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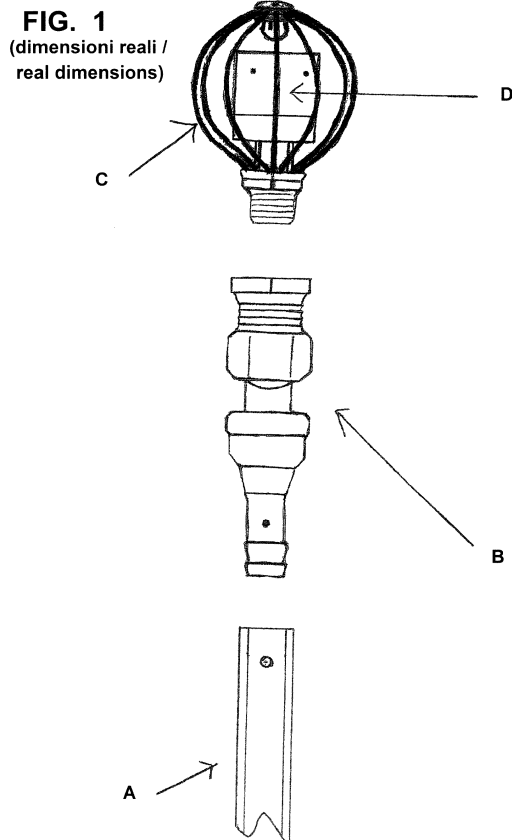
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(54) **TOOL FOR CLEANING CHIMNEY-FLUES**

(57) System for cleaning chimney flues of e.g. pellet stoves employing compressed air jets and vacuum, using a little compressor and a simple vacuum ash cleaner, both being connected at the bottom of the pellet stove through a branch fitting.

Compressed air is supplied through a rigid hose, which is manually pushed up the chimney, to a nozzle head. The nozzle head is rotated by the compressed air and thereby generates a spinning array of jets hitting the chimney wall for loosening the soot.



Description

[0001] Based on my research, on the market, there is not many systems for the cleansing that are found for chimney-flues, and the type are: manual pipe cleaning brush that they not succeed to cover a few bends or a full curve, or electric pipe cleaning brush system that work with a drill and that it has the inconvenient of having to take apart chimney-flue for being able to mount it. None of these tools are equipped of system with join branch to the inspection access that insert the probe and the exhaust fan (**Fig. 3**).

[0002] "SOFFIA CANNE" is a system to compressed air and vacuum for the chimney-flue cleansing, devised for pellet stove.

[0003] The tool is equipped with an appropriate head with rotary blower (**Fig. 1(C)**) that is inserted manually inside of chimney-flues through probe (**Fig. 3**), the cleaning of the internal surfaces happens with the compressed air that comes out from the rotary head (through n° 4 holes ø 1,2 mm.) against the internal wall of the chimney flue, favoring the strip of the soot (**Fig. 4**).

[0004] Such head is mounted on a probe realized with pipeline in plastic and flexible material (**Fig. 1(A)**) what allows his insertion inside a very long chimney flues and overcome of more curves.

[0005] Thanks to the help of a little compressor and a simple vacuum ash cleaner, which they are both connected, through a kit (**Fig. 2**), at an only point of inspection put on the back of the stove. The cleaning of the chimney flue it can be done on the shortest times, without taking apart anything, leaving clean the floor and without getting on the roof (**Fig. 3**).

[0006] Kit is composed with:

1) The brush head is made out with small of thread arches from steel, diameter of 2 mm. (**Fig. 1(C)**) assembled with a blower rotary head (**Fig. 1(D)**) and connected by a directional articulation from brass (**Fig. 1(B)**) to the probe line (**Fig. 1(A)**) through a quick connect. The blower, that rotates on a ball bearing ø 8-22, the shell is made from copper or steel and the nozzle is made from steel or copper (**Fig. 5(D)**).

2) The connection adapter, that goes at the inspection chimney flue door trap, is made fram polyethylene or a different plastic material, with conical base, that goes to the pipe, the branch that connect into the vacuum ash cleaner is connect at the entry of rotating calf head with probe line, anti-soot cap with laces that keep attach at the inspection door (**Fig. 2**).

3) The probe line is made from a suitable pipeline with flexible plastic material, such diameter of 15 mm. and 2 mm. thickness, and length mt. 10-15-20 (**Fig. 1 (A)**).

4) A compressor with 5,6 kg weight with air aspiration 180 litre/min., existing in commerce.

5) A vacuum type (vacuum ash cleaner), 4,3 Kg of weight, with shake filter existing in commerce.

[0007] The complete kit of vacuum and air compressor, it has a weight about 12,5 kg and is easily transportable.

[0008] Such system it make easier to the user that save on the maintenance, almost 50 % and boosts the commerce of pellet stoves, being the lowest costs in maintenance.

DETAILED BOARDS:

[0009]

Figure 1

A) Probe line ø 15 mm., thickness 2 mm., made with plastic material flexible, existing on the market named "Acorn";

B) Brass caster, with 360 degrees rotation and inclination of 30 degrees;

C) Curve arches, joint to the head, made from steel thread, thick 2 mm.;

D) Rotating blower made from copper or steel, it stay connected with a ball bearing ø 8-22.

Figure 2

E) A fitting branch used for inlet, and an entry probe line with an inspection trap on chimney flue build up on several connections soldered with polyethylene or semi finished polypropylene ø 75 mm.;

F) Antisoot plastic cup ø 75 mm. with probe line ø 15 mm.;

G) Laces that tied up to the chimney flue.

H) Anchor into the conical base and related to a trap door inspection that is located in the chimney flue;

I) An anchor for exhaust fan;

J) Anchor for entry calf's head with blower and probe line.

Figure 3

K) Blower with filter shake;

L) Pellet stove;

M) An operator;

N) Air compress weight Kg 5,6 - 180 litre/min;

O) Chimney flue ø 100 mm. long 9 mt., with probe line inserted, that have n° 2 open bend and n° 2 close bend.

Figure 4 (Example of calfs head with rotating blower that passes inside a chimney flue ø 80 mm.)

- 1) n° 2 holes for air exit 2 mm. in the nozzle (6) in direction towards the vane of the dome vane (5);
- 2) n° 4 holes 1,2 mm. in the dome vane (5) for compressed air exits against the internal chimney flue;
- 3) Chimney-flue wall;
- 4) n° 11 small thread arches made of 2 mm. steel;
- 5) Cup dome vane;
- 6) Head jet.

Figure 5

- D) Assembled rotary blower, from copper or steel;
- 7) Spacer made from copper ø 8-10.
- 8) Ball bearing ø 8-22
- 6) Nozzle from copper ø 8 with head ø 12 , having n° 2 holes ø 2 mm.;
- 5) Dome vane made from copper (assembled);

Figure 6 (blower explosion group)

- 7) Spacer made from copper ø 8-10;
- 8) Ball bearing ø 8-22;
- 6) Head jet made from copper ø 8, head a bit flat ø 12 with 2 holes from 2 mm.;
- 5) Cup dome made from copper ø 22, thickness 1 mm., that shows the vane inside the dome, and have 4 holes from 1,2 mm.;
- 9) n° 4 "L" vane made from copper sheet thickness 0,5 mm.;
- 10) Cover cup dome made from copper sheet thickness 0,5 mm.

Figure 7 (head arches group)

- 11) Brass fitting reduction sleeve 3/8" x 1/4";
- 12) Small thread arch made from steel, thickness 2 mm., total 11 pieces;
- 13) Assembly brass washer ø 12-17;
- 14) Rivet arches stopper ø 6mm.;
- 15) Chemical anchors made from metalcrylate hybrid adhesive.

Claims

1. "Soffia Canne" is a tool for the chimney flues cleaning invented for pellet stove , having a kit with a head that blows air compress connected through a branch with a vacuum ash cleaner and a probe line. This kit is long 10 mt, covered with flexible plastic having fast connectors as included. The blower head (having a oval shape)

is made with thread of steel arcs, inside of this, there is a rotary blower with a head jet made from copper or steel, and brass caster (or steel). "Soffia Canne" it can be used with a small air compressor (kg 5,6 weight with air average of 180 lt./min.) and a vacuum ash cleaner. This is vacuum is usually sold together with the pellet stove.

2. "Soffia Canne" as claimed in claim 1, this kit have a blower head (having a oval shape) made with thread of steel arcs thickness of 2 mm. having a low friction resistance, made of steel or brass.
3. "Soffia Canne" as claimed in claim 2, is qualified that rotary head blower, the air blows from the sides.
4. "Soffia Canne" as claimed in claim 3, is qualified that rotary head blower, the air blows from the sides, and that moves the vanes.

FIG. 1
(dimensioni reali /
real dimensions)

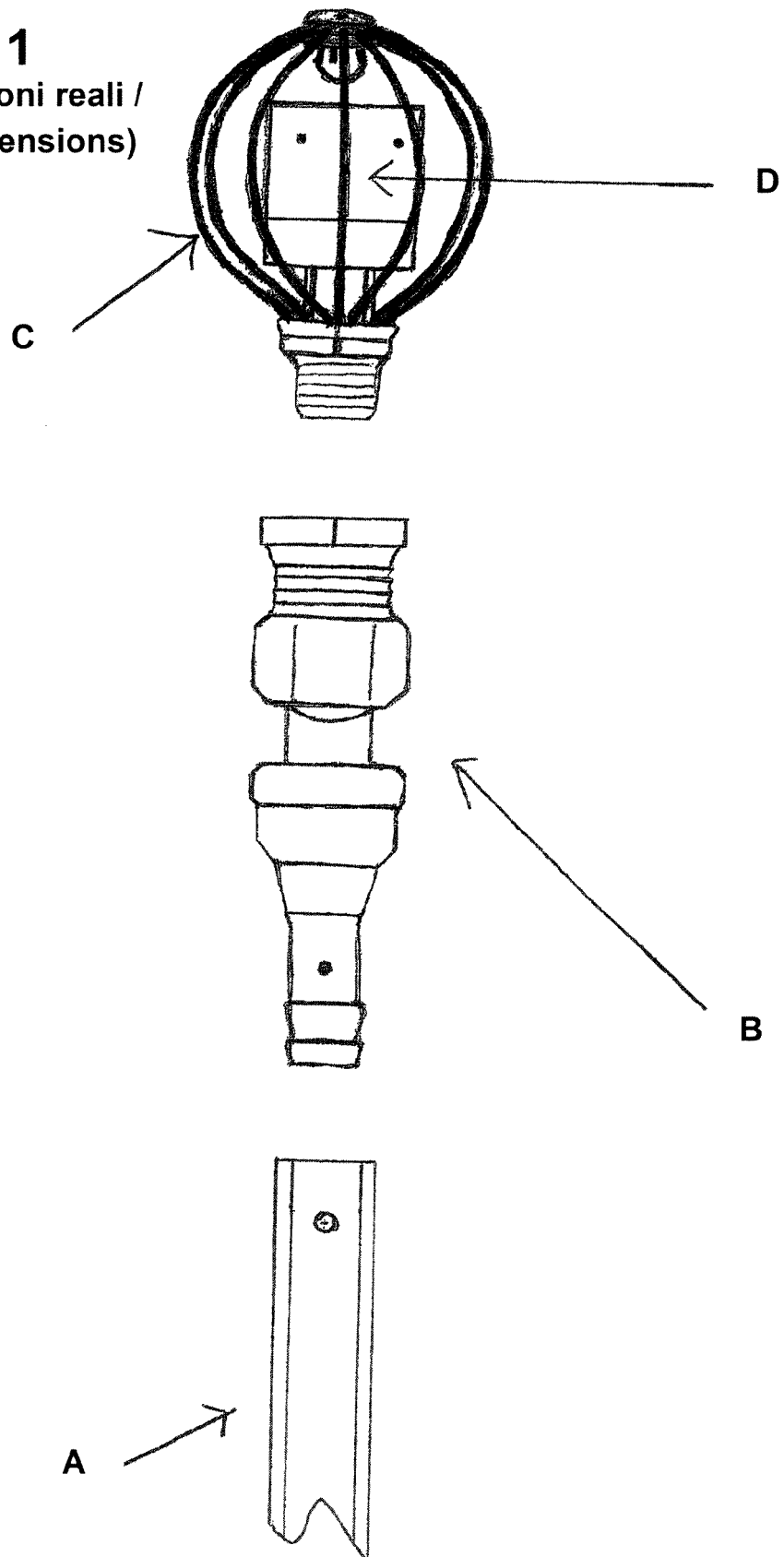


FIG. 2 (scala / scale 1:3)

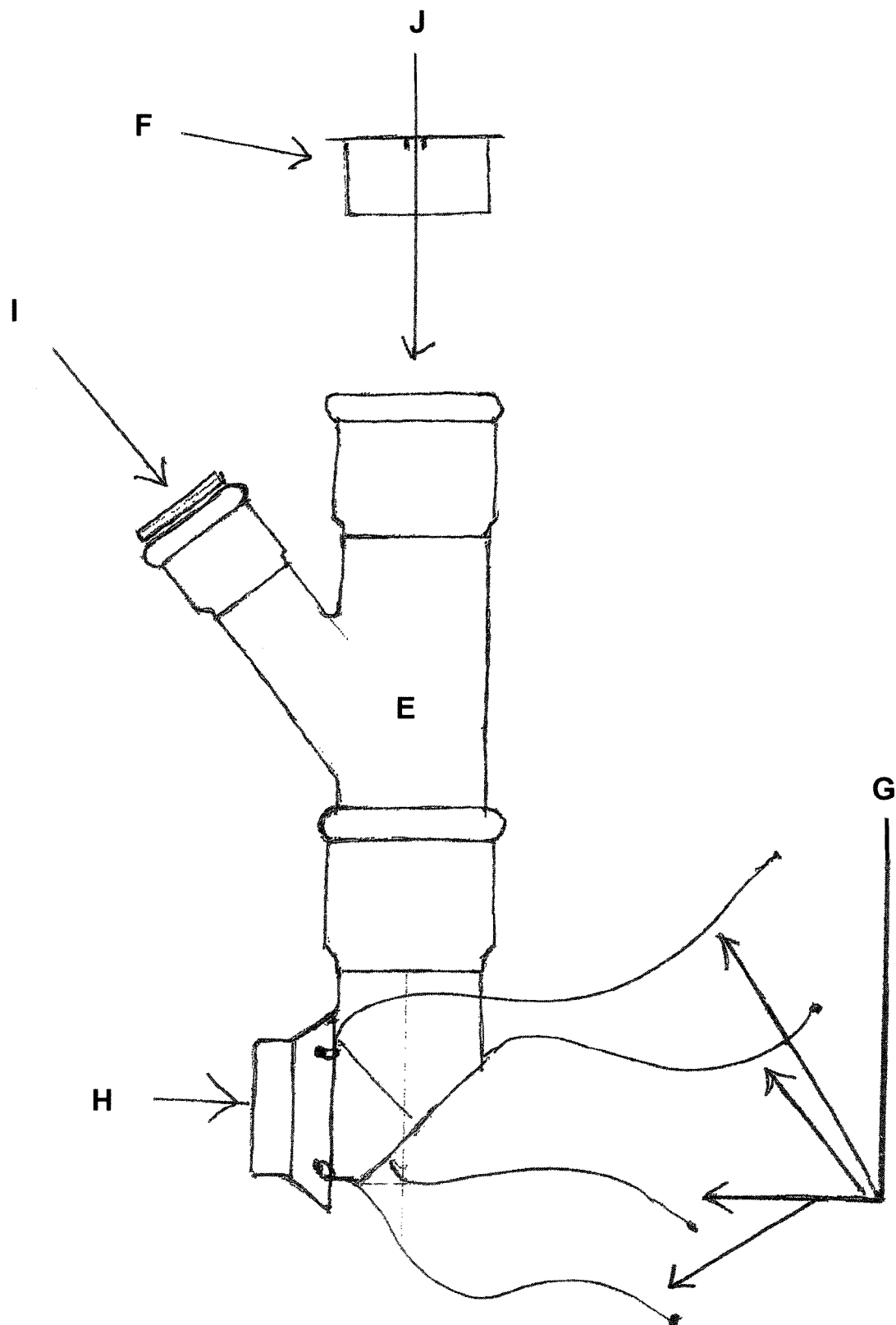


FIG. 3 (scala / scale 1:28)

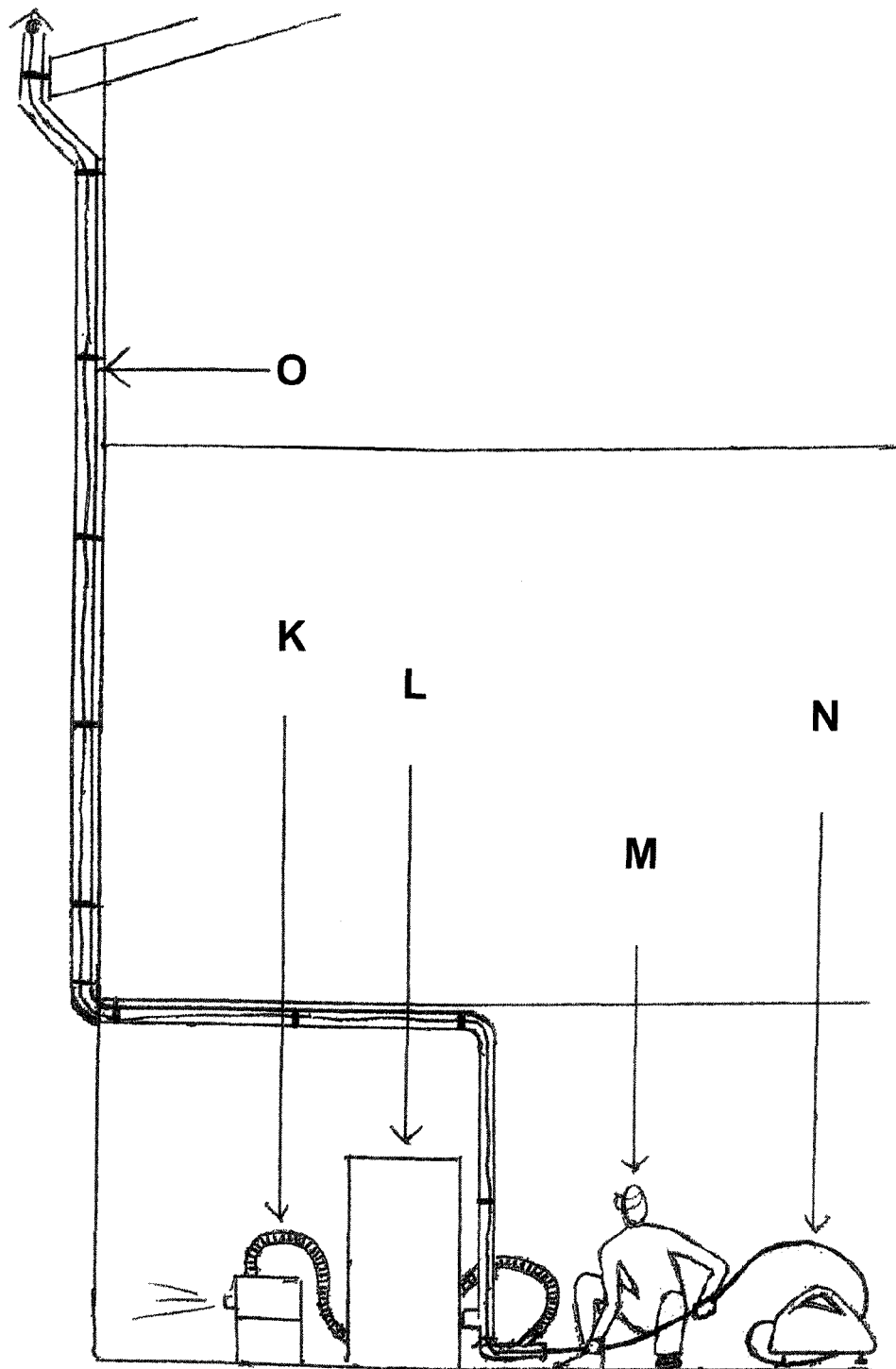


FIG. 4 (dimensioni reali / real dimensions)

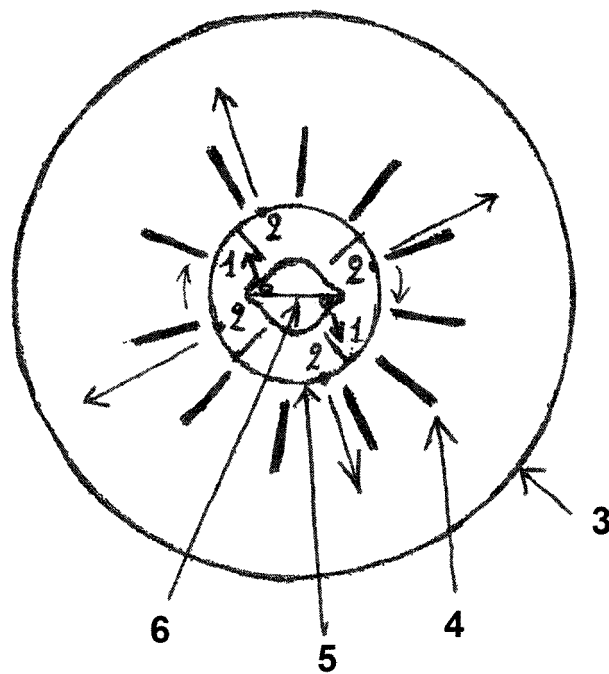


FIG. 5 (dimensioni reali / real dimensions)

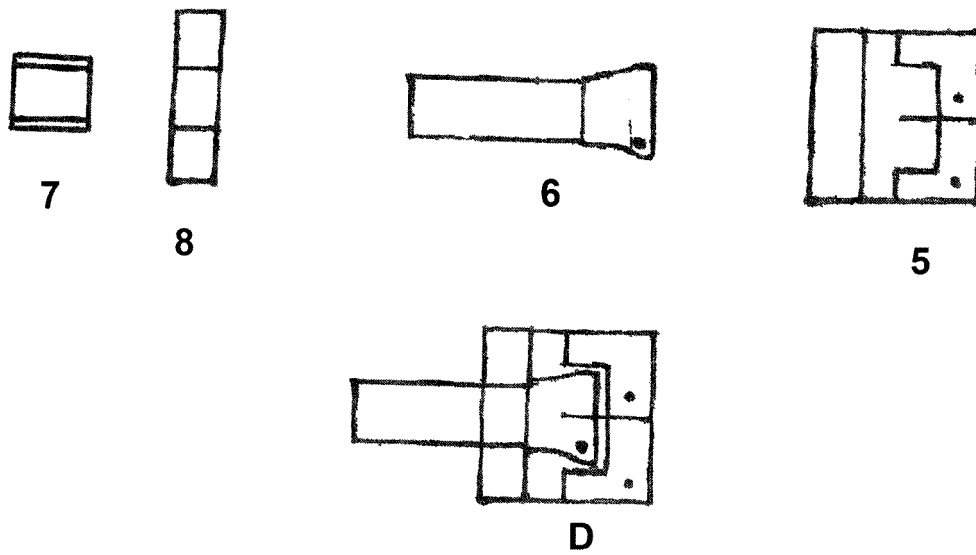


FIG. 6

(dimensioni reali /
real dimensions)

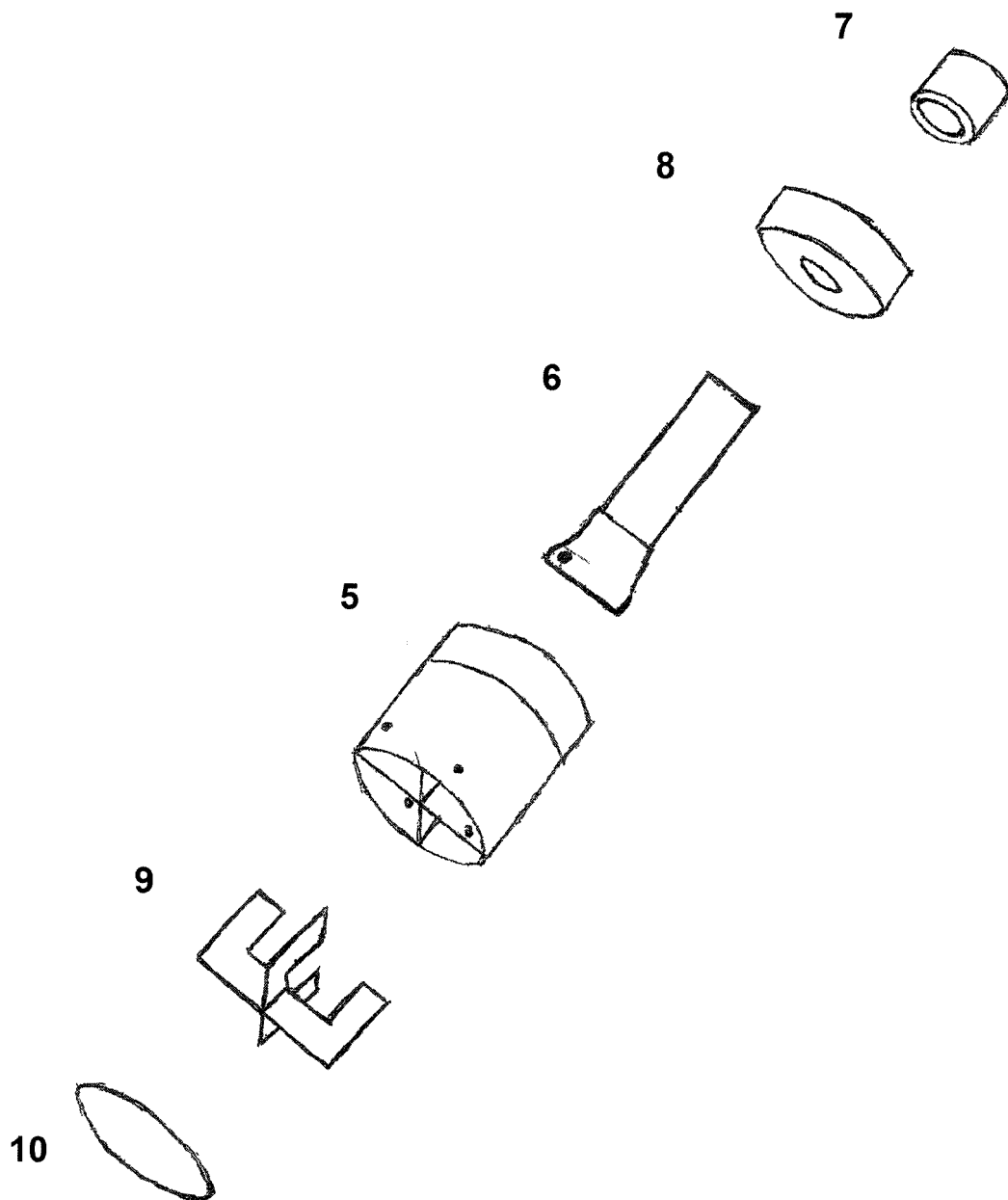
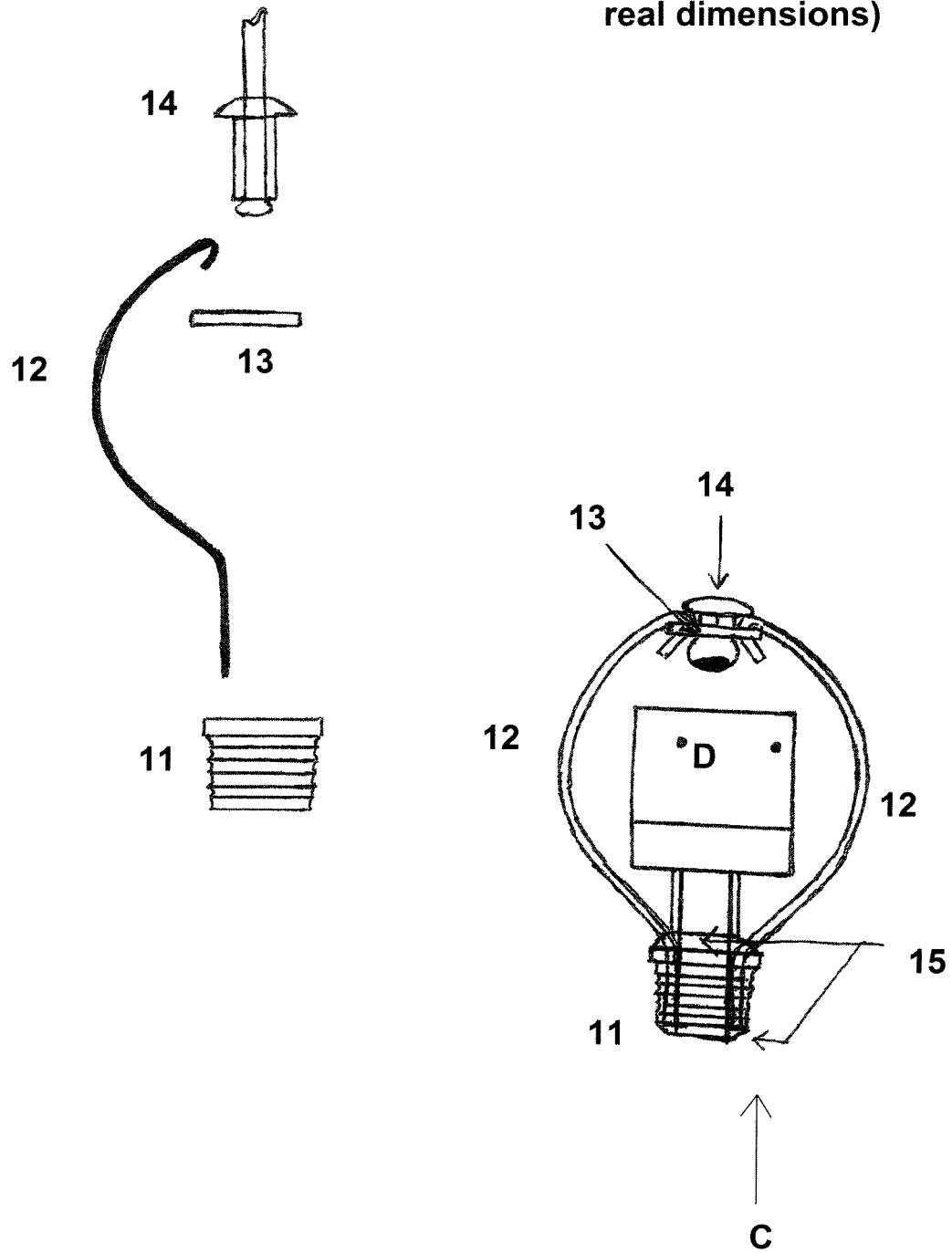


FIG. 7 (dimensioni reali /
real dimensions)





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EP 16 42 5026

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 January 2017	Examiner Hauck, Gunther
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
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82