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(71) Applicant (for all designated States except US):  
**SERANIT GRANIT SERAMIK SAN.VE TIC.A.S.**  
[TR/TR]; Barbaros Bulvar No:83/1 34353, Besiktas Istanbul (TR).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **ALTUNALAN, Hamdi** [TR/TR]; Barbaros Bulvar No:83/1 34353, Besiktas Istanbul (TR).

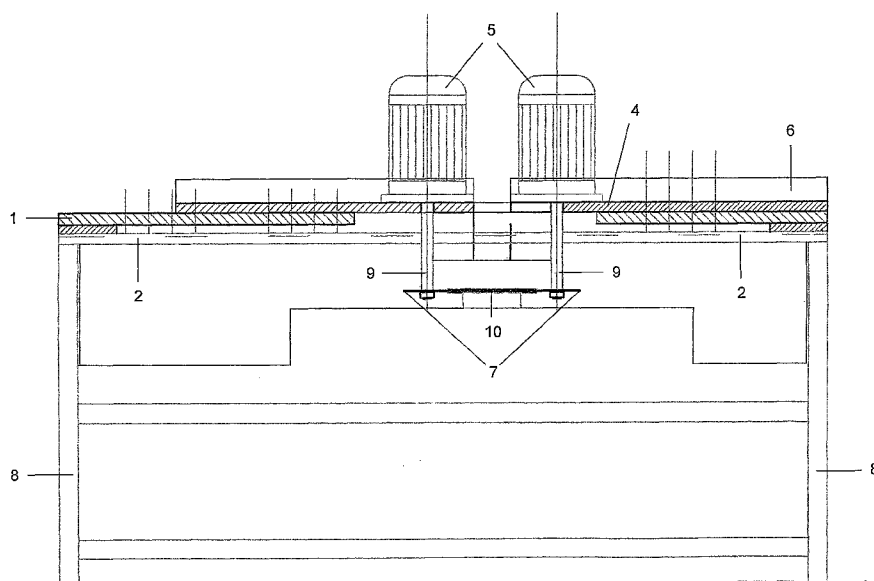
(74) Agent: **ADRES PATENT MARKA VE FIKRI HAKLARI DANISMANLIK TIC.LTD.STI.**; Büyükdere Cad. No:62 Lale Is Merkezi K:1 34387, Mecidiyeköy Istanbul (TR).

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[Continued on next page]

(54) Title: STONE EDGE SLITTING AND CUTTING MACHINE



(57) Abstract: A stone edge slitting and cutting machine which enables the production and mounting of granite ceramics used in the external coatings (10) of buildings such as houses, business centres, public and social buildings via clipped external surface coating system. By means of the stone edge slitting and cutting machine which is subject of the invention, the granite ceramics used in the external and internal surfaces of the buildings are being prepared for construction mounting via slitting clips onto the thin edges of them. The mounting of the granite ceramics manufactured by the stone edge slitting and cutting machine which is subject of the invention is provided to be more economical and maintained to be easily mechanically mounted the surface in all kinds of weather conditions.

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## PATENT SPECIFICATION

### Stone Edge Slitting and Cutting Machine

#### 5 TECHNICAL FIELD

This invention is related with the stone edge slitting and cutting machine which enables the production and mounting of granite ceramics used in the external coatings of buildings such as houses, business centres, public and social  
10 buildings via clipped external surface coating system. By means of the stone edge slitting and cutting machine which is subject of the invention, the granite ceramics used in the external and internal surfaces of the buildings are being prepared for construction mounting via slitting clips onto the thin edges of them. The mounting of the granite ceramics manufactured by the stone edge slitting and cutting  
15 machine which is subject of the invention is provided to be more economical and maintained to be easily mechanically mounted the surface in all kinds of weather conditions.

#### THE KNOWN STATUS OF THE TECHNIQUE

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Today, clips and grooves are being used in mounting of the granite ceramics used in the surface coatings however, the disadvantage of this system is the carriers, and the clips used in the process of mounting the granite ceramic onto the system are visible on the surface.

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In the other system with grooves, the process of mounting are carried out via the grooves cut behind the granite ceramic plates and this leads to the reduction of the breaking strength of the used coating layer.

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Today, cutting of clips, grooves, or slits onto the thin edges of the granite ceramic coatings used in the internal and external coating applications is extremely difficult due to the hardness and low breaking strength of the materials used. During these

groove and slit cutting processes, the material is being subjected to damages and it becomes impossible to proceed with flawless production.

## DESCRIPTION OF THE INVENTION

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This invention is related with the stone edge slitting and cutting machine which is capable of overcoming the above-mentioned disadvantages. The most important feature of the stone edge slitting and cutting machine which is the subject of the invention is the capability of cutting clips, slits, and grooves onto the granite ceramic coatings in a rapid manner.

10

The stone edge slitting and cutting machine which is subject of the invention maintains the manufacture of the granite ceramic coatings used in the Patent Application titled "Clipped Surface Coating System" and No: TR 2005 04820..

15

By means of the stone edge slitting and cutting machine which is subject of the invention, the granite ceramics used in the external and internal surfaces of the buildings are being prepared for construction mounting via slitting clips onto the thin edges of them. The mounting of the granite ceramics manufactured by the stone edge slitting and cutting machine which is subject of the invention is provided to be more economical and maintained to be easily mechanically mounted the surface in all kinds of weather conditions.

20

The most important features of the surface coating systems in which the granite ceramic coatings manufactured by stone edge slitting and cutting machine are used is the invisibility of the mounting elements from outside. Furthermore, although it is extremely difficult to cut grooves, slits or clips onto the thin edges of the granite ceramic coatings via the systems being used today, this process is carried out via an extremely safe and rapid manner by means of the stone edge slitting and cutting machine.

25

30

One of the important features of this machine and the systems manufactured by this machine is that there is no disadvantages in terms of reduction of the

breaking strength of the material as the cut clips are not on the surface of the granite ceramic coating.

## THE PARTS AND THE SECTIONS FORMING THE INVENTION

5

1 – Rail holder.

2 – Plate carrier.

3 – Base plates.

4 – Motor supporting plate.

10

5 – Motors.

6 – Wheels and rails.

7 – Diamond cutter discs.

8 – Machine chassis.

9 – Motor shaft.

15

10 – Coating layer.

11 – Wheel holder plate.

12 – Retaining arms.

13 – Pneumatic holders.

14 – Motor.

20

15 – Water pump.

16 – Pipes.

17 – Valves.

18 – Nozzles.

19 – Water tank.

25

## BRIEF DESCRIPTIONS OF THE DRAWINGS

Figure 1 – Front view of the stone edge slitting and cutting machine.

Figure 2 – Side view of the stone edge slitting and cutting machine.

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Figure 3 – Over view of the stone edge slitting and cutting machine.

Figure 4 – Front view of the diamond cutter discs and coating layer.

Figure 5 – Front view of the wheel holder plate.

Figure 6 – Front view of the wheels and rails and wheel holder plate.

Figure 7 – Front view of the wheels and rails and wheel holder plate.

Figure 8 – Front view of the motor shaft.

Figure 9 – Front view of the plate carrier.

Figure 10 – Front view of the wheel holder plate.

5 Figure 11 – Front view of the wheel holder plate.

Figure 12 – Front view of the wheel holder plate.

Figure 13 – Side view of the wheel holder plate.

Figure 14 – Front view of the wheel holder plate.

Figure 15 – Side view of the wheel holder plate.

10 Figure 16 – Over view of the base plates.

Figure 17 – Side view of the base plates.

Figure 18 – Side view of the base plates.

Figure 19 – Over view of the base plates.

Figure 20 – Front view of the motor supporting plate.

15 Figure 21 – Over view of the motor supporting plate.

Figure 22 – Side view of the closed circuit water installation.

Figure 23 – Side view of the retainer arms and pneumatic holders.

Figure 24 – Side view of the retainer arms and pneumatic holders.

Figure 25 – Over view of the retainer arms and pneumatic holders.

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## **EXPLANATION OF THE INVENTION**

This invention consists of rail holder (1), plate carrier (2), base plates (3), motor supporting plate (4), motors (5), wheels and rails (6), diamond cutter discs (7),  
25 machine chassis (8) motor shaft (9), coating layer (10), wheel holder plate (11),  
retainer arms (12), pneumatic holders (13), motor (14), water pump (15), pipes  
(16), valves (17), nozzles (18) and a water tank (19).

The granite ceramic coating material is loaded onto the machine manually or  
30 automatically via conveyor. Machine takes the material towards the diamond  
cutter discs (7) by means of retainer arms (12) and leaves it there. The material is  
fixed firmly sides and above via the pneumatic retainers (13) upon arriving at the  
location of cutting. At the same time, the retainer arms (12) return back to take the

second piece. After the fixing process, four of the diamond cutter discs (7) which are mounted on the motors (5) activate to slit the fixed stone from left and right. After the slitting process which can be adjusted in the desired measures, the diamond cutter discs (7) return back to their original positions. While the retainer  
5 arms (12) feed the second material, the processed material is being carried away from the machine. This period continues repeatedly.

1, 2, or 4 motors (5) can be used in the stone edge slitting and cutting machine and the diamond cutter discs (7) which carry out the cutting process are mounted  
10 to the motors (5) via motor shaft (9). Motors (5) and the motor shafts (9) in contact with those as well as the diamond cutter discs (7) are located on the motor supporter plate (4) and can be activated via motor supporter plate (4).

Rail holder (1) achieves the process of carrying the wheels and rails (6) and  
15 mounted on the machine chassis (8). Plate holder (2) achieves the function of carrying the base plates (3) and it is in contact with machine chassis (8) and base plates (3). Base plates (3) carry out the functions of supporting and bearing the wheels and rails (6) as well as providing the calibration of those. Base plates (3) are in contact with machine chassis (8), wheels, and rails (6).

20  
Wheels and rails (6) are the parts that provide the actuation and supporting of the motor supporter plate (4). Machine chassis (8) forms the frame of the machine and provides the supporting and the assembly of the machine. Motor supporter plate (4) is movable part and it is in contact with wheels and rails (6) and the  
25 motors (5).

Stone edge slitting and cutting machine uses fluid cutting during the process by means of the closed circuit water system. All of the component parts of the machine which are in contact with the water are made of stainless steel. The other  
30 parts such as machine chassis (8) and plates (3, 11) are made of galvanized steel.

Closed circuit water system consists of a motor (14), a water pump (15), pipes (16), valves (17), nozzles (18), and a water tank (19).

5 The water pump (15) activates as the motor (14) starts and the water is circulated through the system via pipes (16) and valves (17) and sprayed on the system via the nozzles (18). During the stone edge slitting and cutting process, the water fed from the nozzles (18) to the system is reserved in the water tank (19) located at the bottom and used again and again via the motors (14).

10 During the stone (19) edge slitting and cutting process, the particles of the cut coating layer (10) are prevented from entering the system through the water pump (15) and cause blockages by means of the compartments on the left of the water tank (19).

**CLAIMS**

1. This invention is related with the stone edge slitting and cutting machine and characterised in that; it consists of rail holder (1), plate carrier (2), base  
5 plates (3), motor supporting plate (4), motors (5), wheels and rails (6), diamond cutter discs (7), machine chassis (8) motor shaft (9), coating layer (10), wheel holder plate (11), retainer arms (12), pneumatic holders (13), motor (14), water pump (15), pipes (16), valves (17), nozzles (18) and a water tank (19).
- 10 2. It is the stone edge slitting and cutting machine mentioned in Claim 1 and characterised in that; it takes the coating layer (10) towards the diamond cutter discs (7) by means of retainer arms (12) and leaves it there. The material is fixed firmly sides and above via the pneumatic retainers (13)  
15 upon arriving at the location of cutting. At the same time, the retainer arms (12) return back to take the second piece.
- 20 3. It is the stone edge slitting and cutting machine mentioned in Claim 1 and characterised in that; it carries out the clip cutting on the thin edges of the coating layer via the diamond cutter discs (7) which are mounted on the motors (5) via motor shaft (9), and activate to slit the fixed stone from left and right.
- 25 4. It is the stone edge slitting and cutting machine mentioned in Claim 1 and characterised in that; after the completion of the slitting process adjusted in the desired measures, the diamond cutter discs (7) return back to their original positions and while the retainer arms (12) feed the second material, the processed material is being carried away from the machine.
- 30 5. It is the motor (5) mentioned in Claim 3 and characterised in that; it houses the diamond cutter discs (7) mounted on the end via the motor shaft (9) and it is movably located on the motor supporter plate (4).

6. It is the rail holder (1) mentioned in Claim 1 and characterised in that; it provides the supporting of the wheels and rails (6) and mounted on the machine chassis (8).
- 5 7. It is the plate holder (2) mentioned in Claim 1 and characterised in that; it achieves the function of carrying the base plates (3) and it is in contact with machine chassis (8) and base plates (3).
- 10 8. They are the base plates (3) mentioned in Claim 7 and characterised in that; they carry out the functions of supporting and bearing the wheels and rails (6) as well as providing the calibration of those by being in contact with machine chassis (8), wheels, and rails (6).
- 15 9. They are the wheels and rails (6) mentioned in Claim 6 and characterised in that; they are the parts that provide the actuation and supporting of the motor supporter plate (4).
- 20 10. It is the machine chassis (8) mentioned in Claim 6 and characterised in that; it forms the frame of the machine and provides the supporting and the assembly of the machine.
- 25 11. It is the motor supporter plate (4) mentioned in Claim 5 and characterised in that; it is a movable part and it is in contact with wheels and rails (6) and the motors (5).
- 30 12. It is the stone edge slitting and cutting machine mentioned in Claim 2 and characterised in that; it is equipped with a closed circuit water cooling system and the closed circuit cooling water system consists of a motor (14), a water pump (15), pipes (16), valves (17), nozzles (18), and a water tank (19).

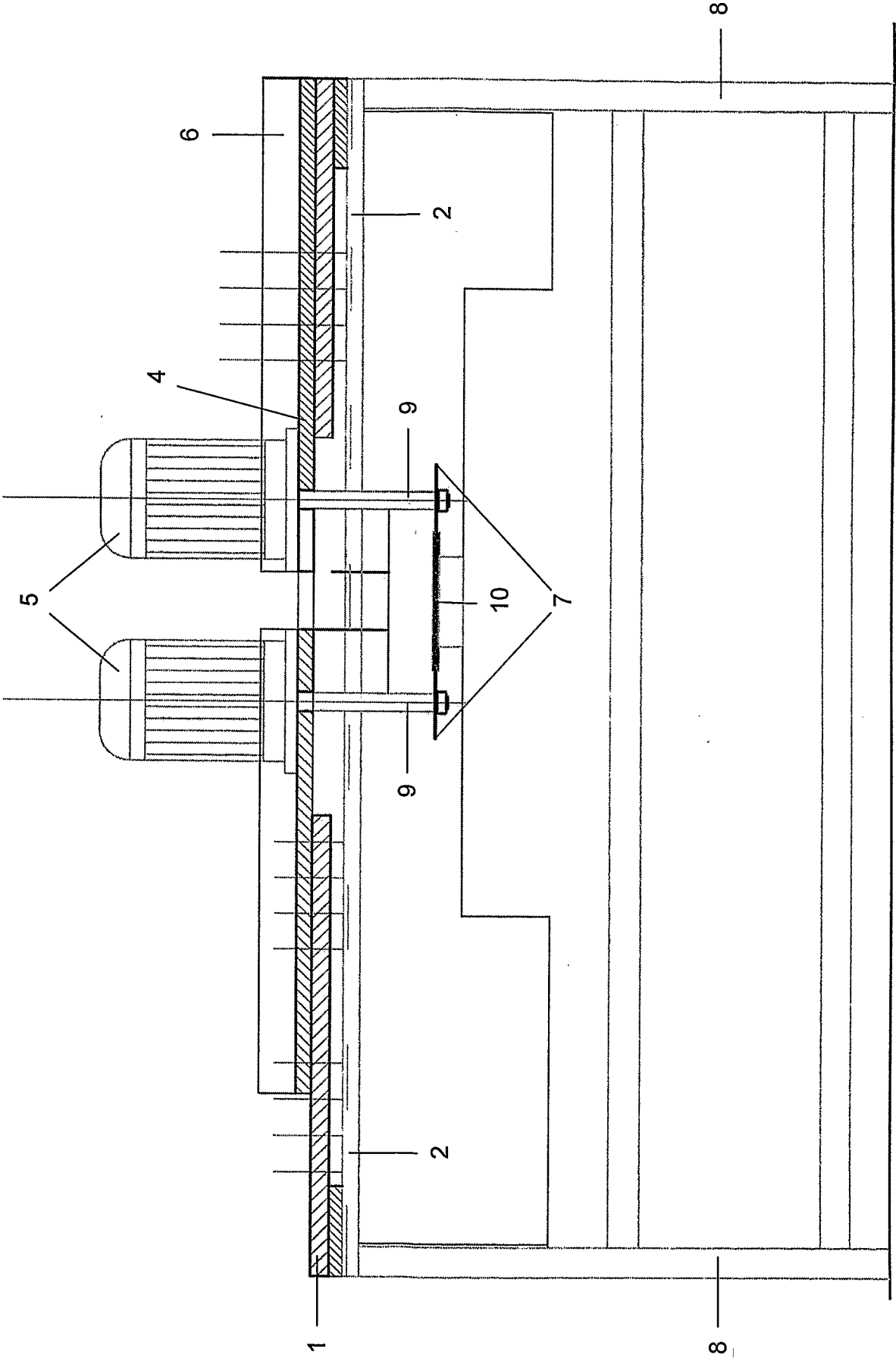


Figure 1

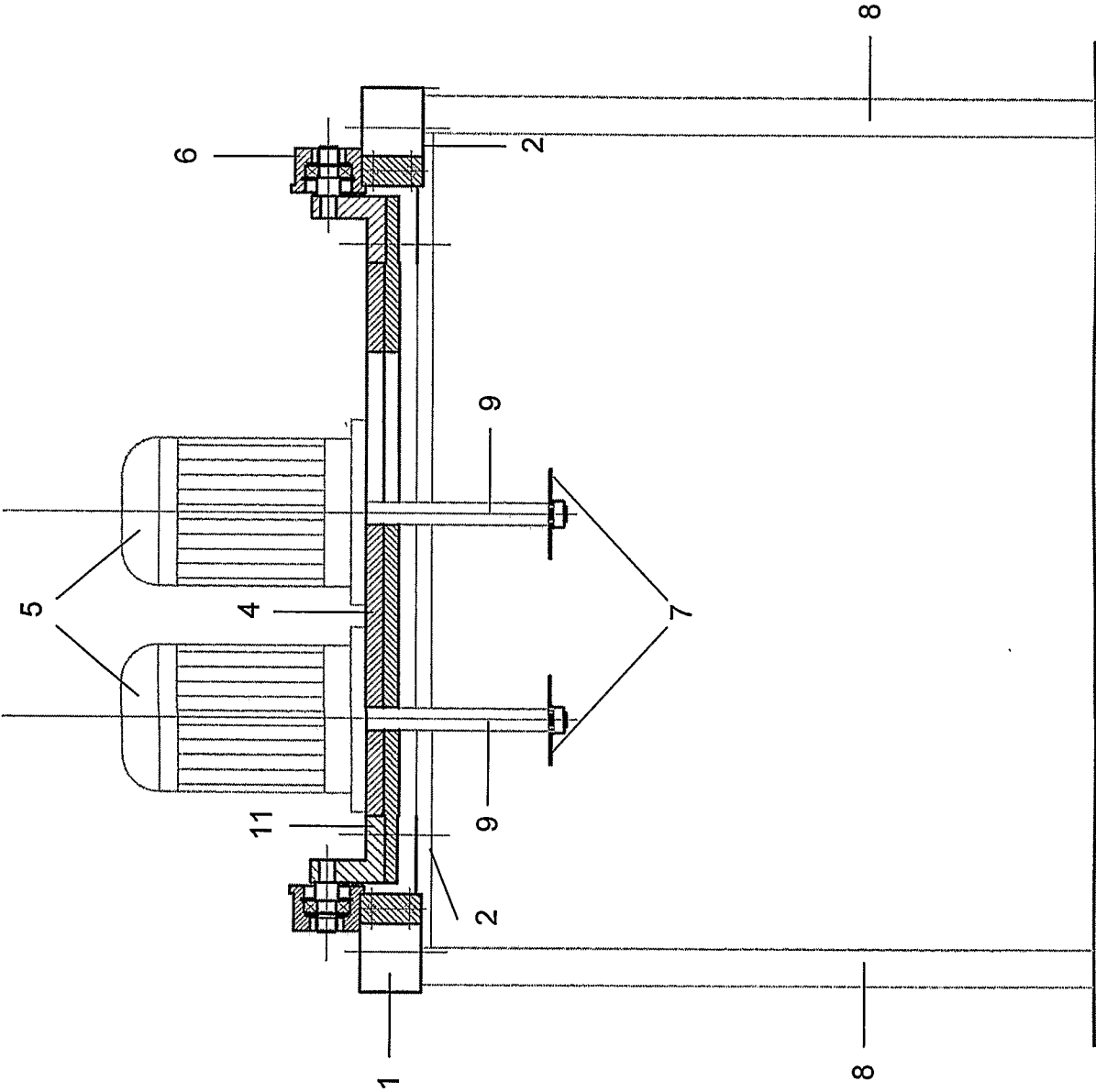


Figure 2

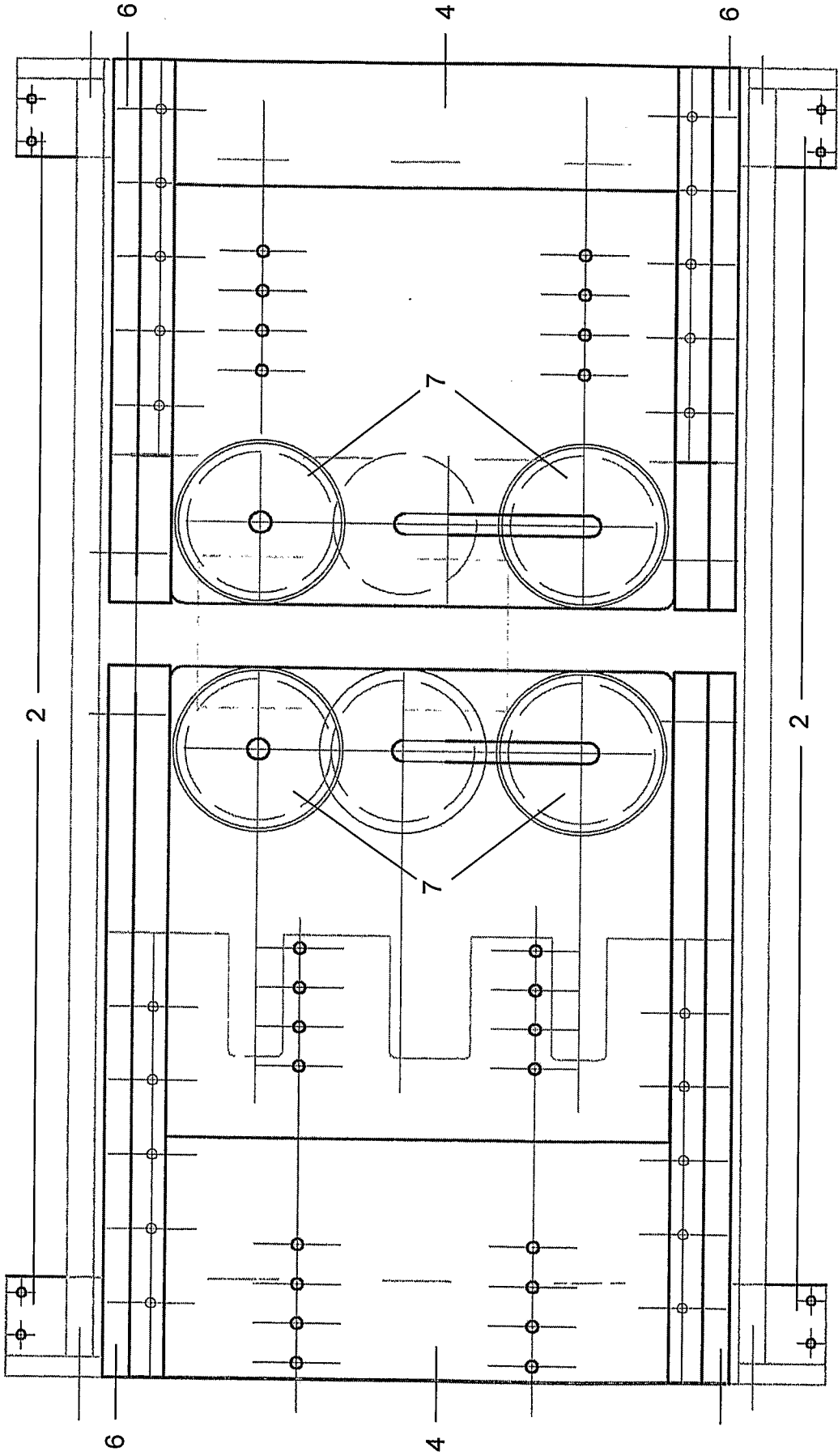


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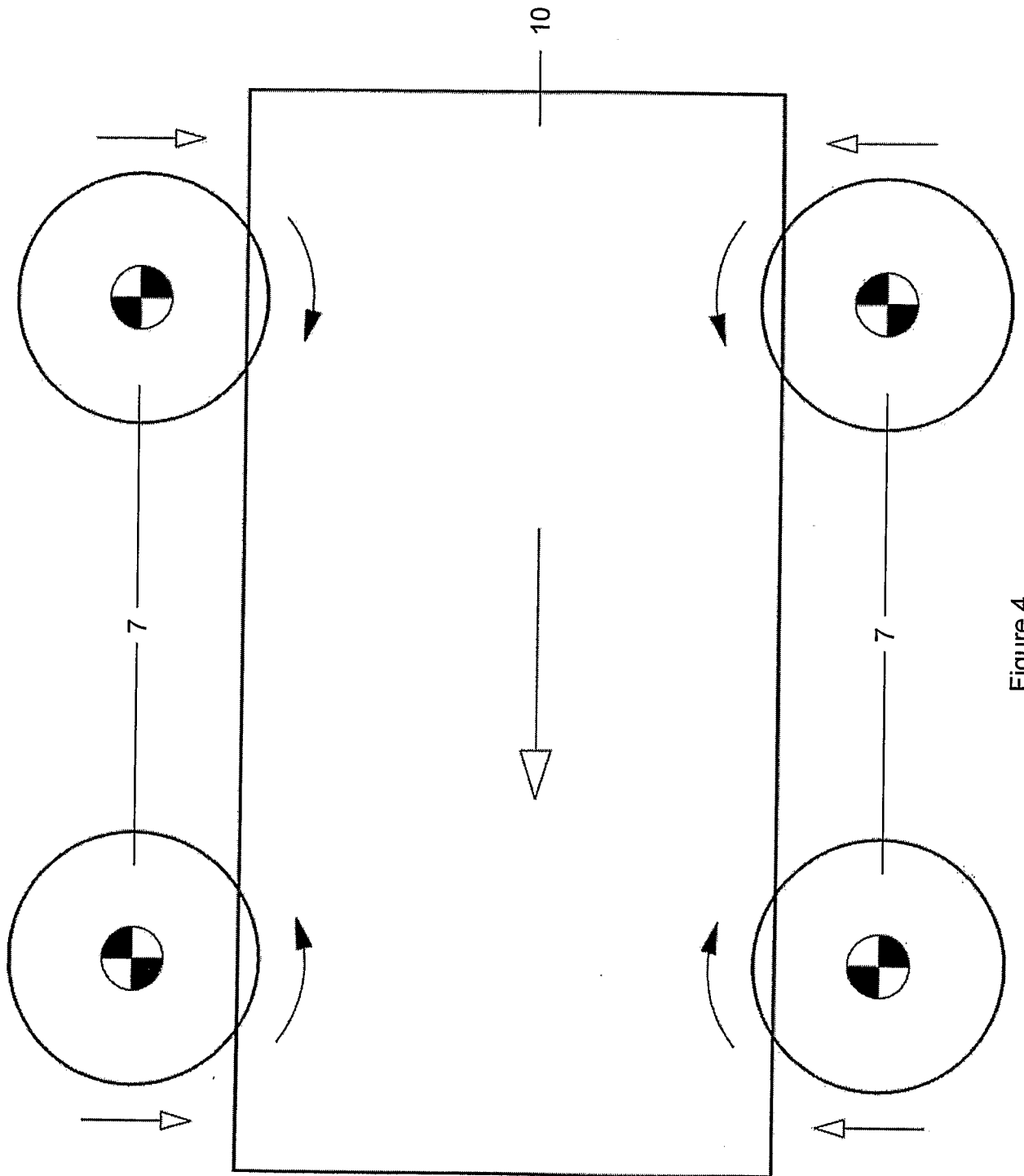


Figure 4

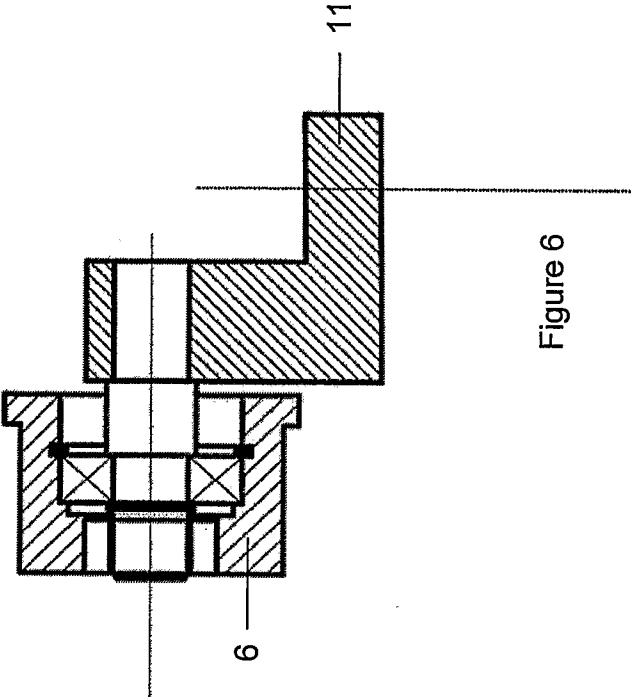


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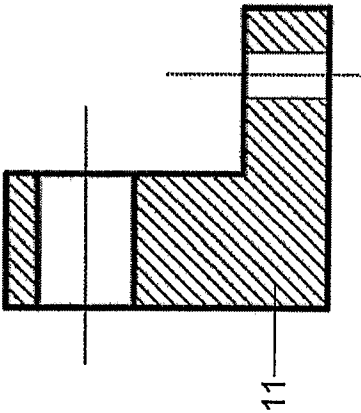


Figure 5

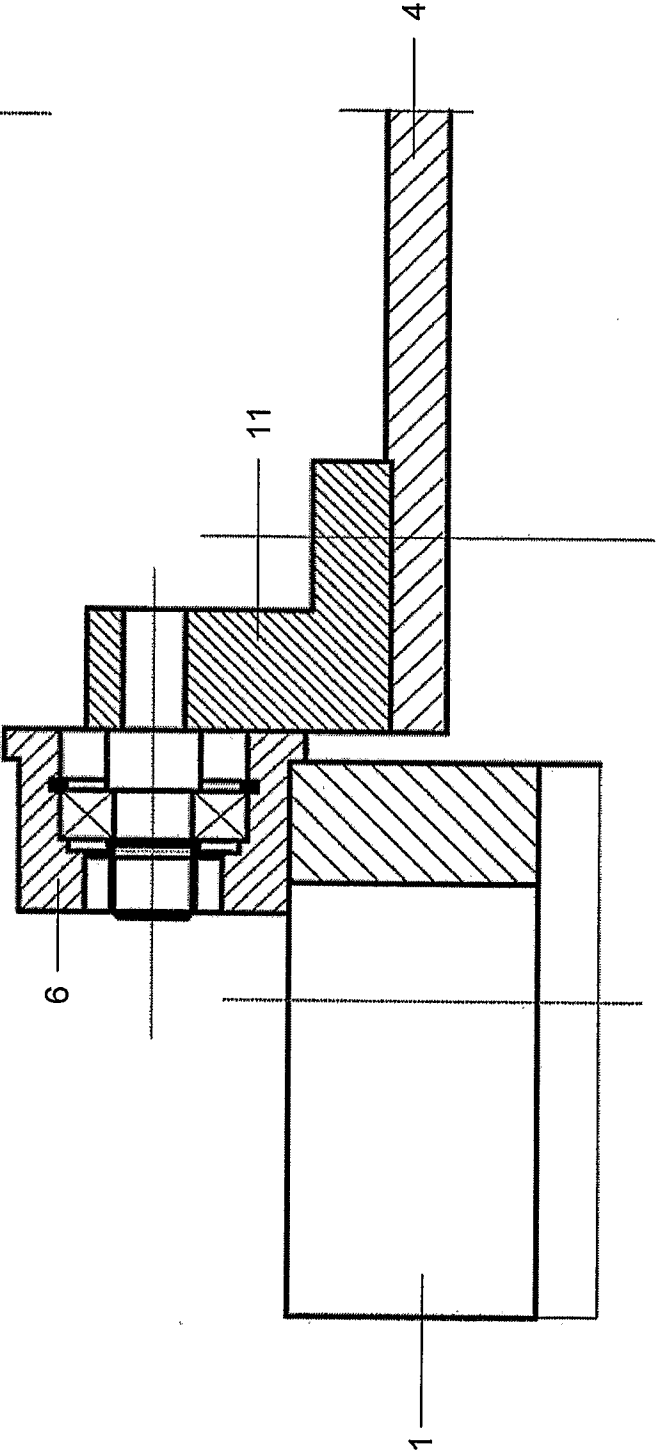


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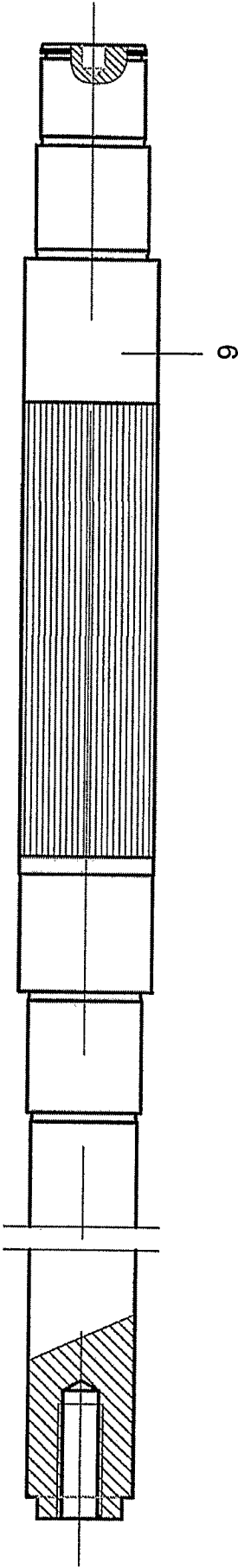


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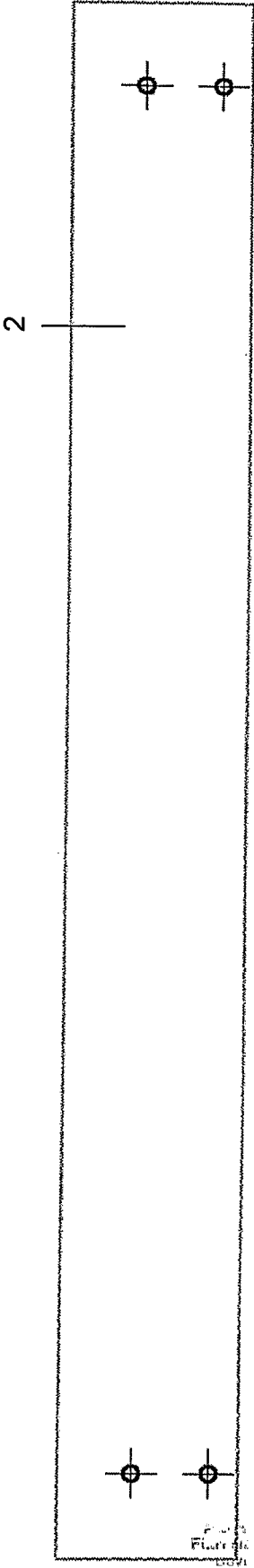


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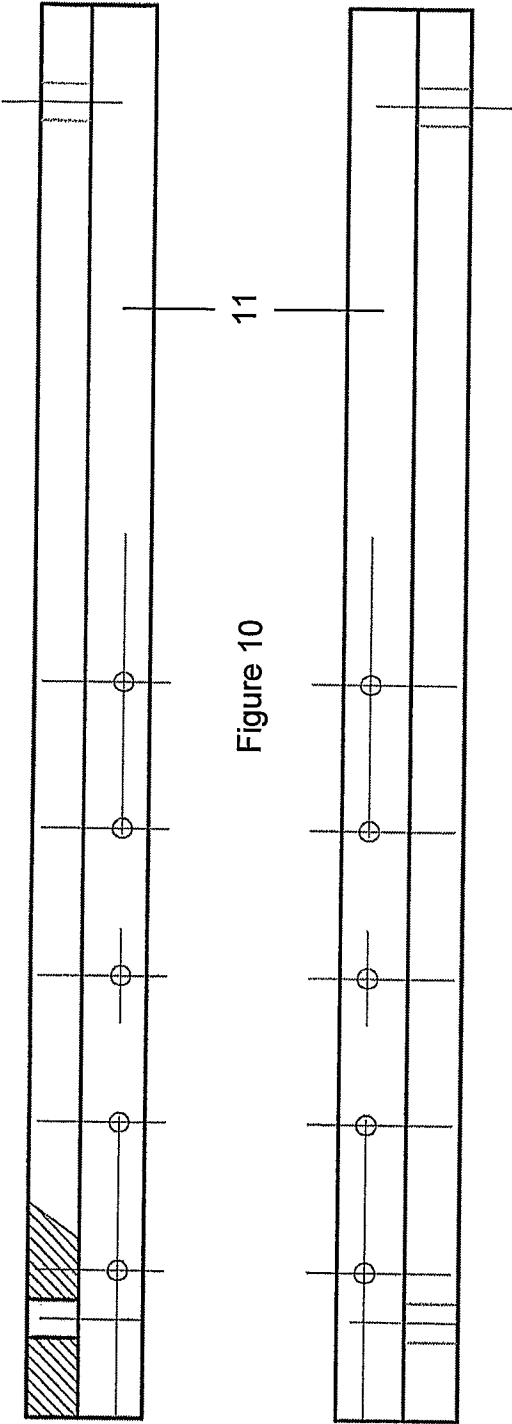


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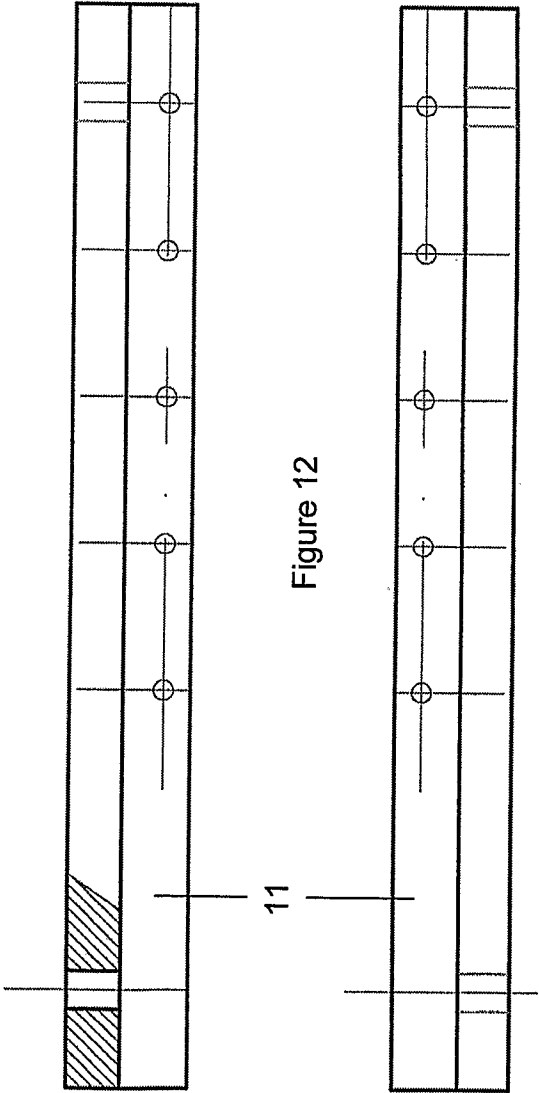
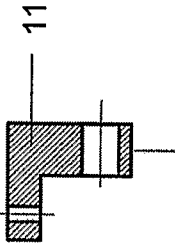
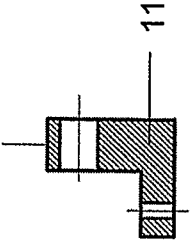


Figure 14



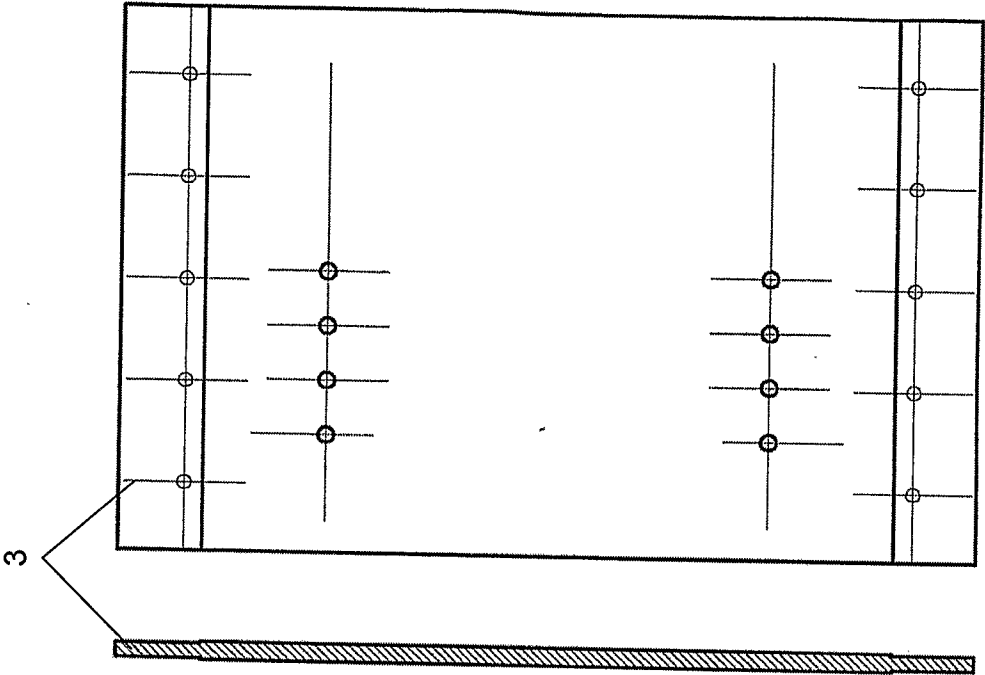


Figure 19

Figure 18

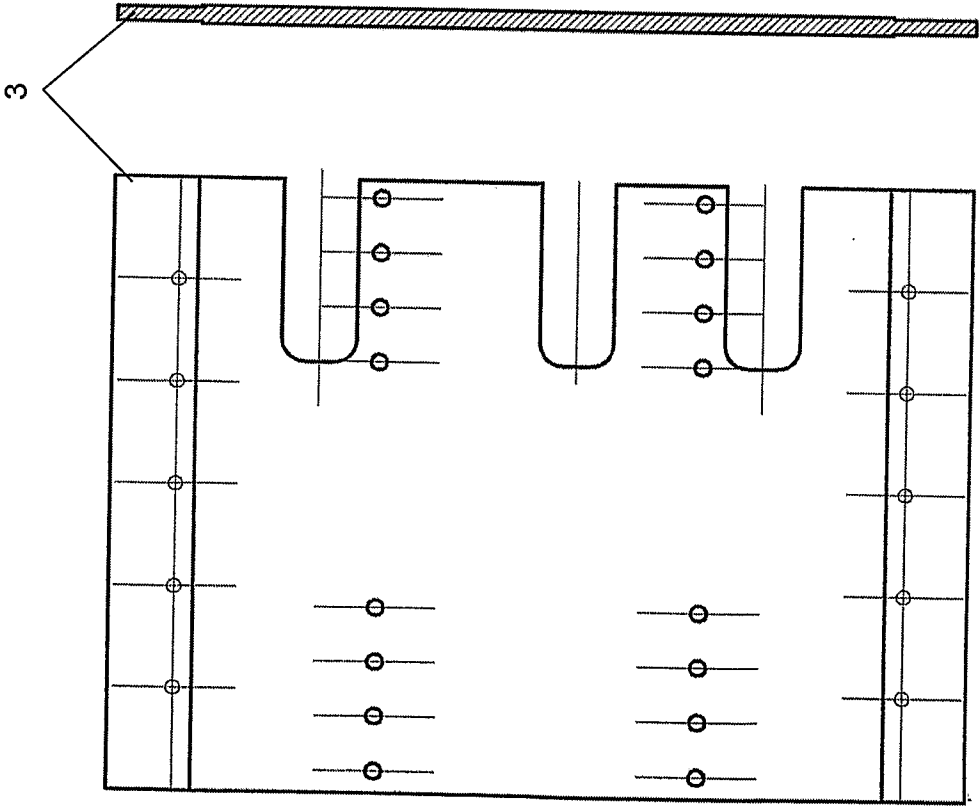


Figure 17

Figure 16

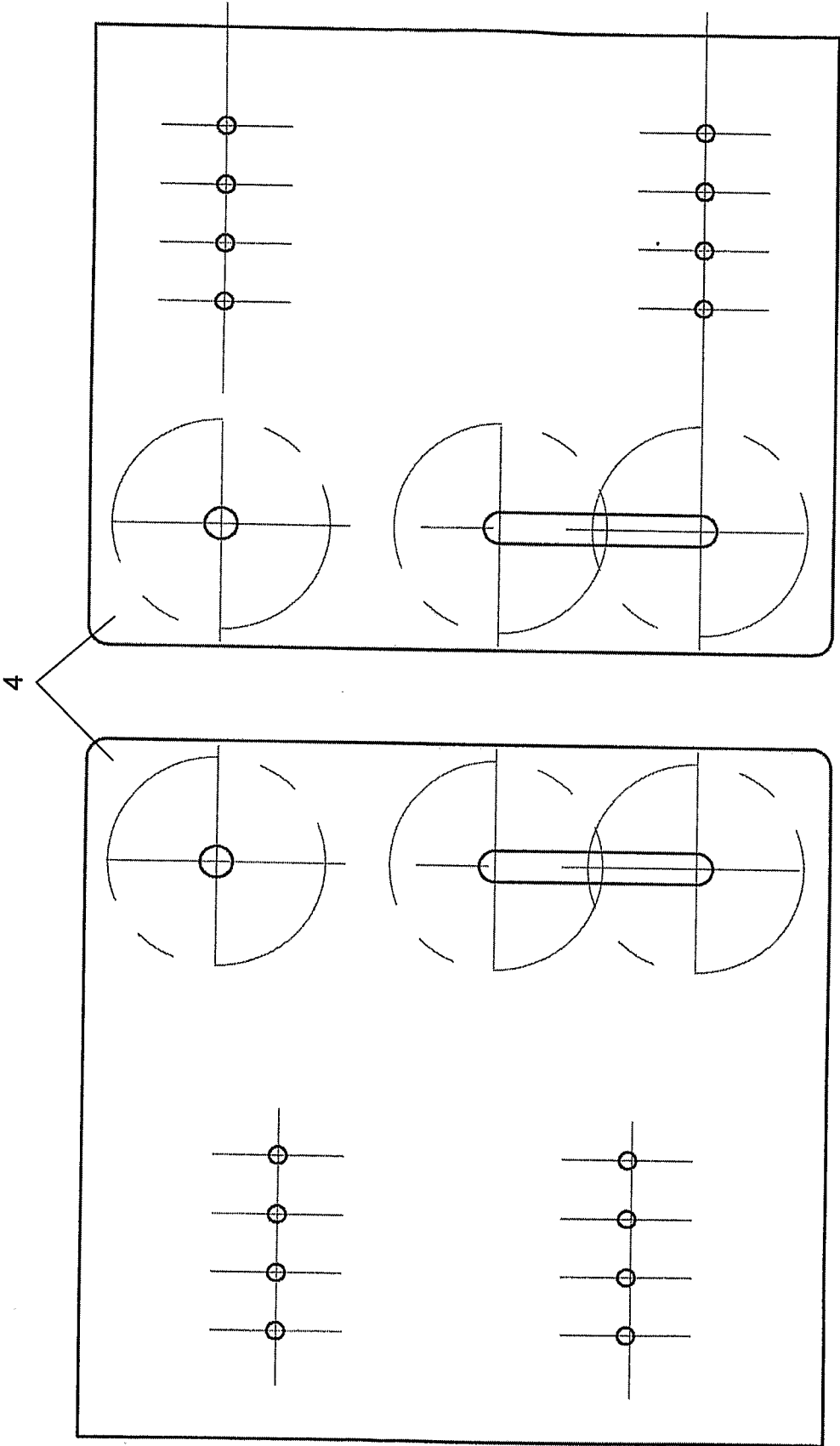


Figure 21

Figure 20

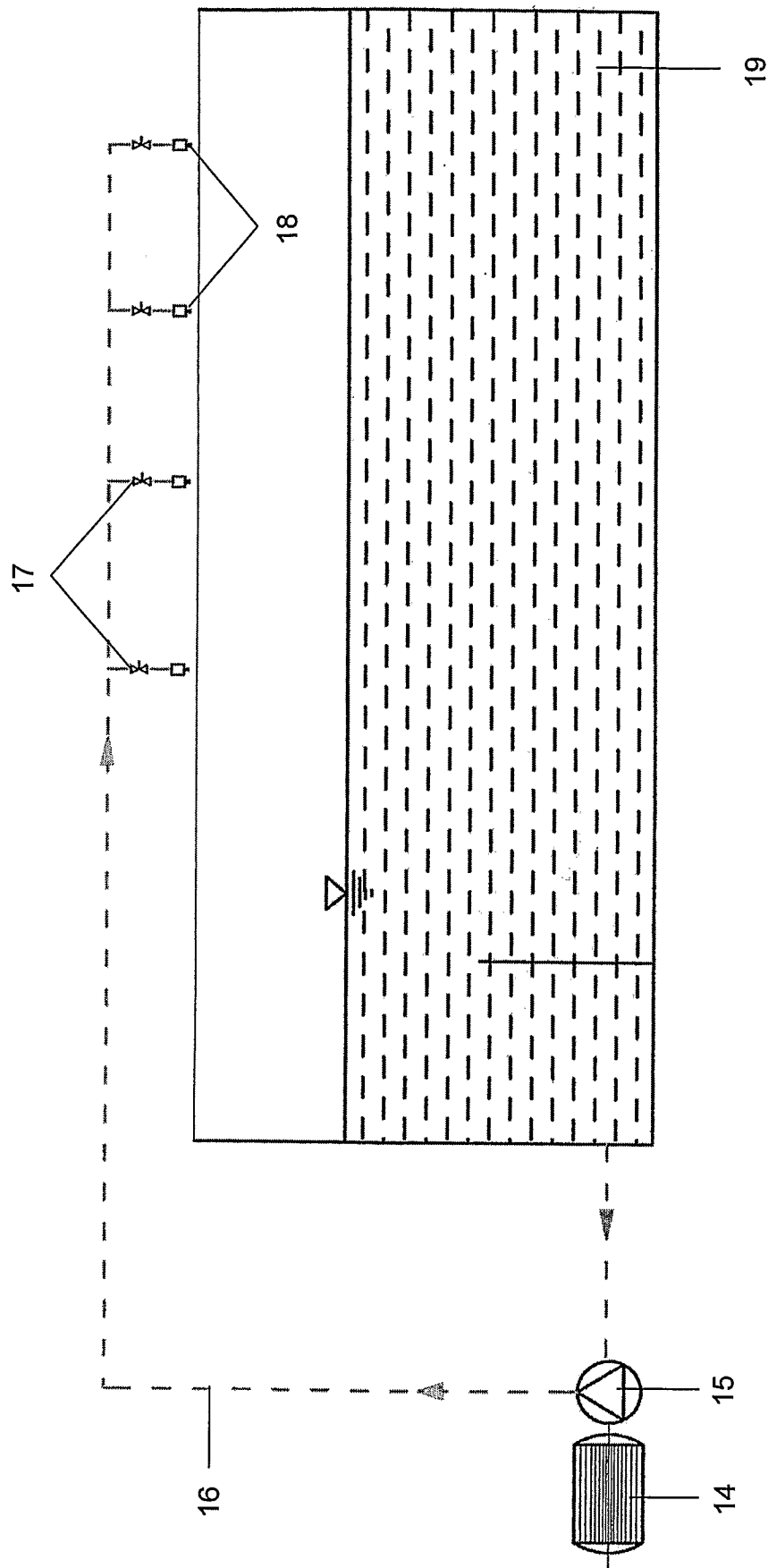


Figure 22

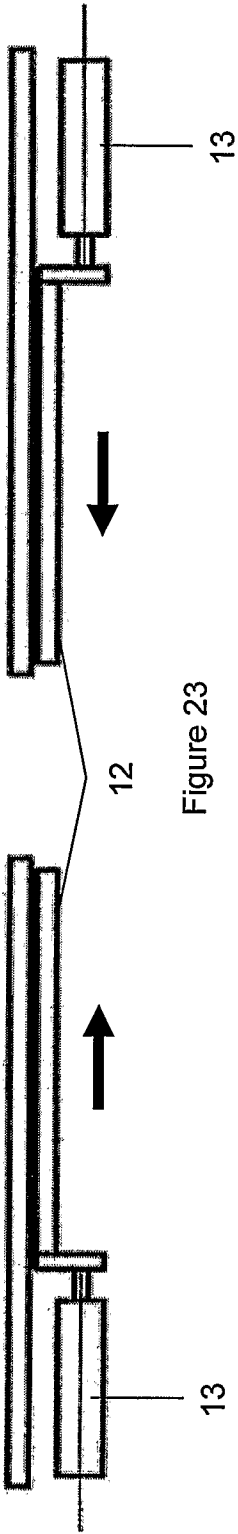


Figure 23

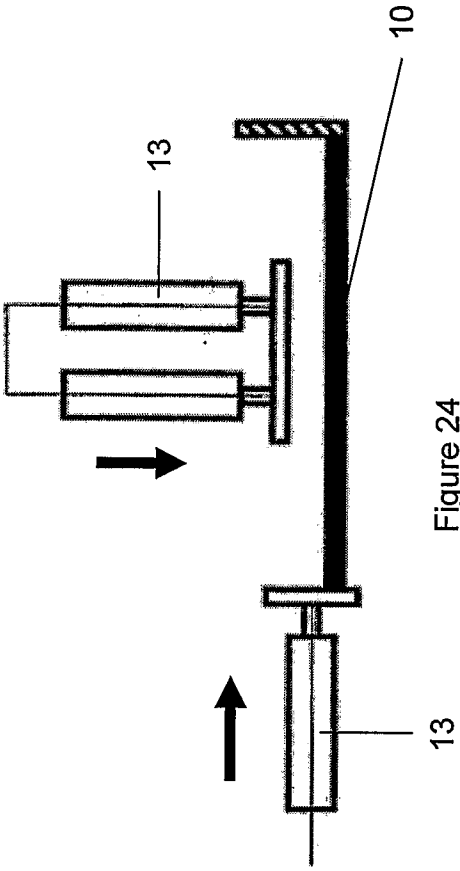


Figure 24

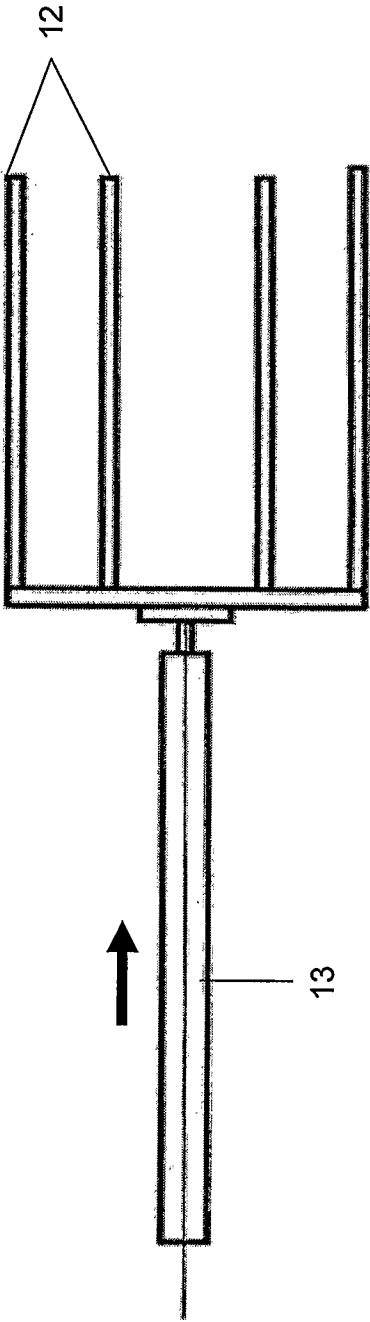


Figure 25

## INTERNATIONAL SEARCH REPORT

International application No

PCT/TR2006/000010

A. CLASSIFICATION OF SUBJECT MATTER  
INV. B28D1/04

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)  
B28D

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. |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y         | EP 1 125 705 A2 (FLII TONI S A S DI TONI ENRICO [IT]) 22 August 2001 (2001-08-22)<br>the whole document                                    | 1-12                  |
| Y         | GB 2 163 094 A (RACKHAM ANTHONY CHARLES)<br>19 February 1986 (1986-02-19)<br>page 4, line 21 - line 24<br>figures 1,2                      | 1-12                  |
| Y         | WO 99/33622 A (GAJDO ANDRAS [HU])<br>8 July 1999 (1999-07-08)<br>page 7, line 1 - line 4<br>page 15, line 23 - page 16, line 5<br>figure 6 | 1-12                  |
|           | -----<br>-/--<br>-----                                                                                                                     |                       |

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

21 December 2006

Date of mailing of the international search report

02/01/2007

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/TR2006/000010

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                          | Relevant to claim No. |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y         | GB 1 547 652 A (REDPATH DORMAN LONG LTD)<br>27 June 1979 (1979-06-27)<br>page 1, right-hand column, line 86 - line 88                                       | 1-12                  |
| Y         | -----<br>DD 223 668 A1 (DRESDEN GESELLSCHAFTSBAU<br>[DD]) 19 June 1985 (1985-06-19)<br>the whole document<br>in particular:<br>page 5, paragraph 4<br>----- | 1-12                  |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/TR2006/000010

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
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| DD 223668                                 | A1 | 19-06-1985          | NONE                       |                     |