripheral throat of the bushing (11), and a sealing flexible back wall on said bushing, while it inwardly has a sealing flexible front wall (19) on a closing seat (20), and a rigid back wall (21) on which an open-coil spring (22) rests.



Description

FIELD OF THE INVENTION

[0001] The present invention refers to an aerographic spray gun, intended for the application of pulverized fluids, such as paint.

[0002] The gun of the invention comprises a spray nozzle, to which it flows the fluid to be pulverized and compressed air in charge of producing the pulverization of said liquid. The control of the discharge of the liquid to be pulverized is carried out by means of a needle activated by a trigger. The control of the opening or closing of the passage of compressed air is carried out by means of a valve which forms part of a bushing coaxially mounted on top of the aforementioned needle and which can be moved together with said needle.

BACKGROUND OF THE INVENTION

[0003] In traditional aerographic spray guns the bushing having the valve which opens or closes the passage of air is subdivided into two sections fixed by an intermediate annular part, which forms a peripheral flange, protruding from the bushing surface, to form said valve. The aforementioned peripheral flange has a double function. On the one hand, it closes or opens against a front seat forming a chamber for the passage of compressed air, through which the bushing goes, and on the other hand, it serves as a support of a back open-coil spring which constantly pushes the valve to the closing position.

[0004] The aforementioned arrangement entails a considerable increase in the cost of the air throttle valve, since it requires that the bushing comprises two parts and that the mounting of the assembly be carried out later by means of the intermediate part, forming the valve itself.

DESCRIPTION OF THE INVENTION

[0005] The object of the present invention is to eliminate the aforementioned problems through a simpler constitution of the valve, which enables to use single-piece bushings. Another object of the invention is to attain a gun like the one described in which the control of the passage of air is more effective and with a safer and faster activation response.

[0006] The gun of the invention belongs to the previously described type and is characterized in that the valve controlling the passage of compressed air is constituted by an annular part made of a material with certain capacity to elastically deform, the annular part being mounted on a peripheral throat of the bushing.

[0007] The annular part has an inner channel which determines an anchoring rigid front wall on the peripheral throat of the bushing and a sealing flexible back wall on the surface of said bushing. The annular part also has an outer channel which determines a flexible front wall,

which serves as sealing means on a seat to close the chamber for the passage of compressed air, and a rigid back wall on which it rests an open-coil spring between this annular part and a back support.

[0008] According to another characteristic of the invention, the bushing on which the annular part is mounted is a single-piece bushing and it is coaxially mounted on the needle controlling the discharge of fluid to be pulverized, resting on a front stop, against which the trigger acts, all of which is performed in a well-known manner.

[0009] With the arrangement described, the bushing being a single-piece bushing, it simplifies its manufacturing and mounting, as well as the placement and, if necessary, the replacement of the annular part forming the valve.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The attached drawings show a non-limiting example of an embodiment, the description of which will state more clearly the characteristics of the invention.

[0011] In the drawings:

Figure 1 shows a sectional view of the aerographic spray gun, of traditional constitution, including the valve of the invention.

Figure 2 shows a diametric sectional view of a traditional valve for an aerographic spray gun.

Figure 3 shows a diametric sectional view of a valve constituted according to the invention.

Figure 4 shows detail A of figure 1, at a larger scale.

DETAILED DESCRIPTION OF AN EMBODIMENT

[0012] Figure 1 shows an aerographic spray gun of traditional constitution, including a body 1 which includes a first chamber 2 to which it flows the liquid to be pulverized, whose supply is connected to the inlet 3. The chamber 2 has a tubular body 4 mounted thereon with an outlet 5 against which the end of a needle 6 is adjusted, which controls the discharge of the fluid to be pulverized.

[0013] The body 1 also forms a second chamber 7 through which the compressed air passes, coming from a source which is connected to the inlet 8. The passage of air through the second chamber 7 is controlled by a valve shown in the sectional view of figure 3 and it is constituted by a bushing 11 coaxially mounted on the needle 6, resting at the front on a stop 9, on which the action trigger 10 acts.

[0014] On the bushing 11 an annular piece 12 is mounted, said piece having an inner peripheral channel 13 and an outer peripheral channel 14. The inner peripheral channel 13 determines a rigid front wall 15 coupled on a peripheral throat 16 of the bushing 11 which serves as an anchoring means of the annular piece 12 on said bush-

ing. The inner channel 13 also determines a back flexible wall 17 which serves as a sealing means against the external surface of the bushing 8.

[0015] As regards the outer peripheral channel 14, it determines a sealing flexible front wall 19 on a closing seat 20 of the second chamber 7 for the passage of compressed air. The outer channel 14 also forms a rigid back wall 21, on which an open-coil spring 22 rests, being arranged inside the second chamber 7, between the annular part 12 and a back seat.

[0016] In order to pulverize the liquid supplied through the mouth 3 the trigger 11 is activated, partially opening the outlet 5 of the tubular body 4. At the same time, the annular part 12 forming the valve of the invention is pushed back, enabling the compressed air to go through a third chamber 24 and through the drills -not shown-, up to the spray nozzle 25, which has drills 26 for the outlet of air, which enable to pulverize the paint.

[0017] Figure 2 shows the constitution of a traditional valve, which is mounted on the gun of figure 1 like the valve of the invention, but in which the bushing 11 is constituted by two parts 11' which are joined by an intermediate part 12' which forms the valve itself which will open or close the passage of compressed air. In this valve, the bushing 11 is formed by two parts and also requires a mounting process through the intermediate part 12'. The union of the two parts of the bushing with the intermediate part 12' has more inertia than the annular part 12' of the invention, which causes the gun to have a lower response in the opening and closing of the passage of compressed air.

[0018] On the other hand, in the valve of the invention the annular part has a flexible front wall 19, thanks to which a perfect closure of the passage of compressed air is attained.

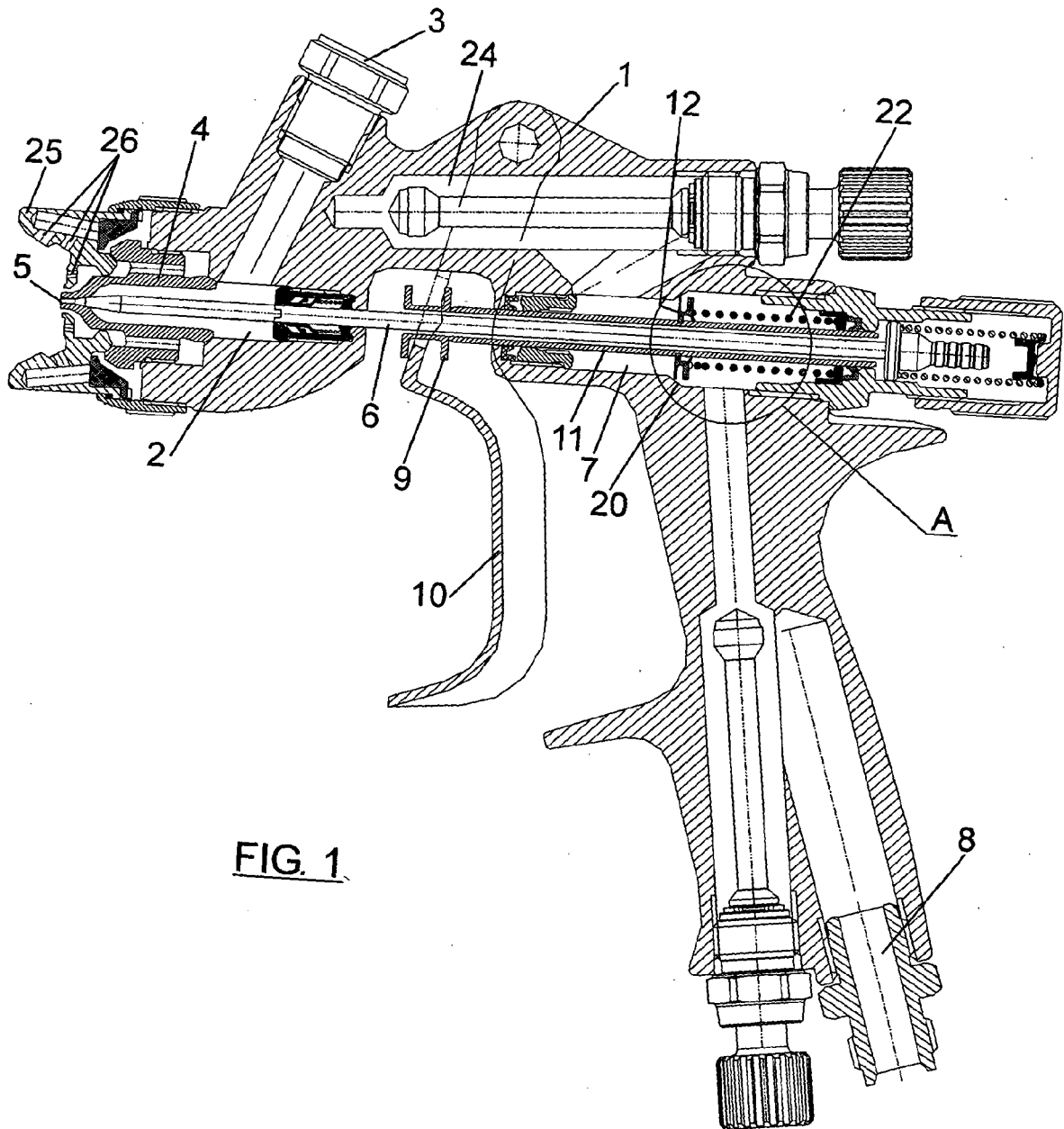
[0019] Since the annular part 12 of the invention is made of a material with certain capacity for elastic deformation, for example polyamide, both the front wall 19 and the back wall 17 will have the necessary flexibility to attain a good closure against the seat 20 of the second chamber 7 for the passage of compressed air and against the surface of the bushing 11.

[0020] Figure 4 clearly shows the mounting of the annular part 12 on the bushing 11, through the rigid front wall 15, as well as the support of the flexible front wall 19 on the seat 20 and the support of the flexible back wall 17 on the surface of the bushing 11, with light deformation thereof, adjusting and sealing on the surface of said bushing. It also shows how the spring 22 rests against the rigid back wall 21, to constantly push the bushing 11 and annular part 12, towards the closing position, against the seat 20.

is controlled by a needle activated by a trigger, whose needle has a bushing mounted thereon, which can be moved with the needle and carries a valve in charge of opening or closing the passage of compressed air, **characterized in that** said bushing is a single-piece bushing and the valve is constituted by an annular part mounted on a peripheral throat of the bushing, whose annular part has an inner peripheral channel, which determines an anchoring rigid front wall on the peripheral throat of the bushing and a sealing flexible back wall on said bushing, and an outer peripheral channel which determines a sealing flexible front wall on a closing seat of a second chamber for the passage of compressed air and a rigid back wall on which an open-coil spring rests arranged between the annular part and a back support.

Claims

1. Aerographic spray gun comprising a spray nozzle, in which the discharge of the liquid to be pulverized



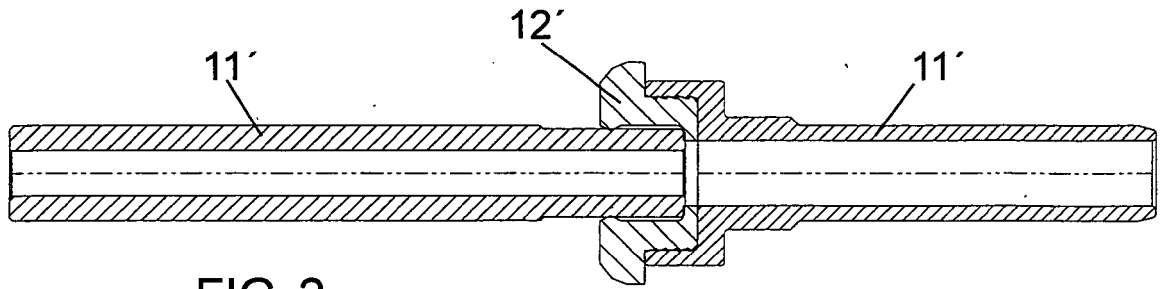


FIG. 2

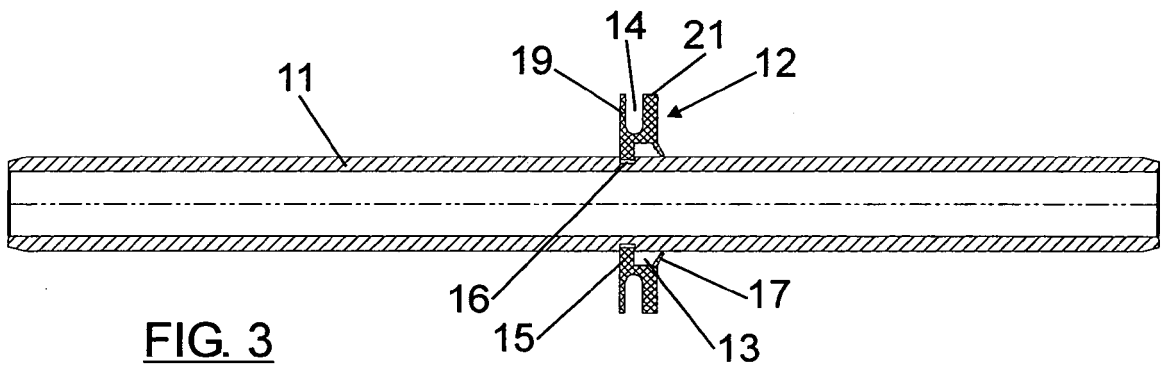


FIG. 3

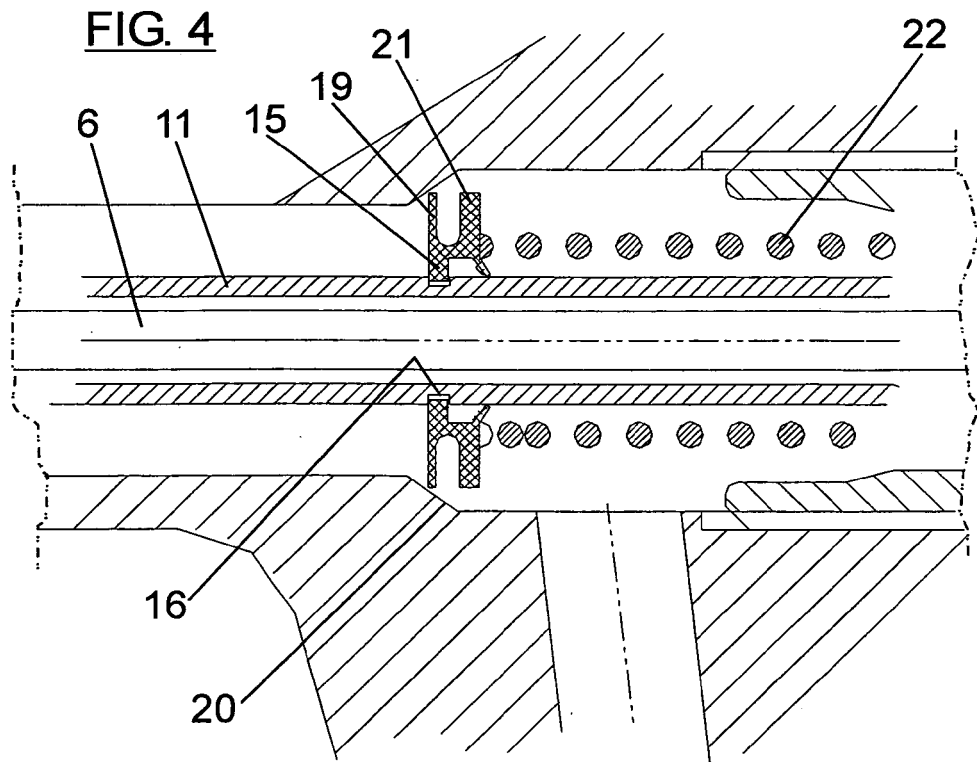


FIG. 4



EUROPEAN SEARCH REPORT

Application Number
EP 09 38 0114

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2005/145718 A1 (BLETTE RUSSELL E [US] ET AL) 7 July 2005 (2005-07-07) * page 2, paragraph 26; figure 4 *	1	INV. B05B7/02
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			TECHNICAL FIELDS SEARCHED (IPC)
			B05B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 August 2009	Examiner Eberwein, Michael
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 38 0114

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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11-08-2009

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