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(11)

**EP 1 454 865 A1**

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:

**08.09.2004 Bulletin 2004/37**

(51) Int Cl.7: **B65H 33/16, B65H 33/18**

(21) Application number: **03078985.3**

(22) Date of filing: **24.12.2003**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HU IE IT LI LU MC NL PT RO SE SI SK TR**

Designated Extension States:

**AL LT LV MK**

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(30) Priority: **24.12.2002 IT LU20020015**

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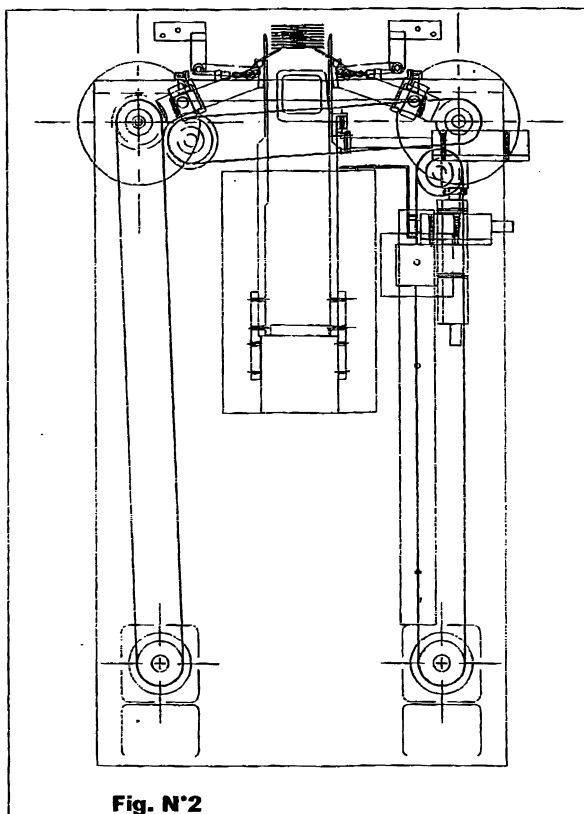
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(54) **Apparatus for stacking folded paper sheets**

(57) Device for bending machine fit to separate and unload in automatic a predetermined number of paper sheets, that permits to obtain sticks of a predetermined

number of paper sheets, automatically separated, unloaded and compacted, avoiding the need of manual operation.



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**Description**Technical field:

**[0001]** The object of the present invention is a device, for bending machine, fit to separate and unload in automatic the sticks of a predetermined number of paper sheets.

Background art:

**[0002]** At the present time, one of the problems noticed in this field to separate and/or unload the sticks of a certain number of sheets paper, is the necessity to have at least a person who is completely busy in this operation.

**[0003]** The outcome disadvantages are alternatively or cumulatively these ones:

- 1) the unload of sheets paper is made in holds and no by sticks;
- 2) the holds of sheets paper are not the same;
- 3) the hold is composed by sheets that are partially or totally out of order;
- 4) the separation of the sticks,
- 5) composed of a certain number of sheets paper, is hand made;
- 6) there are devices fitted to find in automatic the predetermined number of paper sheets that must compose each stick, but they are not fitted to unload or separate, in automatic the single stick;
- 7) the attention of a person busy to run these operations (hand made and repetitive) can obviously decrease during the working day, with consequent risks of error;
- 8) the required intervention of a person cause a loss of time.

Disclosure of the invention:

**[0004]** With the present device we intend to solve the aforesaid problems, thanks to the characteristics of this invention, as more clearly described and represented, as follow, even if by way of example.

**[0005]** The Figures 1, 2, 3 and 4, on the enclosed tables, represent the cross section of the device object of the invention, the Figure 5 instead represent the perspective view of the device.

**[0006]** The device, object of the present invention, that is connected to the head of the ply of a bending machine - for napkins, towels, paper serviette - permits the passage in automatic from the ply phase to the following working phases, for example, packing and/or cut; this means that this invention remove the need to have the continuous presence of a person to unload and/or separate the sticks of a predetermined number of paper sheets. An other important characteristic of the invention consists in the fact that this device works in phase

with the head of the ply.

Brief description of the drawings:

**[0007]** As we see in the aforesaid tables, the automatic separator device is made up of cam wheels (1), connecting rod supports (2), connecting rod (3), top compactor comb (4), separators (5), separator pistons (6), top piston comb (7), lower piston combs (8), compactor pistons (9), trolley (10), guide (11), structure (12), pulleys (13), conveyor belt (14), Brushless motors (15), and then with changeable speed, belts (16), side boards (17), lower comb (18), pinions and gears (19) precedent serviette stick (20), following serviette stick (21).

Best mode for carrying out the invention:

**[0008]** In particular, the separators (5) are supports, and their function is to separate the different holds, for example: interfolded serviette of tissue paper each time that the predetermined number of serviettes that must compose the stick is reached; it means the separators (5) separate the following serviette stick (21) from the precedent serviette stick (20) and they compose the supports on which the following stick is piling while the precedent stick is unloaded (20) (Fig.5).

**[0009]** The cams' (1) speed change according to the head speed. In the central part of the device, on the separators (5), that are slanting in the way to be able to support the stick of serviettes, a plied serviettes series is overlapping. When the predetermined serviettes' number is obtained, the separators go away and they set free the stick on the top compactor comb (4). The trolley (10) goes down in phase with the comb's speed (4), while the separators (5) come back at the central position, in the way to be able to receive the sticking of the following serviettes stick.

**[0010]** The precedent stick (20) passes from the top comb (4) to the lower comb (18), that takes it on the conveyor belt (14), so that the top compactor comb (4) can compress such stick (20) and it lets go out the air left between the different sheets. After this operation the stick (20) go to the following working phases. Meanwhile, on the separators (5), the following stick (21) of a predetermined number of interfolded paper tissue serviettes is piling.

**[0011]** What we have described above, with the help of the drawings, is only a not limiting example.

**[0012]** Obviously, also what has not directly described or illustrated is object of the present invention when it is part of the general purpose of the invention.

**Claims**

1. Device for bending machine fit to separate and unload in automatic a predetermined number of paper sheets, **characterised in that** it goes in phase with

the speed of a bending machine's ply head, and thanks to the supports/separators, it permits to obtain stick with a predetermined number of paper sheets, automatically separated, unloaded, compacted and made, avoiding the need to hand operate;

2. Device for bending machine fit to separate and unload in automatic a predetermined number of paper sheets, as claimed in claim 1), **characterised in that** it permits the speed regulation and the adjustment of the output quantity of paper sheets that compose each stick
3. Device for bending machine fit to to separate and unload in automatic a predetermined number of sheets paper, as claimed in claim 1) or 2), **characterised in that** it can be carried out in any kind of material, even different for each of its own parts, if suitable for the purpose;
4. Device for bending machine fit to separate and unload in automatic a predetermined number of paper sheets as claimed in claim 1), 2) or 3), **characterised in that** every single components can be made with different shape, number and dimension respect to the represented components, if the target of the invention is respected;
5. Device for bending machine fit to separate and unload in automatic a predetermined number of paper sheets, made according to one of the previous claims.

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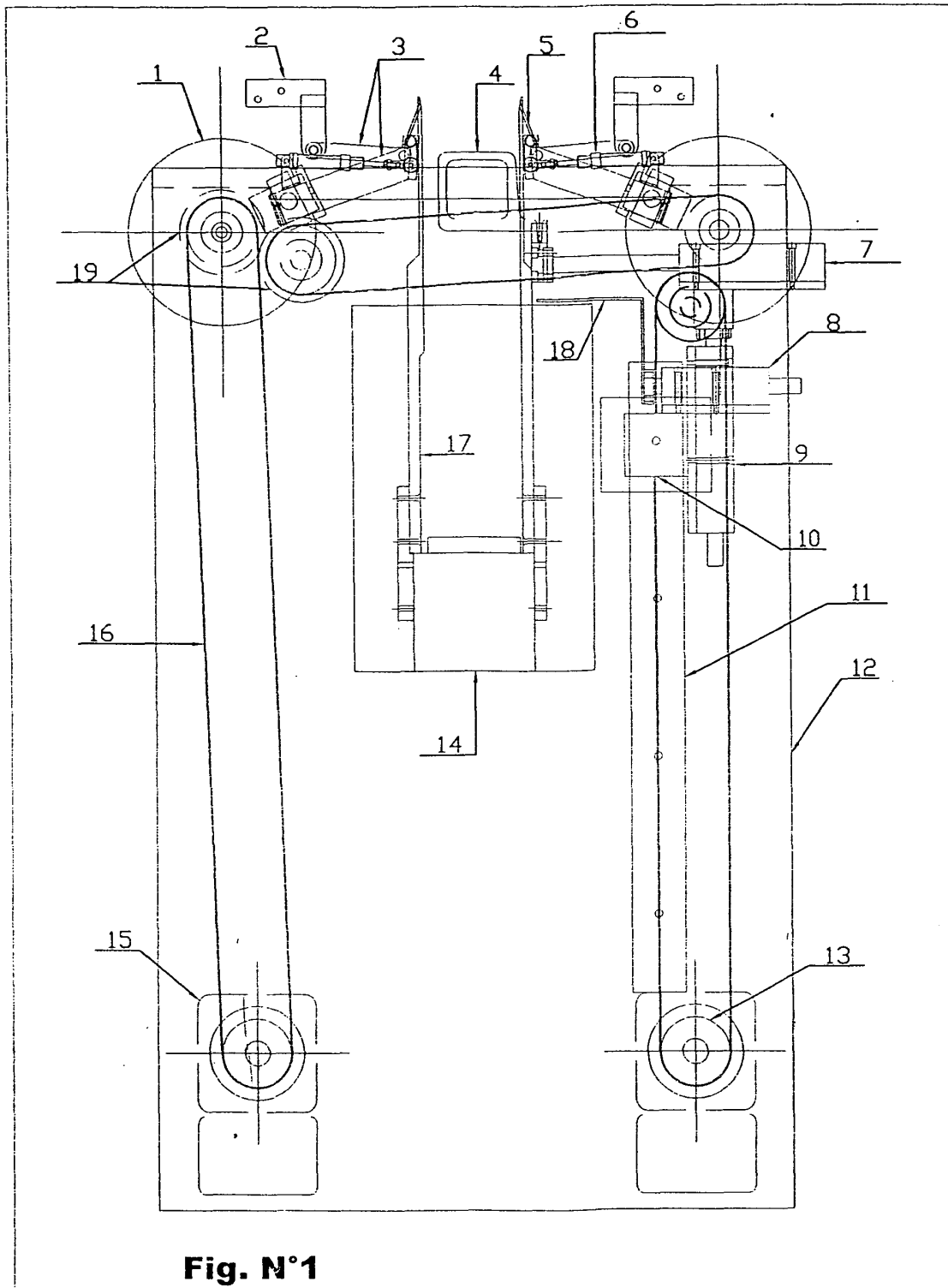
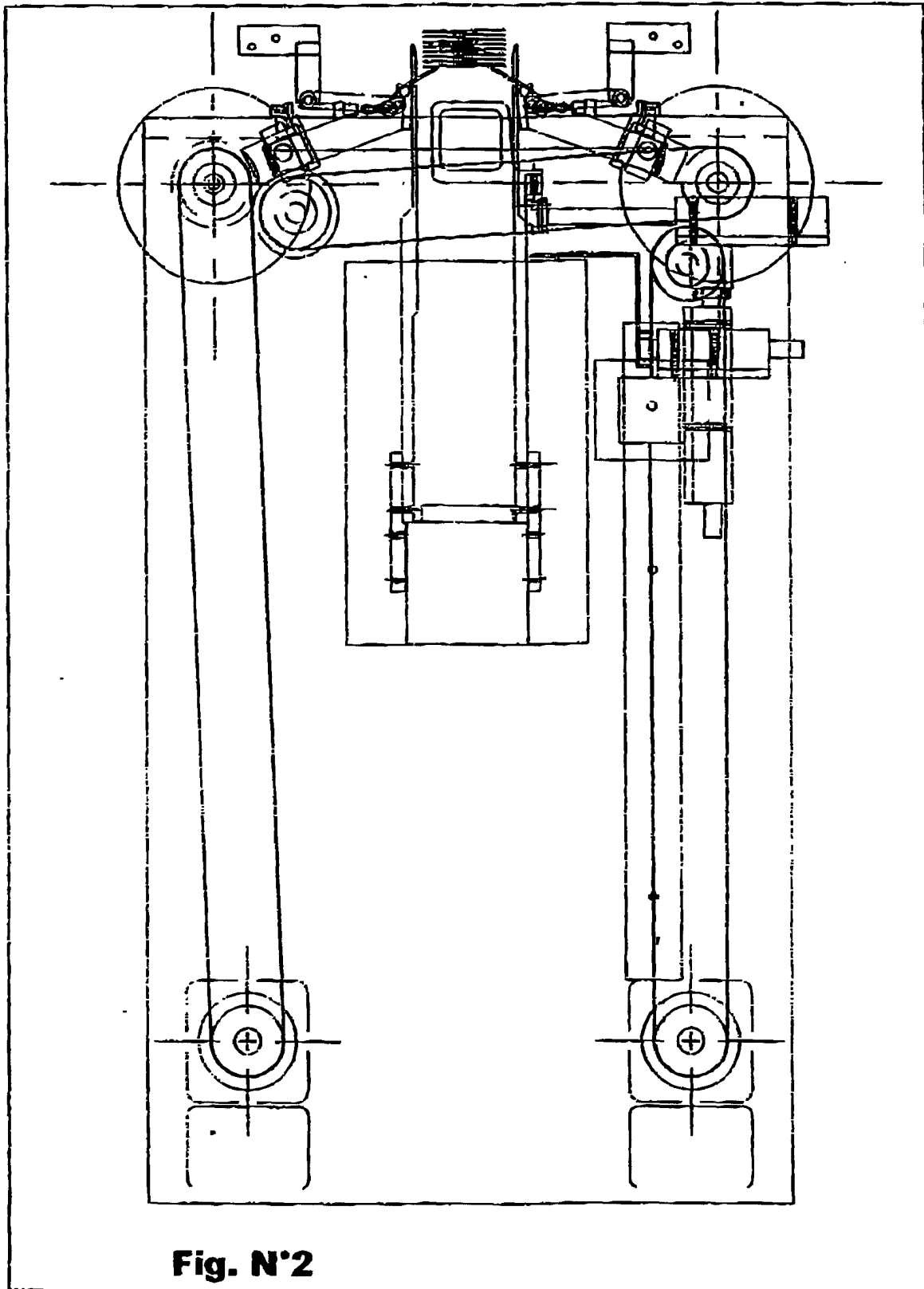
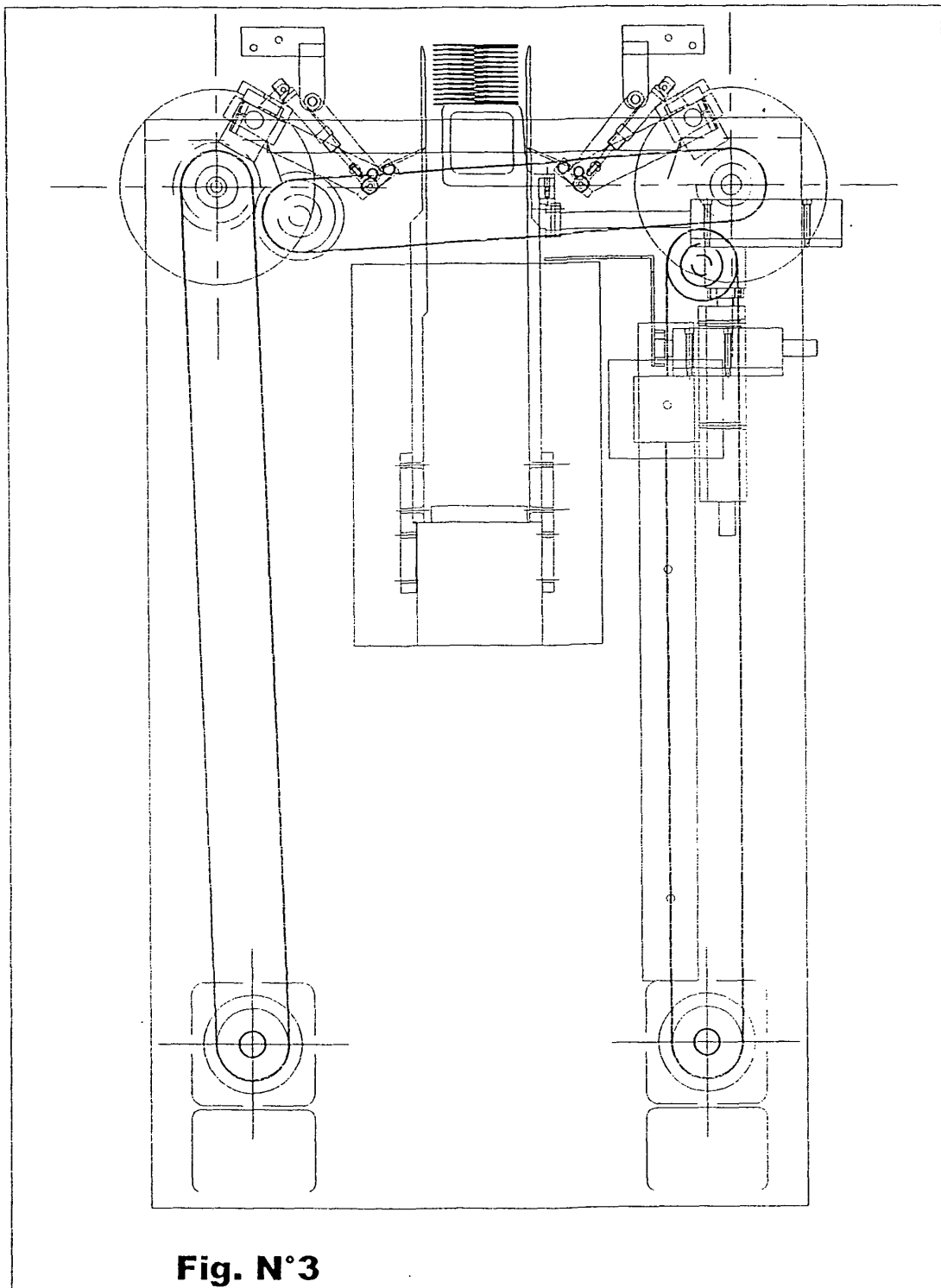
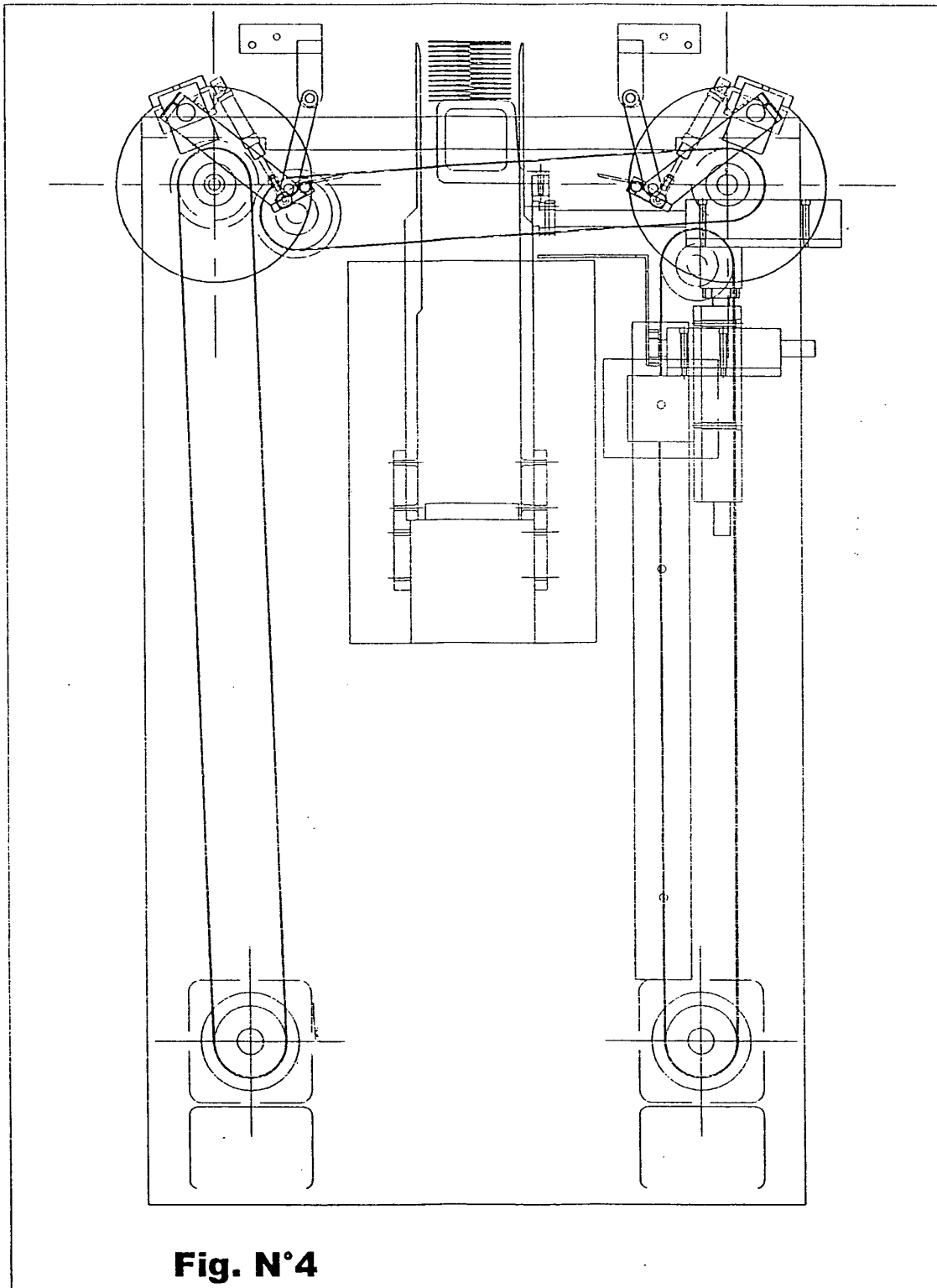
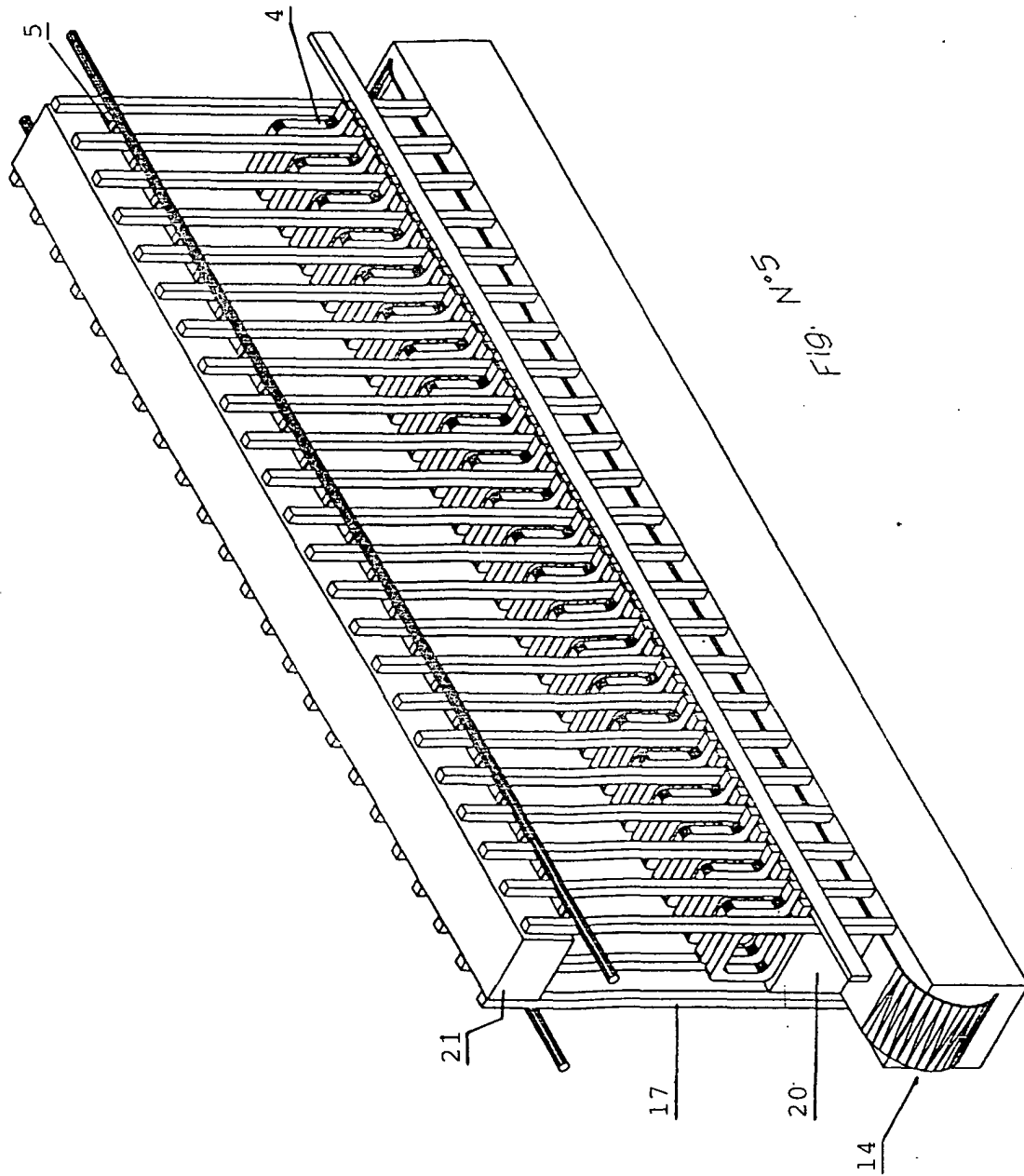


Fig. N°1













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# EUROPEAN SEARCH REPORT

Application Number  
EP 03 07 8985

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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X	US 4 938 657 A (BENSON BRUCE V ET AL) 3 July 1990 (1990-07-03) * figures 4,5 *	1,2	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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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 17 May 2004	Examiner Stroppa, G
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EPO FORM 1503, 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 03 07 8985

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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