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— of inventorship (Rule 4.17(iv)) for US only

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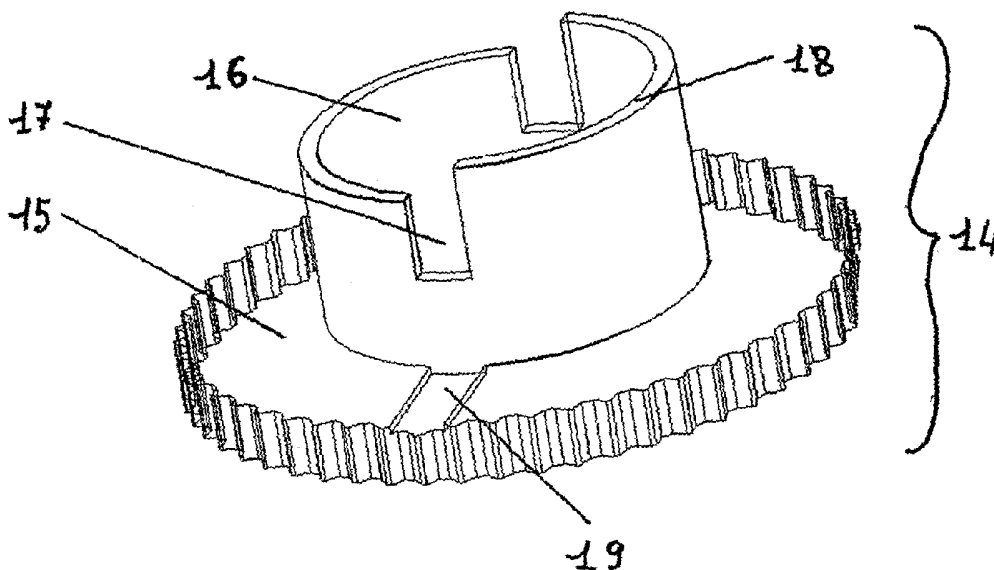
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(54) Title: A CUP FOR PAINT-SPRAY GUNS



(57) Abstract: Described herein is a disposable cup (10) for spray guns which can be easily loaded and is able to deliver the paint continuously.

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## A CUP FOR PAINT-SPRAY GUNS

### **Field of the invention**

The present invention relates to paint-spray guns and in particular ones with a top cup.

### 5 **Prior art**

Paint-spray guns are widely used in almost all of the sectors in which it is necessary to paint products of various types (for example, car bodies, furniture, ironmongery, etc.). As is known, these are devices consisting basically of a head provided with: a nozzle for outlet of the paint; a first inlet mouth for connection to a  
10 compressor; and a second inlet mouth for connection to the reservoir of the liquid to be sprayed. By acting on a trigger or push-button (which are also normally inserted in the head), the compressor is actuated, which, by blowing in the compressed gas enables outlet of the liquid from the tanks and atomization thereof through the nozzle.

15 Basically two types of paint-spray guns are commonly used: ones with a bottom cup and ones with a top cup. As is known, the guns with a top cup offer the advantage of enabling a complete use of the liquid to be sprayed, thus eliminating the problem of the residue, which, instead, always remains in guns with a bottom cup.

20 Spray guns with a top cup present, however, problems of loading of the liquid, and the various solutions suggested, such as for example bags of liquid to be inserted into the cup, or two cups, one inserted inside the other, do not meet completely the requirements of practicality on the part of the operators of the sector.

### **Scope of the invention**

25 The purpose of the present invention is to make available a new type of disposable cup for spray guns, in particular ones with a top cup, which will enable all the paint to come out completely and will be easy to use.

### **Summary of the invention**

30 The above purpose is achieved with a disposable cup according to the invention, in which one or more portions of the surface consist of easily perforable material and which has a plug provided, which can be engaged in said perforable portions and is able to act as an air valve, as is described in what follows and emerges

from the annexed claims.

### List of Figures

- Figure 1 shows a cross section of the cup according to the invention;
- Figure 2 shows the plug-valve; and
- 5 - Figure 3 shows a detail of the invention (easily perforable surface portion with corresponding projecting edge)

### Detailed description of the invention

The disposable cup 10 according to the invention is substantially a cup of a traditional type but, as may be seen from Figures 1 and 3, it has at least one easily perforable surface portion 11, which is bounded along its perimeter by a raised edge 12, which projects on the outside of the cup and inside which there is a channel 13 (see Figure 3) perpendicular to the surface of the cup. The position of said channel 13 can be marked by an appropriate indication (such as an arrow, a raised portion, etc.) cut into the surface of the cup in a position corresponding to the channel 13.

Said easily perforable surface portion normally consists of the same material that forms the rest of the cup but more thin than the rest of the surface of the cup.

Preferably, said easily perforable surface portion is circular, and consequently the raised edge 12 will also be circular.

20 Preferably, said at least one easily perforable surface portion is set on the base of the cup (i.e., the part of the cup that, in the working position, faces upwards).

Figure 2 shows the plug-valve 14, which, as may be seen, consists of a cap 15, to which solidly adheres a wall 16, shaped so as to be engaged on the edge 12 and hence on the perimeter of the easily perforable surface portion 11. Thus if, for example, the perforable surface portion and the corresponding edge 12 are circular in shape, the wall 16 will be shaped like the surface of a right cylinder.

25 Said wall 16 has at least one slit 17, preferably two, arranged in positions that are diametrically opposite to one another.

The height of the wall 16 will be such as to enable perforation of the perforable surface 11 once the plug-valve is inserted in the hole formed by the raised edge 12.

If preferred, just one portion 18 of the circular wall 16 will be such as to enable

perforation of the surface 11, whilst the other will be as long as the raised edge 12. In this way, the surface 11 will be detached only in part, thus enabling the necessary passage of air, but without the surface 11 falling in the liquid to be sprayed, as would occur if detachment occurred along all the perimeter of the surface 11.

If preferred, on the underside of the cap 15 (i.e., the one facing the wall 16) in a position corresponding to one of the slits or the only slit 17, there is cut a channel 19 set radially from the edge of the circumference of the cap 15 up to the wall 16.

If preferred, on the opposite side of the cap the presence of the underlying channel 19 may be marked by an appropriate indication (an arrow possibly coloured, a raised portion, a notch, etc.).

If preferred, the edge of the cap can be knurled in order to facilitate its use by the operator.

The use of the cup according to the invention is immediately understandable.

Once the liquid to be sprayed has been poured into the cup, the operator will apply the gun to the cup, using the usual means of engagement; alternatively, the cup may be already filled and will hence be simply connected to the gun in the usual way.

Consequently, one or more plug-valves will be applied by perforating the respective surface portions. By rotating the plug-valve so as to connect the slit 17 or one of the slits 17 to the channel 13 (and thus also to the possible channel 19), it will be possible to cause the air to pass and hence to paint without any problems, whilst in the resting stages it will be sufficient to rotate the plug-valve, thus excluding the inside of the cup from the outside. The operation of rotation is obviously facilitated if the marks indicating the channel 19 and the channel 13 are present, as explained above.

Once it is empty, the cup may be thrown away and replaced by a new cup, either pre-charged or not.

The cup and the plug-valve may be made of materials normally used for this purpose, for example rigid or semi-rigid plastic suitable for being produced by moulding.

Preferably, transparent or semi-transparent materials will be used, and the cup

may be graduated in order to enable ease of evaluation of the amount of liquid remaining.

**CLAIMS**

1. A disposable cup for paint-spray guns with top cup, in which the surface of said cup has at least one easily perforable portion.
2. The cup according to Claim 1, in which said at least one easily perforable surface portion (11) is bounded along its perimeter by a raised edge (12), which projects on the outside of the cup and inside which there is made a channel (13) perpendicular to the surface of the cup.
3. The cup according to Claim 2, in which the surface portion (11) and the raised edge (12) have a circular shape.
4. The cup according to Claims 1 to 3, in which said surface portions (11) are arranged on the base of the cup.
5. A plug-valve (14), which is able to be engaged on the edge (12).
6. The plug-valve (14) according to Claim 5, consisting of a cap (15) to which there adheres a wall (16), which is shaped so as to be engaged on the edge (12) and has at least one slit (17).
7. The plug according to Claim 6, in which just one part (18) of the wall (16) is sufficiently long to perforate the surface (11) whilst the remaining part of wall (16) is as long as the raised edge (12).
8. The plug according to Claims 5 to 7, in which the wall (16) is shaped like the surface of a right cylinder.
9. The plug according to Claim 8, in which the wall (16) has two slits (17) arranged in positions that are diametrically opposite to one another.
10. The plug according to Claim 9, in which on the side of the cap (15) facing the wall (16) there is cut a channel (19) set in a radial direction from the edge of the circumference of the cap to the wall in a position corresponding to one of the slits or the single slit (17).
11. The plug according to Claim 10, in which on the opposite surface of the cap (15) in a position corresponding to said channel (19) there is present an appropriate mark (an arrow possibly coloured, a raised portion, a notch, etc.).
12. The cup according to Claims 1 to 4 and plug according to Claims 5 to 11 made of transparent plastic material.
13. A paint-spray gun with top cup provided with a cup and a plug according to

Claims 1 to 12.

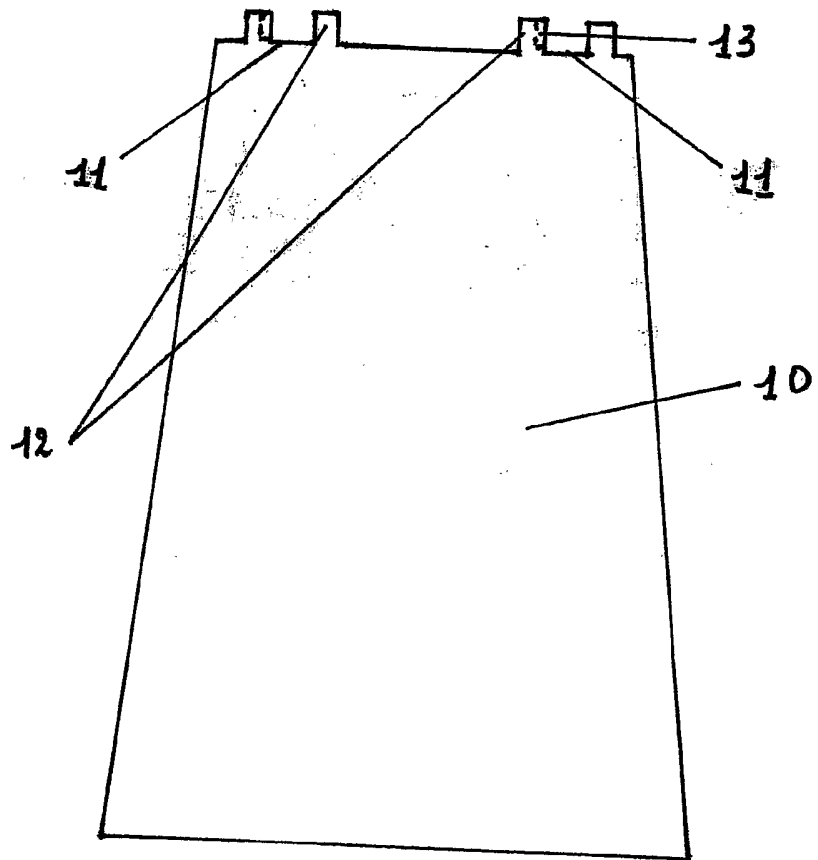


Fig. 1

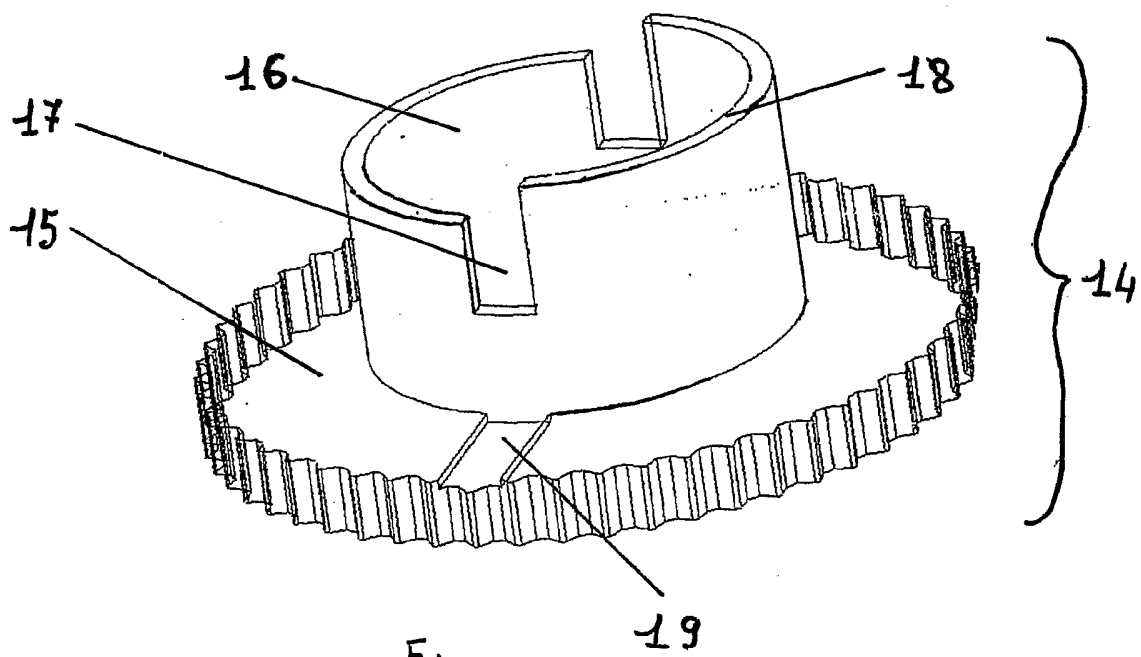
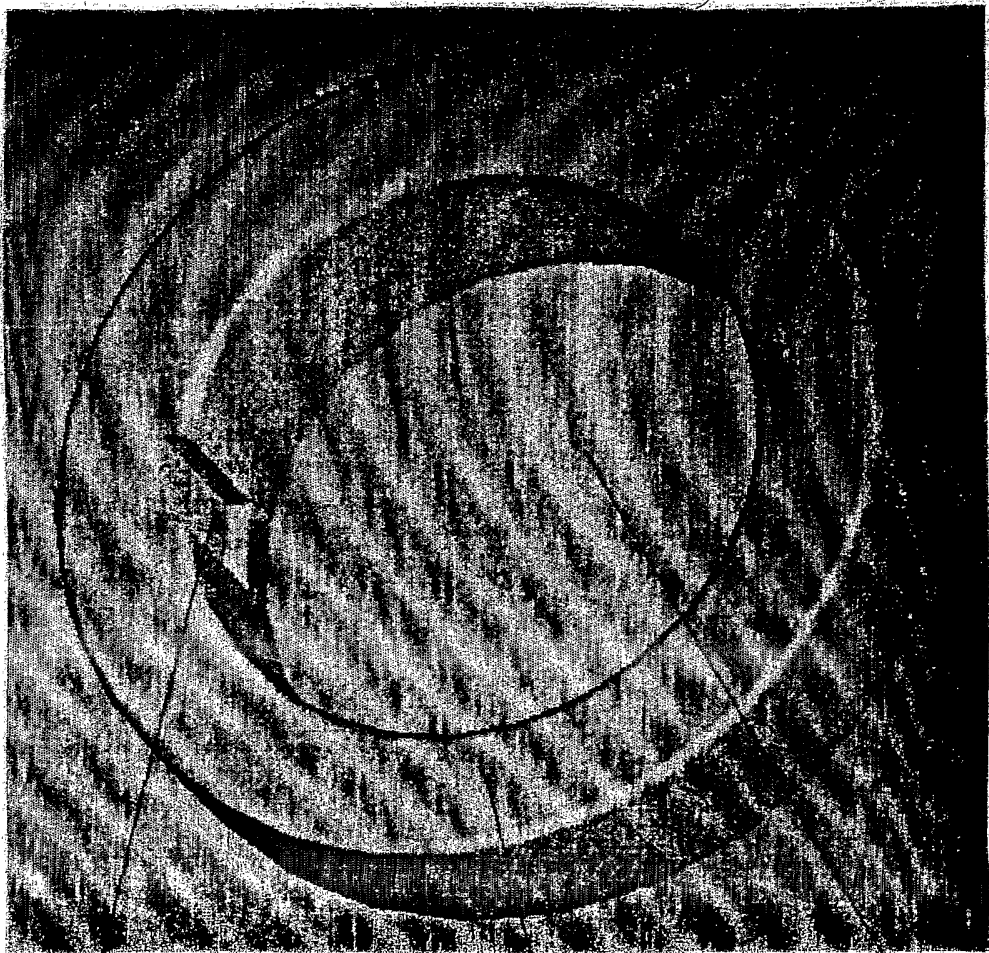


Fig. 2



Fig. 3



13

12

11

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 B05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 631 254 A (PHAM KIEN DUONG ; SEVIL LUIS (FR)) 17 November 1989 (1989-11-17)  page 3, line 11 - line 18 page 5, line 30 - line 35; figures claims 6-8	1,5-9, 12,13
A		2-4,10, 11
X	----- US 3 063 600 A (HENRY PAPP ET AL) 13 November 1962 (1962-11-13)  column 2, line 39 - column 3, line 7; figures	1,5,8, 12,13
A		2-4,6,7, 9-11
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Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X  A	US 3 730 392 A (MARAND J) 1 May 1973 (1973-05-01) the whole document  -----	1,5,8, 12,13  2-4,6,7, 9-11

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