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Europäisches  
Patentamt  
European  
Patent Office  
Office européen  
des brevets



(11)

EP 2 535 431 A1

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:  
19.12.2012 Bulletin 2012/51

(51) Int Cl.:  
C21D 1/667 (2006.01)  
C21D 11/00 (2006.01)  
F27D 15/02 (2006.01)

C21D 9/00 (2006.01)  
C22F 1/04 (2006.01)

(21) Application number: 12170805.1

(22) Date of filing: 05.06.2012

(84) Designated Contracting States:  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB  
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO  
PL PT RO RS SE SI SK SM TR  
Designated Extension States:  
BA ME

(30) Priority: 17.06.2011 IT MI20111092

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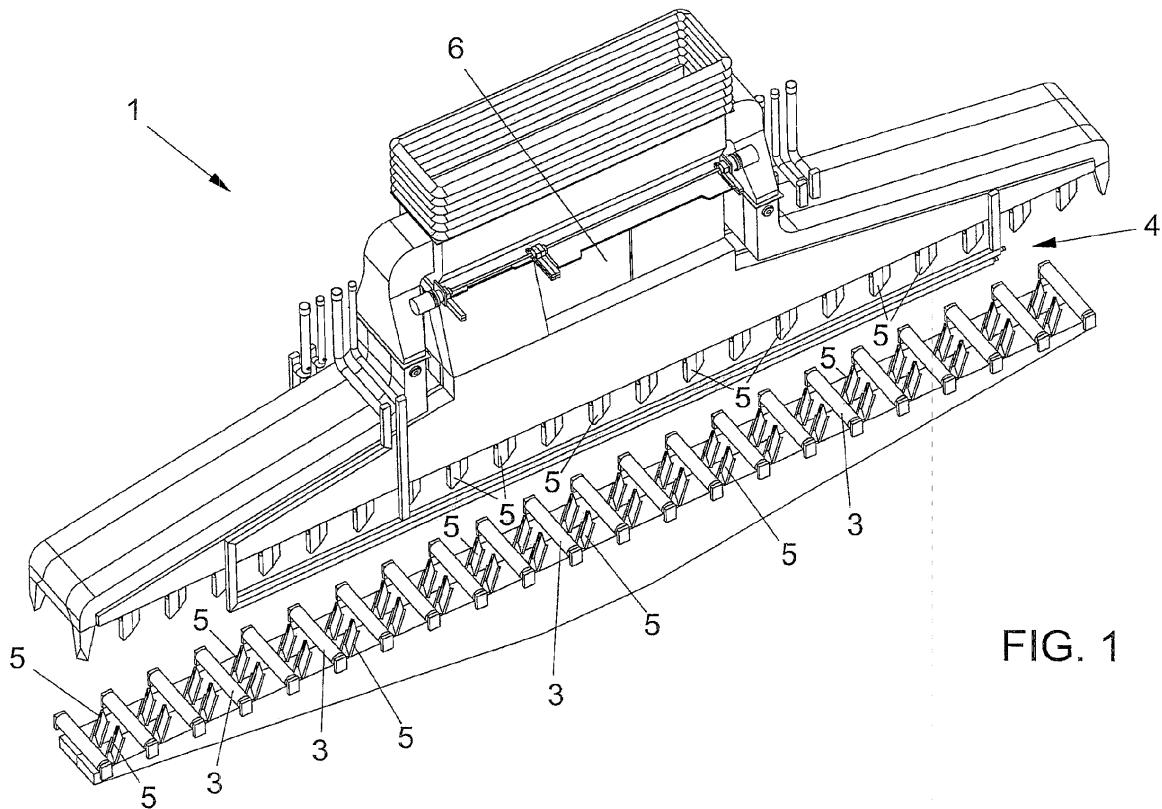
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(54) **Improved hood assembly for controllably cooling extruded section members of aluminium and other metal materials at an output of an extruding line therefor.**

(57) An improved hood assembly for controllably cooling extruded section members of aluminium and other metal materials at an output of an extruding line therefor, characterized in that said hood assembly comprises

a plurality of air delivery spouts inclined according to angles varying from 20° to 60° with respect to a sliding longitudinal direction of said section member through said cooling line.



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## Description

### BACKGROUND OF THE INVENTION

**[0001]** The present invention relates to an improved hood assembly for controllably cooling extruded section members of aluminium and other metal materials at an output of an extruding line therefor.

**[0002]** As is known, hood assemblies for cooling by air flows aluminium extruded section members exiting extrusion lines at a very high temperature are already known.

**[0003]** However, prior hood assemblies comprise a plurality of ducts which are arranged perpendicular to the extruded aluminium section member feeding direction.

**[0004]** The above prior hood assemblies have the drawback of a poor operation efficiency and a comparatively large length thereby requiring high air flow rates to provide a satisfactory cooling.

**[0005]** This, in turn, involves a very high power drain, and a use of a large length hood assembly, of a correspondingly large size.

### SUMMARY OF THE INVENTION

**[0006]** Accordingly, the main object of the present invention is to provide such an improved hood assembly for controllably cooling extruded section members of aluminium and other metal materials which is adapted to cool in a much more efficient manner the extruded aluminium section members coming from extruding lines at a very high temperature.

**[0007]** According to one aspect of the present invention, the above mentioned object as well as yet other objects, which will become more apparent hereinafter, are achieved by an improved hood assembly for controllably cooling extruded section members of aluminium and other metal materials according to claim 1.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0008]** Further characteristics of the subject hood assembly will become more apparent from the following detailed disclosure of a preferred embodiment of an improved hood assembly for controllably cooling extruded section members of aluminium and other metal materials, which is illustrated, by way of an indicative, but not limitative example, in the accompanying drawings, where:

Figure 1 shows a top side perspective view of the improved hood assembly according to the present invention;

Figures 2 and 3 show cooling air delivery mouth portions associated with the subject hood assembly, which mouth portions are inclined at angles from 20° to 60° with respect to the longitudinal feeding direction of the section members to be cooled; and

Figures 4 and 5 show orientation direction of top mouth outlet portions and optional bottom mouth portions for delivering air for cooling the extruded section members.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

**[0009]** With reference to the number references of the mentioned figures, the improved hood assembly 1 for controllably cooling extruded section members 2 of aluminium and other metal materials coming from an extruding line according to the present invention is characterized in that it comprises a plurality of air delivery mouth or outlet portions 5, inclined at angles varying from 20° to 60° with respect to the longitudinal sliding direction on the section members 2 on corresponding sliding rollers 3 along a cooling line 4.

**[0010]** More specifically, the inventive hood assembly 1 comprises cooling air ducts 5, said cooling air being sucked or drawn from an outside environment and being conveyed to the hood assembly.

**[0011]** Said cooling air mouth portions 5 according to the present invention are not arranged perpendicular to the section member to be cooled sliding direction, but are inclined at an angle from 20° to 60°.

**[0012]** Preferably, the slanting of the air conveying mouth portions 5, for ejecting cooling air on the section members 2 to be cooled, corresponds to an angle of about 45°.

**[0013]** This inclination is so oriented that cooling air is ejected or caused to impinge on section members 2 having a larger impinging surface and with a correspondingly enhanced section member cooling capability.

**[0014]** The theoretical increase of the cooling capability due to the provision of the inventive hood assembly 1 is of about 40%.

**[0015]** Such a feature would involve a large power saving, with a possibility of reducing the length of the hood assemblies 1, while reducing the fan power.

**[0016]** The cooling system according to the present invention may be used only with air, which is ejected on the section member to be cooled through ejecting nozzles inclined with respect to the section member feeding direction at angles from 20° to 60°.

**[0017]** The inventive improved hood assembly 1 comprises moreover a plurality of adjustment gates for adjusting the air flow by a linear type of opening and closing adjustment.

**[0018]** As is known, extruded section members 2 have frequently different thickness walls.

**[0019]** The section members 2 must be evenly cooled down for preventing them from bending, because of a non homogeneous cooling.

**[0020]** In a case of a water cooling system, nozzles are used designed for properly delivering cooling water to provide a homogeneous cooling down.

**[0021]** Said water nozzles are arranged with an inclination of 20°/60° (preferably 45°), with the same advan-

tages of air cooling ejecting mouth portions, due to an increasing impinging surface, with an efficiency improvement which, even in this case, is of about 40% with respect to a conventional hood assembly.

**[0022]** If a water cooling is performed, then the hood assembly fan, using two fan dedicated manifolds 5, will project cooling air on said section members 2, thereby holding inside the hood assembly water used for cooling down said extruded section members. 5

**[0023]** While the improved hood assembly 1 according to the present invention has been hereinabove disclosed and illustrated by a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to many modifications and variations coming within the invention scope. 10 15

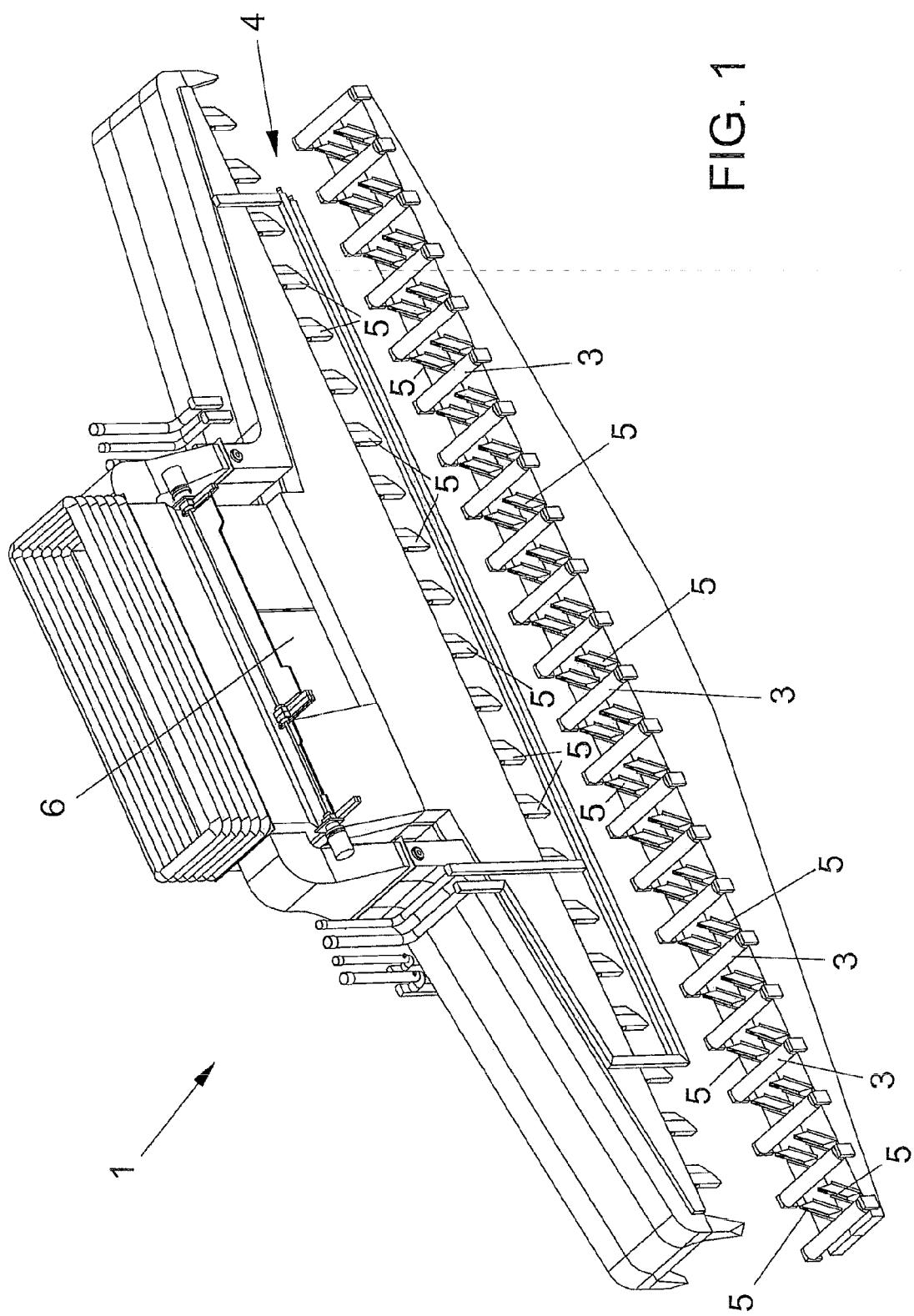
7. An improved hood assembly, according to claim 1, **characterized in that** said hood comprises water cooling means including a plurality of water nozzles arranged with an inclination of 20/60°, preferably 45°, and delivering cooling water to provide an enhanced and homogeneous cooling down of said section members being extruded.

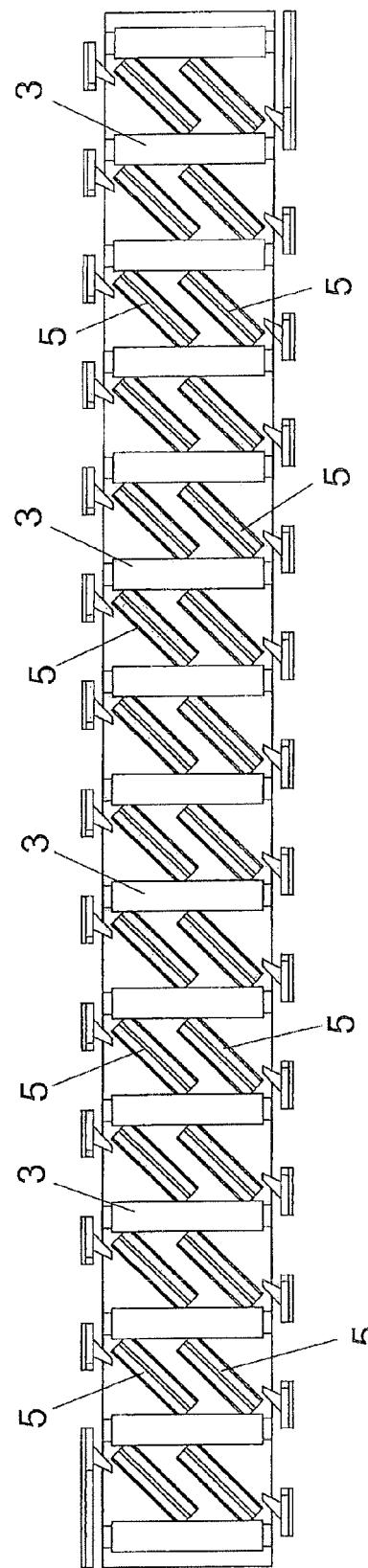
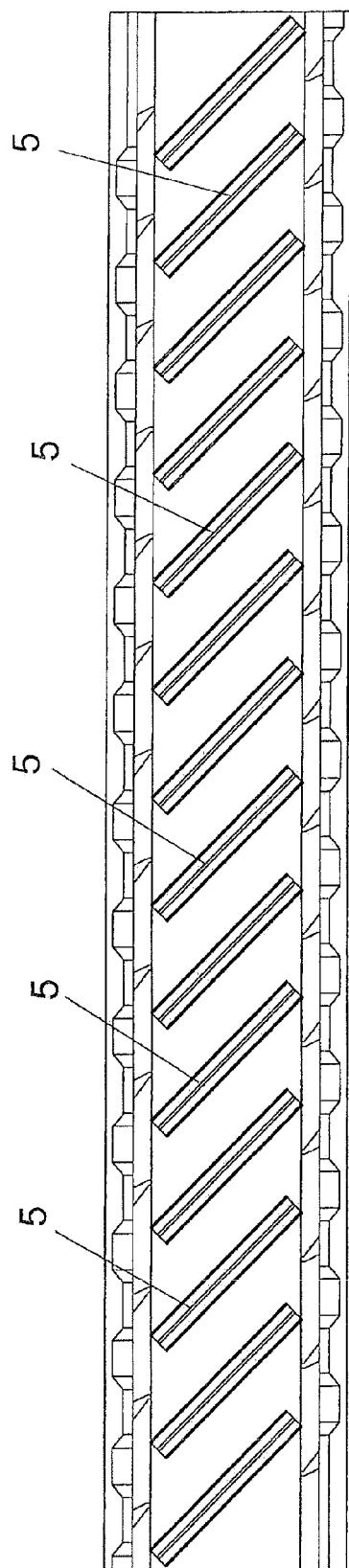
8. An improved hood assembly, according to claim 1, **characterized in that** if a water cooling is performed therein, the hood assembly fan, using two fan dedicated manifolds, projects cooling air on said section members to introduce into said hood assembly water used for cooling the extruded section members. 20

## Claims

1. An improved hood assembly for controllably cooling extruded section members of aluminium and other metal materials at an output of an extruding line therefor, **characterized in that** said hood assembly comprises a plurality of air delivery spouts inclined according to angles varying from 20° to 60° with respect to the sliding longitudinal direction of said section member through said cooling line. 20 25
2. An improved hood assembly, according to claim 1, **characterized in that** said hood assembly comprises a plurality of cooling air ducts for sucking air from an outside environment and conveying the sucked air to said hood assembly. 30
3. An improved hood assembly, according to claim 1, **characterized in that** said ducts are inclined with an angle of about 45° with respect to said section member feeding direction. 35
4. An improved hood assembly, according to claim 1, **characterized in that** said inclination is so arranged that cooling air is projected on said section member with a broadened impact surface and a correspondingly increased section member cooling capability. 40 45
5. An improved hood assembly, according to claim 1, **characterized in that** said improved hood assembly provides a theoretical cooling capability enhanced by 40% thereby providing an improved power saving with a reduction of the hood assembly length and reducing the ventilating power of fan assemblies. 50
6. An improved hood assembly, according to claim 1, **characterized in that** said hood assembly comprises a plurality of adjustment gates for adjusting the air flow by a linear type of opening and closing adjustment. 55

FIG. 1





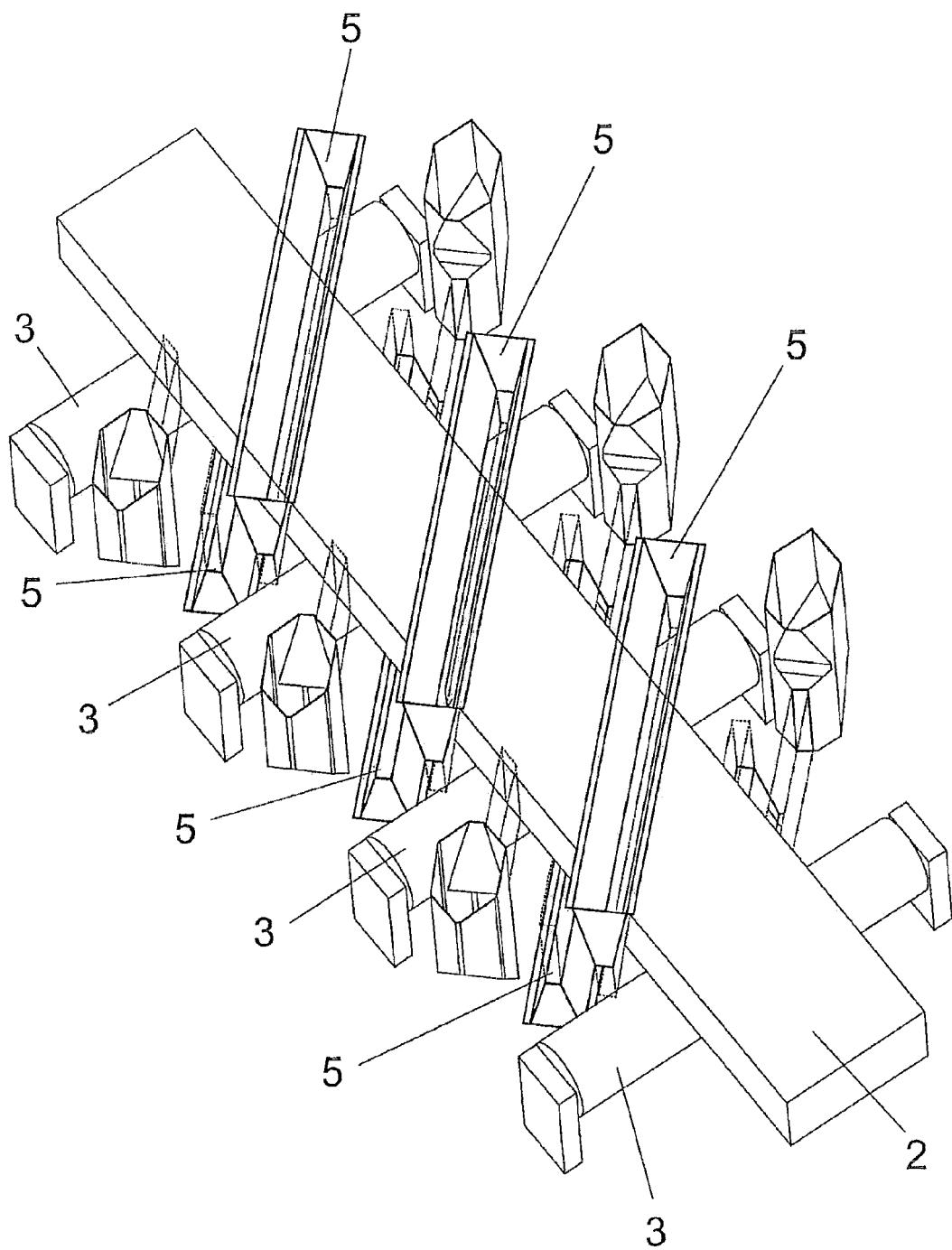
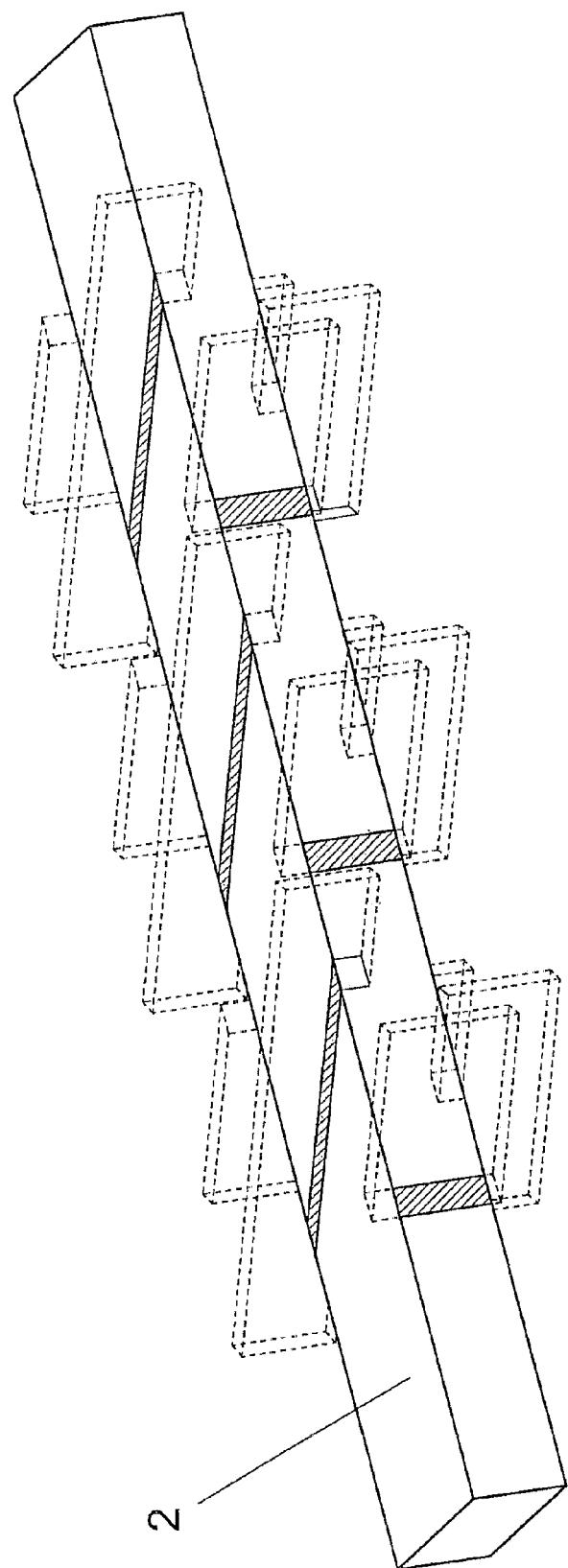


FIG. 4

FIG. 5





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Application Number

EP 12 17 0805

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1	Place of search Munich	Date of completion of the search 13 September 2012	Examiner Catana, Cosmin
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			

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

EP 12 17 0805

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