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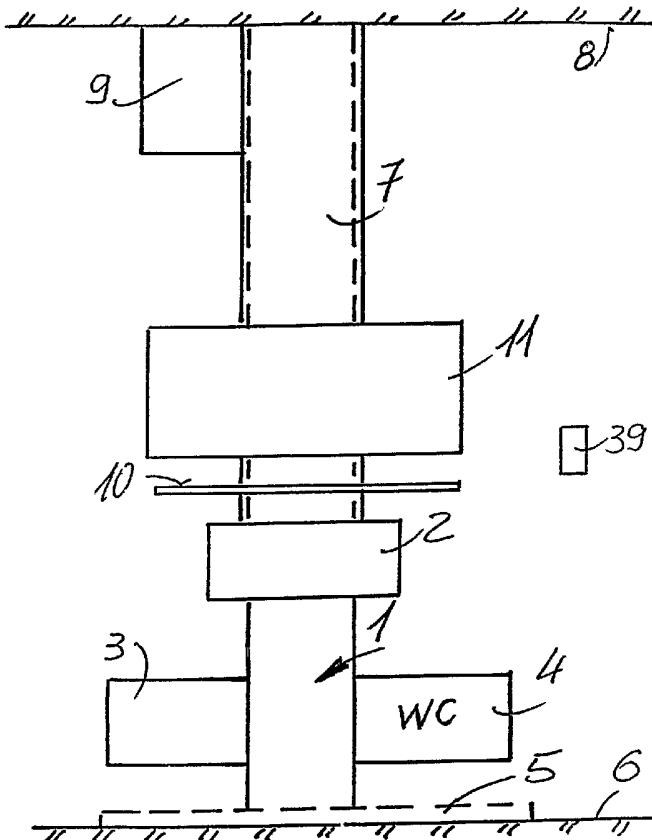
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(54) Title: ROTATING COLUMN SUPPORTING SANITARY FITTINGS AND SANITARY FITTING ASSEMBLY OBTAINED WITH SAID COLUMN



(57) Abstract: A rotating column (1) for supporting sanitary fittings comprises a supporting cage consisting of a plurality of fixed rings which are superimposed with a distance from each other and secured to inside supporting vertical sections; a plurality of rotating rings interposed between said fixed rings and supporting said sanitary fittings; a rotating means, for example profiled wheels, which are interposed between adjacent rotating rings and supported outside on said fixed rings, as well as a motor for each sanitary fitting, with an associated transmission means for rotating a respective rotating ring, or couple of rotating rings, supporting a sanitary fitting; wherein a triturating means for triturating the solid material delivered by said sanitary fittings is preferably provided. The invention relates further to a sanitary fitting assembly mounted on said rotating column for forming a complete lavatory requiring an extremely limited surface which is smaller than, for example, 1,5 m<sup>2</sup> and is also accessible to handicapped people on perambulator.

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(3-411)

“ROTATING COLUMN SUPPORTING SANITARY FITTINGS  
AND SANITARY FITTING ASSEMBLY OBTAINED WITH  
5 SAID COLUMN”

10 Technical field

The present invention relates to a rotating column supporting sanitary fittings and a sanitary fitting assembly obtained with said column according to the preambles of claims 1 and 7, respectively.

15 Background of the invention

As is known, frequently in families, for example when the children begin to go to school or to have a job, as well as when old parents or father-in-laws and/or mother-in-laws transfer to the son's or daughter's family, arise the situation of using the bathroom  
20 practically at the same hours by more member of the family, which in turn indirectly arises the need of having a second bathroom or lavatory, and this frequently also in the case of middle-small hose or flat surface of, for example, 70 – 80 m<sup>2</sup>.

This need is frequently satisfied by means of a single WC bowl and  
25 a small wash-basin in a small room which, however, is not generally accessible to handicapped people on a perambulator. However is still unsatisfied the need of a second lavatory having the three basic sanitary fittings, that is a wash basin, a WC bowl and a bidet, preferably together with a shower plate, and in particular also  
30 accessible to people on perambulators.

A similar problem frequently also arises when houses or flats are reconstructed as well as in the case of new constructions of houses,

flats in buildings and hotels, wherein in hotels said small lavatories could also represent for the hotel rooms the previous prior art bathrooms, wherein said small lavatories or lavatories for hotel rooms can also be provided in superimposed disposition in the  
5 single floor.

It is further known that the traditional disposition of sanitary fittings requires a great deal of work concerning the installation of the electric and the hydraulic plant for the cold and warm water as well as the exhaust plumbing of the sanitary fittings.

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#### Summary of the invention

Accordingly, starting from the illustrated prior art, the present invention's aim is to overcome the above mentioned problems, by providing a column for supporting sanitary fittings as well as a  
15 sanitary fitting assembly obtained together with said column for forming a lavatory with more sanitary fittings, preferably with the basic sanitary fittings, and preferably together with a shower plate, which sanitary fitting assembly may be installed on a surface which on the one hand is very small, for example smaller than 1,5 m<sup>2</sup>, and  
20 on the other hand is also accessible for handicapped people on perambulator, so that the proposed lavatory can satisfy the provided actual law requirements.

The above aim is achieved by a column and a sanitary fitting assembly having the features of claims 1 and 7, respectively.

25 Further advantageous developments are set forth in the dependent claims.

With the proposed solutions according the present invention a lot of important advantages are achieved.

30 Firstly, by providing several sanitary fittings, preferably all the basic sanitary fittings, which are rotatable in an horizontal plane from a rest position, or not use position, that is lying in the same vertical plane, singularly in the use position thereof, said sanitary

fittings are installed on column-like supporting means, and is therefore required a substantially rectangular installation surface which is extremely small and is, for example, smaller than 1,5 m<sup>2</sup>, for example with a size of 0,85 m x 1,4 m.

5 Said small surface also allows the further advantage to permit the access thereto to handicapped people on perambulator. According to the invention it is also easily possible to install in said lavatory a shower plate, for example on the same lavatory surface.

Advantageously the column-like supporting means is concealed by  
10 means of a column-like case which extends, for example as a rectangular column, up to the ceiling. In this way said column-like case can be used for housing in a centralized manner the pipes delivering cold and warm water to the different sanitary fittings, as well as the electric plant, the ventilation plant, if provided, and the  
15 sanitary fitting exhaust plumbings.

By providing said column-like case with inspection doors or with a sector-like construction is considerably facilitated the maintenance of the different plants. The advantages obtained with said column-like case become more important when the lavatories according to  
20 the present invention are disposed in superimposed position in the different floors of a building, for example a flat building or a hotel.

The achieved concentration in particular of the hydraulic plants and the sanitary fitting exhaust plumbing also permit to substantially reduce the costs for carrying out said plants and exhaust plumbing  
25 with respect to the traditional installation thereof, that is with sanitary fittings installed in a bathroom at a distance from each other.

Still another advantage is to be seen in the fact that the proposed disposition of sanitary fittings according to the present invention  
30 can be preinstalled in an own box having an own door, electric light and air recirculation, wherein said box can be installed in any room, for example in a living room, in an entrance, in a sleeping room, in

a laundry, in a cellar, in a garage, and so on.

If a greater surface than the mentioned small installation surface is available it will then be possible to also install in the proposed lavatory a washing-machine, which allows easily imaginable advantages for the housewife.

The rotating dispositions of sanitary fittings according to the present invention are further advantageously also installable on small surfaces which are different from a rectangular shape, for example in cabins of cruise ships, ferry-boats, boats, and so on.

10

#### Brief description of the drawings

Further characteristics, advantages and details of the column for the rotating support of sanitary fittings and the sanitary fitting assembly according to the present invention will become apparent hereinafter from the following disclosure of preferred embodiments, which are schematically shown in the accompanying drawings, in which:

15 Fig. 1 is a frontal elevation view of an installed column with a disposition of the sanitary fitting according to the invention,

Fig. 2 is a frontal view of the supporting column,

20 Fig. 3 is a top view on the column of Figg. 1 and 2,

Fig. 4 is a sectional view of the supporting column along the sectional line IV-IV in Fig. 2,

Fig. 5 is a cross sectional view of a detail of the supporting column along the sectional plane V-V of Fig. 4,

25 Fig 6 is a sectional view along the sectional plane VI-VI of Fig. 2,

Fig. 7 is a vertical sectional view of a detail showing the triturating means for triturating solid materials,

Figg. 8a to 8d are top views illustrating different use position of the sanitary fittings, and more precisely in the use position of a wash-basin in Fig. 8a; in the use position of a WC bowl in Fig. 8b; in the use position of a bidet in Fig. 8c; and in the use position of a shower, if provided, in Fig. 8d,

30

Fig. 9 shows the installation of the columns and the sanitary fitting assembly according the invention in superimposed floors of a building, with a triturating bucket shown in the top floor,

5 Fig. 10 is a frontal view of the concealing case in which a panel is removed for illustrating, among other, the collectors delivering the cold and warm water to the sanitary fitting, as well as a flushing box, and

10 Fig. 11 is a detail of an embodiment concerning the rotating connection between the rings of the supporting column according to the invention.

#### Description of the preferred embodiments

For the sake of a better illustration the different Figures are shown schematically and on different scales.

15 In all Figures equal parts are indicated by the same numeral references.

Reference is first made to Fig. 1 in which 1 denotes the column according to the invention for supporting in a rotatable way sanitary fittings, in the shown example a wash-basin<sup>2</sup>, a bidet 3 and a WC  
20 bowl 4. The numeral 5 denotes a possibly provided shower plate which is placed on the room floor 6. A concealing case extending for example up to the ceiling 8 is denoted by 7 and 9 indicates a possible boiler for warm water. For completion purposes 10 denotes a bracket and 11 a mirror.

25 The supporting column 1 allowing the rotation in the horizontal plane of the single sanitary fittings from the rest position (parallel to the wall 12 side column 1, Figures 8a – 8d) in the use position (in the example rotated for 90°) substantially presents a configuration formed by fixed rings and interposed rotatable rings as shown and  
30 disclosed in the following.

The column 1 consists of a supporting case 13 comprising a plurality of rings 14, which are superimposed at a distance from

each other and secured together by means of a plurality of internal vertical sections 15 which substantially extend along the height of said column 1 and form with the lower end thereof supporting legs 16 which may be possibly offset in order to avoid impediments of the rotation movements of the movable parts, wherein said legs end for example with foot or in a base which may be secured to the room floor by means of, for example, known pegs.

Between the fixed rings 14 are placed rotatable rings 17 supporting the sanitary fittings, wherein for a stable support one or more sanitary fittings may be supported by more rotatable rings 17 which are connected together by supporting brackets 18 of the associated sanitary fitting. In the shown example the wash-basin 2 and the bidet 3 are supported by two rotatable rings 17, respectively, whereas the WC bowl 4 is supported by a single rotatable ring 17.

The support of the rotatable rings 17 between the fixed rings 14 takes place by means of rolling means formed, in the shown example, by a plurality of pulley-like wheels 19 which are idle supported on the fixed rings 14, and more precisely projecting outside from the latter and engaged between two adjacent rotatable rings, respectively, wherein the wheels of the top and lower rings 14 obviously engage only the adjacent rotatable ring 17. On each fixed rings are provided, for example, four wheels 19 offset from each other for 90°.

The rotation of each sanitary fitting takes place, in the shown example, by means of an electric motor 20 which is secured to the top fixed ring 14 and the shaft 21 of said motor (Fig. 4) extends vertically downwards as far as the associated rotatable ring 17 and presents at its free end a gear-wheel 22 engaged with a toothed sector 23 secured to said rotatable ring 17. For avoiding an expensive working for obtaining said toothed sector 23 the latter may be substituted by a piece of a bicycle chain in which is engaged said gear-wheel 22.

Said shaft 22 is advantageously guided in a guiding sleeve 24 secured to the top fixed ring 14 and is further guided by one or more guiding rings 25 secured to fixed rings 14. The toothed gearing 20 of the motor 20 is denoted by 26. The end-positions for  
5 obtaining a rotation of 90° of the rotatable rings 17 can be realized for example by using known, not illustrated, limit switches cooperating between a fixed and an therewith associated rotatable ring.

As clearly inferable from Fig.6, said wheels 19 have a pulley-like  
10 conformation and the edges of the rotatable rings 17 present a corresponding rounded shape.

According to the present invention the column 1 can be advantageously installed on a shower plate 5, the drain of which is denoted by 27. said shower plate can have a conformation at will,  
15 for example it can be formed by a known PVC sheet with built-in drain.

The legs 16 supporting said column 1 as well as the, not shown, possible base of the latter may be formed at will, for example in function of the chosen shower plate 5 or in function of the  
20 installation in a new building or in a building to be modified. The exhaust pipes of the sanitary fittings or plumbings are placed inside the column 1 and guided outside through the floor as known.

In order to reduce the cross section of the exhaust pipe or plumbing of the WC bowl 4 according to the present invention in said column  
25 1 is provided a triturating device 28. According to the invention, as shown in Fig. 7, the triturating wheel 28A is housed in a perforated box 29 and is driven by a vertical shaft 30 which is connected with an electric motor 31 (Fig. 1) supported, for example, by the fixed top ring 14 of said column 1. Said perforated box 29 is housed in a  
30 bucket-like case 32 formed, for example, by a rotatable body 33 which receives the exhaust pipes of the wash-basin, the bidet and the WC bowl, and by a fixed bottom 34 receiving the exhaust pipe

of the shower plate. In particular, the exhaust pipe of the wash-basin, for example in the form of a flexible hose, is denoted by 35, the exhaust pipe of the WC bowl is denoted by 36, the exhaust pipe of the bidet is denoted by 37 and the exhaust pipe of the shower drain is denoted by 38.

The body 33 of said bucket-like box 32 is rotatable in order to freely follow the rotation of the exhaust pipes or hoses of said bidet and WC bowl. The numeral reference 39 denotes a control panel or button strip inserted in the electric circuit controlling the electric motors for the rotation of said sanitary fittings and the triturating wheel as well as of a possible, not illustrated, fan for the air ventilation.

In Fig. 10 may be seen the cold water delivery 41 coming from the floor and ending in the collector 42 from which start the hoses 42a directed to the wash-basin, the bidet, the flushing box 43 and, if provided, to the shower handset denoted by 44, respectively.

The warm water pipe 45 coming from the boiler 9 ends in the collector 46 the outlet pipes 46a of which are directed to the wash-basin, the bidet and, if provided, the shower, respectively.

The concealing case 7 allows a direct access to the provided plants or circuits and plumbing and facilitate, therefore, the maintaining thereof.

Reference is now made to Fig. 11 from which is inferable that said wheels 19 supported by the fixed rings 14 and allowing the rotation of said rotatable rings 17 are substituted by respectively a couple of wheels 19a and 19b which are engaged with a fixed ring 14 and a rotatable ring 17, respectively. With this solution the movements of the sanitary fittings are easier and more uniform.

The invention also provides, if required, the installation of a known air ventilation.

### Working

The working of the sanitary fitting assembly is as follows:

In the rest position the WC bowl 4 and the bidet 3 will be positioned parallel to the wall 12 column side as they for dimensions reasons can not be positioned on the same side whereas  
5 the wash-basin 2 will be positioned in a rest position which may be chosen above the bidet 3 or WC bowl 4 because said wash-basin is placed in a higher position than said bidet and WC bowl, wherein in the shown example is illustrated the rest position of the wash-basin 2 above the WC bowl 4.

10 For the use of a respective sanitary fitting will be pushed the corresponding button which will cause the rotation of the wished sanitary fitting in the use position. The use of the other sanitary fittings will take place after rotatable repositioning of the just used sanitary fitting and subsequent rotation of the needed sanitary  
15 fitting from the rest position in the use position by pushing the corresponding switch.

By rotating all rotatable sanitary fittings in their rest position will be possible the use of a shower 5, if provided. However, it is always allowed the access to handicapped people on a perambulator, too.

20 According to the invention the proposed disposition of said sanitary fittings can be installed as an assembly in a room in which will be later erected the corresponding walls with an access door. The execution of the connecting works for the provided plants and the centralized exhaust pipe can be simplified by providing a step-like  
25 floor raising for housing thereof.

Alternatively said assembly-like disposition of the sanitary fittings can also be preinstalled in an own box to be installed in a room, wherein the erection of walls and only connection works for the connection of the different plants with centralized plumbing are to  
30 be carried out.

In the case of use in superimposed floors of a building the column 1 for the rotatable support of sanitary fittings according to the

invention can advantageously be placed in a superimposed position, as shown in fig. 9, which permits to reduce the installation works and costs.

In case of lacks of electric power the sanitary fittings can easily be rotated manually.

From the above constructional and functional disclosure, it should be apparent that with the sanitary fitting supporting column and the sanitary fitting assembly according to the present invention it is possible to efficiently achieve the above mentioned aim and to obtain the mentioned advantages.

#### Further embodiments

In practicing the invention, those skilled in the art could propose different modification and variants as, for example, suggest the use of only two rotatable sanitary fittings, a sanitary fittings rotation smaller than 90°, a different number of said supporting and guiding wheels 19, or 19a and 19b supported by the revolving rings 17, substitute said supporting and guiding wheels with other rolling means as toothed crowns, varying the number of the fixed and the revolving rings, the use of different metals and alloys for the construction of the column, and so on without departing from the scope of the invention.

25

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### Claims

1. A rotating column for supporting sanitary fittings **characterized** in that it comprises:
- 5 - a supporting cage consisting of a plurality of fixed rings which are superimposed with a distance from each other and secured to inside supporting vertical sections,
  - a plurality of rotating rings which are interposed between said fixed rings and support said sanitary fittings,
  - 10 - a rotating means, for example profiled wheels, which are interposed between adjacent rotating rings and supported outside on said fixed rings, as well as
    - for each sanitary fitting a motor with an associated transmission means for rotating a respective rotating ring, or couple of rotating
    - 15 rings, supporting a sanitary fitting,
    - a triturating means for triturating the solid material delivered by said sanitary fittings being preferably provided.
2. A column according to claim 1, **characterized** in that it
- 20 comprises:
- two rotating rings for supporting a wash-basin,
  - two rotating rings for supporting a bidet, and
  - a rotating ring for supporting a WC bowl.
- 25 3. A column according to claim 1 and 2, **characterized** in that the wheels supporting the rotating rings have the form of a pulley and the circumferential ring edges are correspondingly convexly rounded.
- 30 4. A column according to one or more of the preceding claims, **characterized** in that on each fixed ring is provided a plurality of, for example four, supporting wheels, or couples of supporting

wheels, which are uniformly distributed along the circumference of said fixed rings.

5 5. A column according to claim 1, **characterized** in that said vertical sections form at the bottom thereof supporting legs for said column, wherein in order to possibly not hampering the rotation of the WC discharge pipes one or more legs formed by said vertical sections are offset with respect to the respectively associated vertical section.

10

6. A column according to claim 1, **characterized** in that said triturating means comprises a triturating wheel housed in a perforated box which is in turn housed in a bucket-shaped case receiving the discharged material from the rotating sanitary fittings, wherein the shaft of said triturating wheel extends vertically and is connected to an electric driving motor which is supported on a fixed column ring, wherein further said bucket-shaped case has a rotating body and a fixed bottom, the seal between said latter body and bottom being accomplished for example by means of an O-ring.

20

7. A sanitary fitting assembly for forming a lavatory, **characterized** in that the provided sanitary fittings are horizontally to and fro supported in a rotating manner onto a column having rotating rings according to one or more of the preceding claims 1 to 6, wherein on said column are preferably mounted all the basic sanitary fittings, that is a wash-basin, a WC bowl and a bidet.

25

8. A sanitary fitting assembly according to claim 7, **characterized** in that it further comprises a shower plate, for example formed by a PVC sheet with a built-in drain.

30

9. A sanitary fitting assembly according to claims 7 and 8,

**characterized** in that it comprises a column-shaped case having for example a circular or square cross section adapted to at least partially conceal said rotating column supporting said sanitary fittings and extending up to the room ceiling, wherein said case  
5 houses the collectors of warm and cold water, as well as the pipes or hoses connecting said collectors to the associated sanitary fittings and a flushing box, as well as throughgoing bores for the hoses connected to the shower, and the push button of the flushing box, and so on.

10

10. A sanitary fitting assembly according to claim 9, **characterized** in that said warm water collector has branchings connected to the mixing fittings of the wash-basin, the bidet and, if provided, the shower, respectively whereas the cold water collector has  
15 branchings connected with said mixing fittings of the wash-basin, the bidet, the flushing box of the WC bowl and, if provided, the shower mixing fitting.

11. A sanitary fitting assembly according to one or more of the  
20 claims 7 to 10, **characterized** in that it is installed onto a step-like floor raising, wherein in said floor raising are housed the floor branches of the hydraulic, electric, and possibly the ventilation plant, as well as the centralized exhaust plumbing.

25 12. A sanitary fitting assembly according to one or more of the claims 7 to 10, **characterized** in that it is housed in an own box which can be installed in an house, flat, hotel room or the like.

30 13. Sanitary fitting containing box, **characterized** in that it contain a rotating column supporting sanitary fittings or a sanitary fitting assembly according to one or more of the claims 1 to 10.

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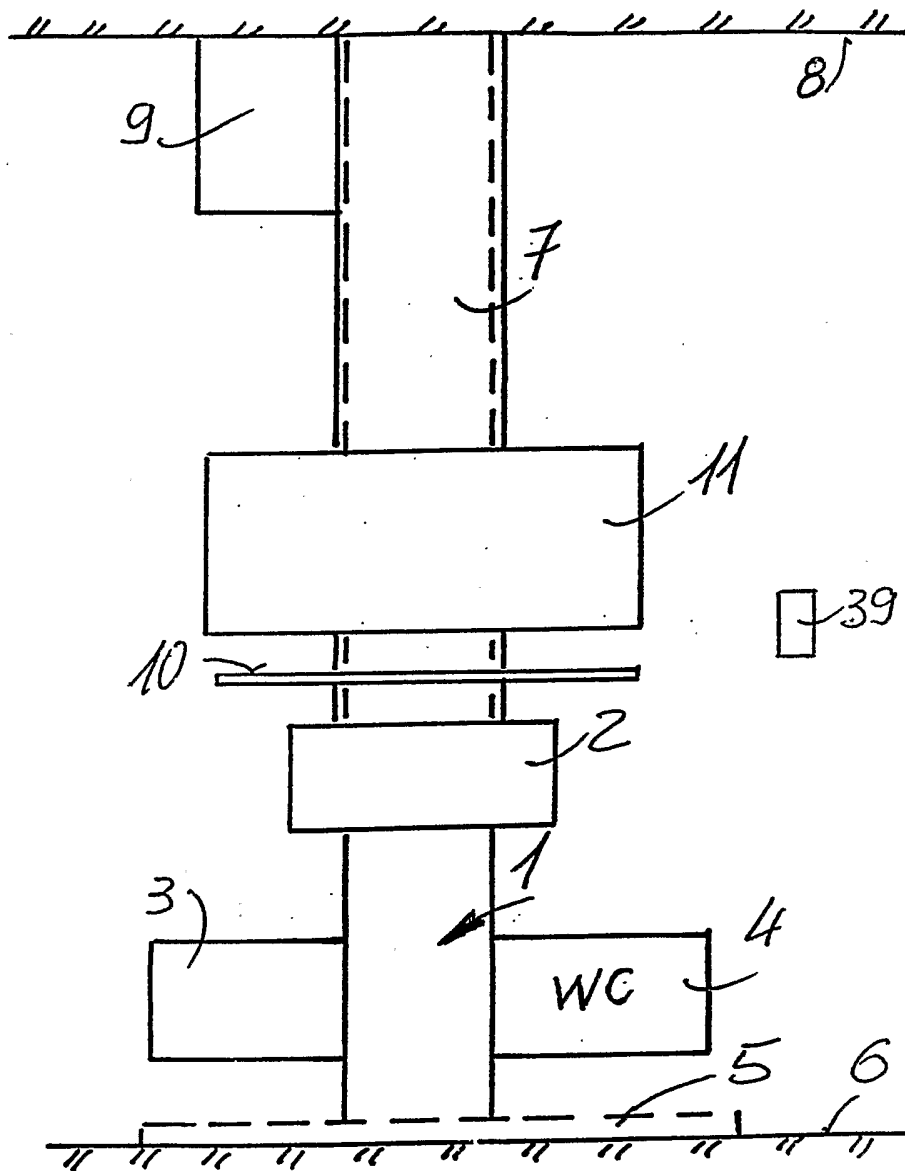


Fig. 1

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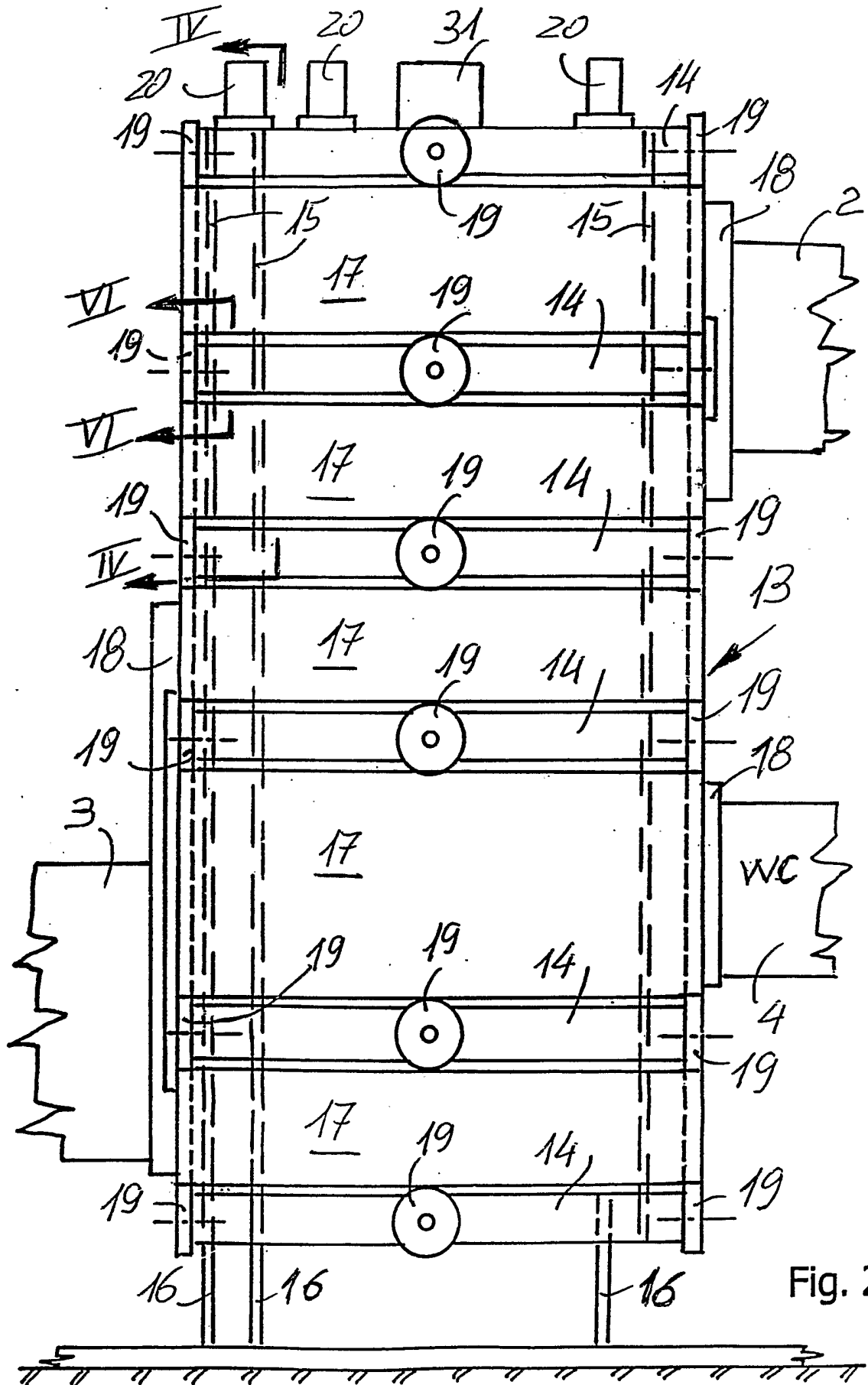


Fig. 2



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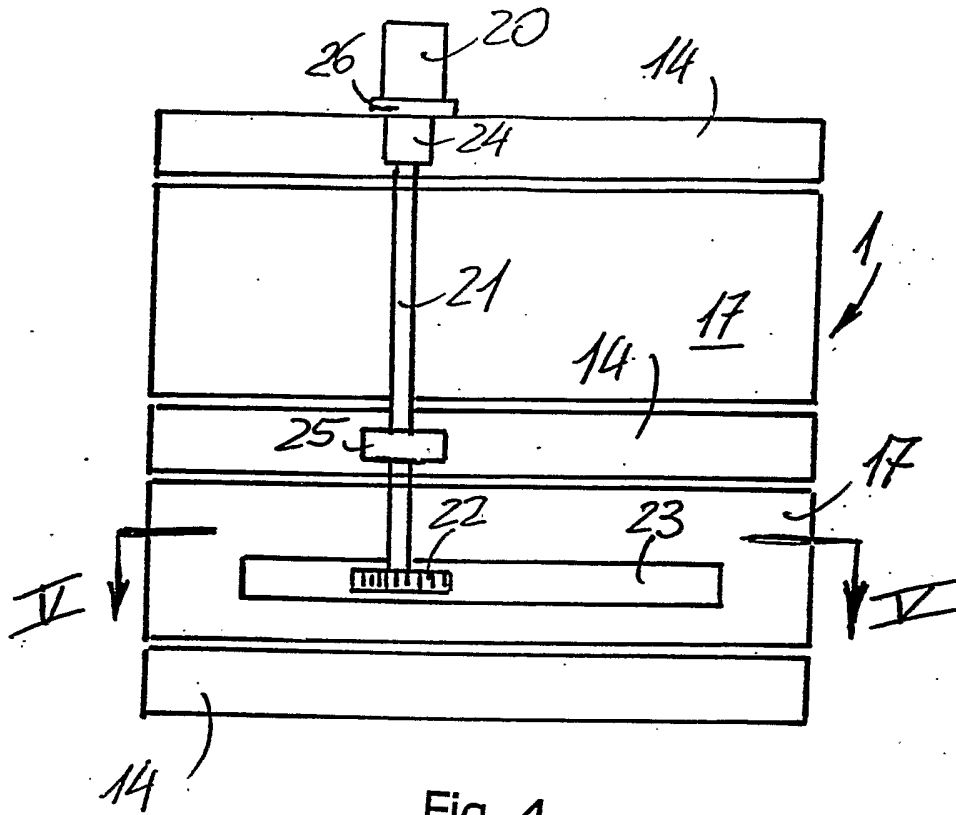


Fig. 4

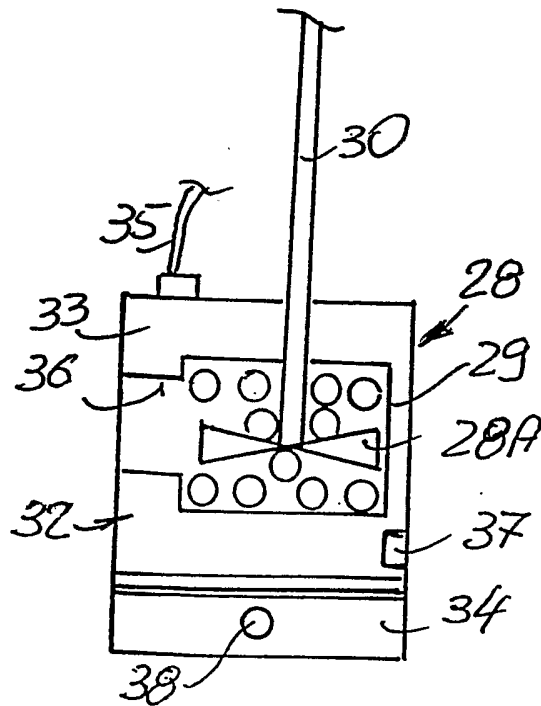


Fig. 7

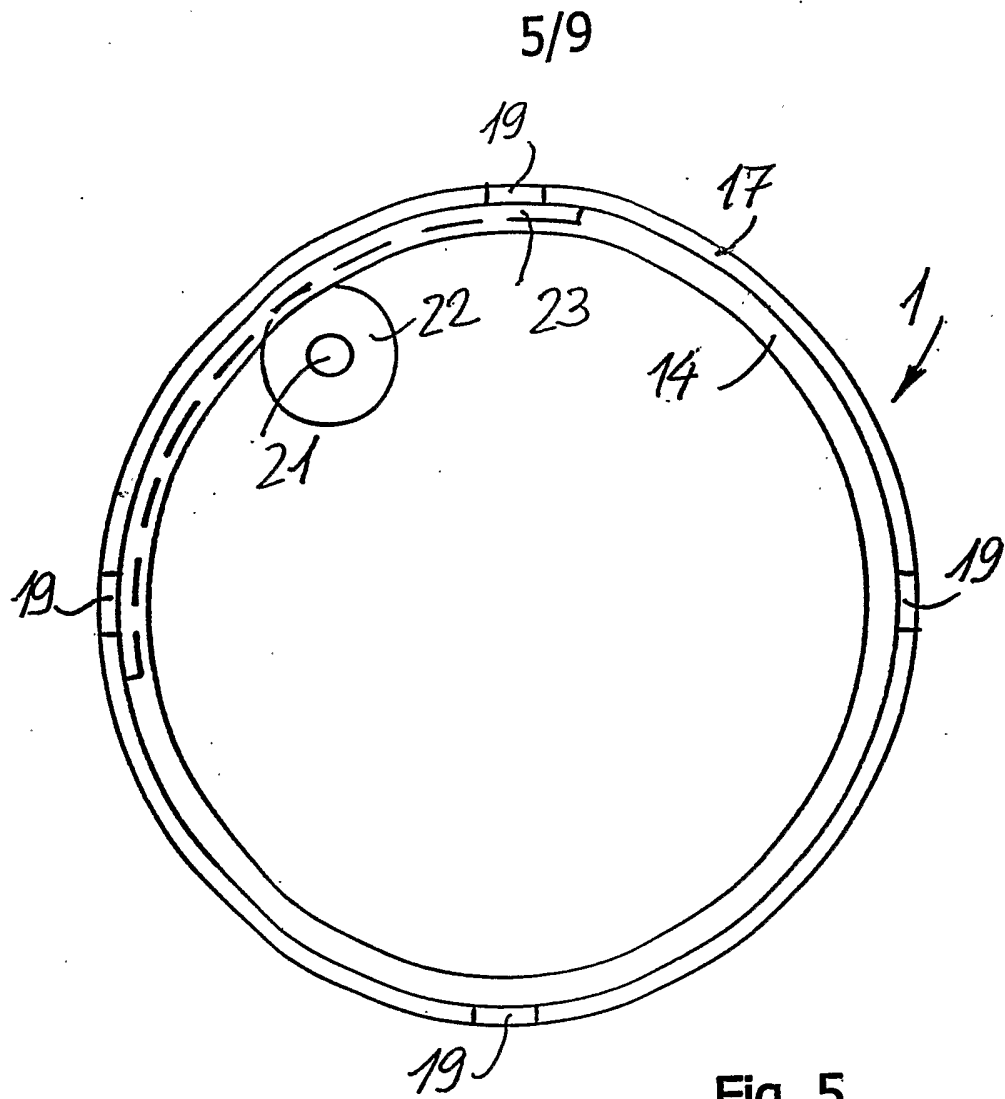


Fig. 5

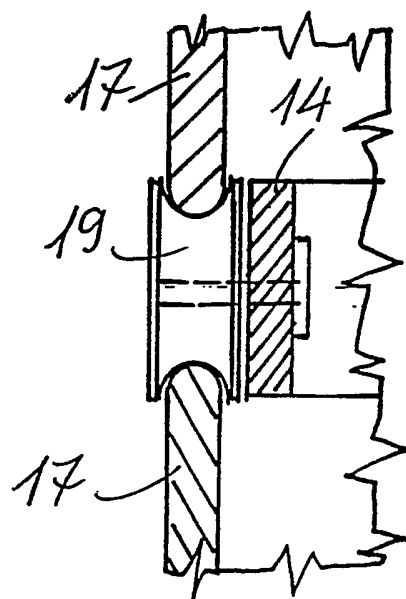


Fig. 6

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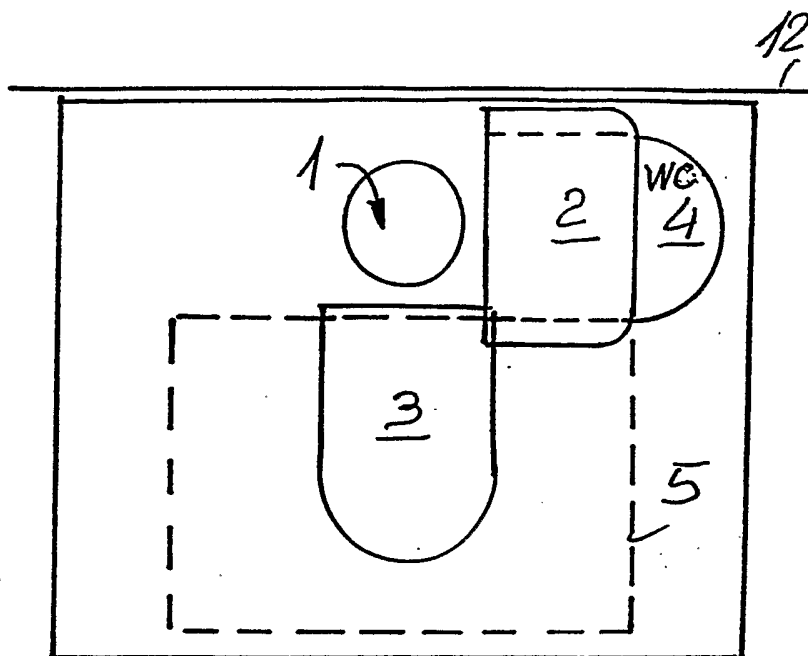


Fig. 8c

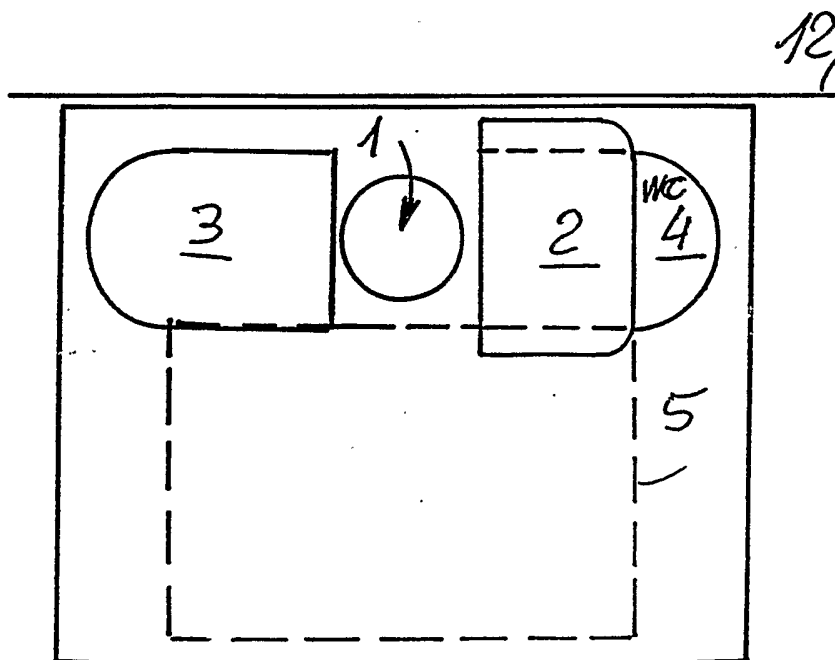


Fig. 8d

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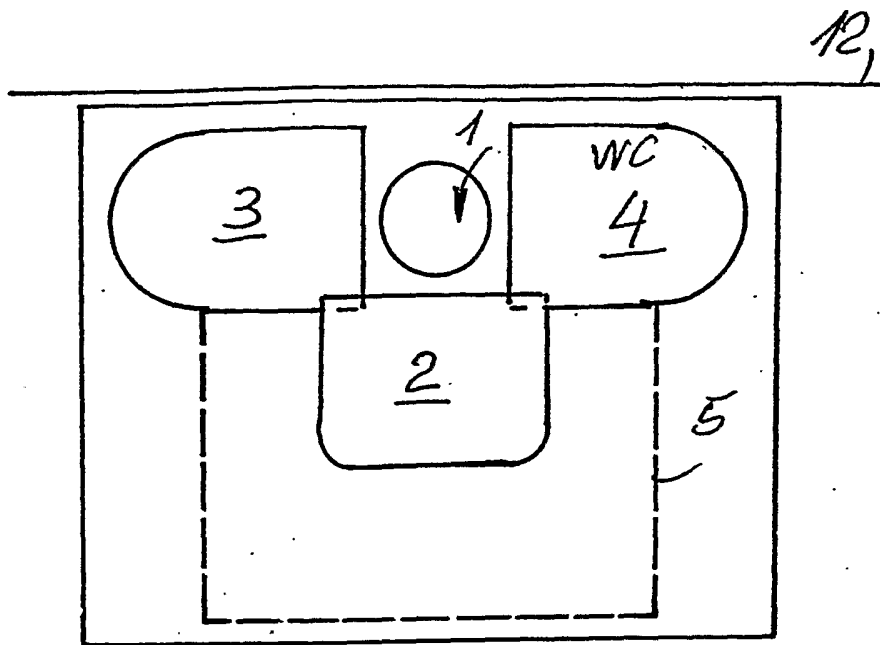


Fig. 8a

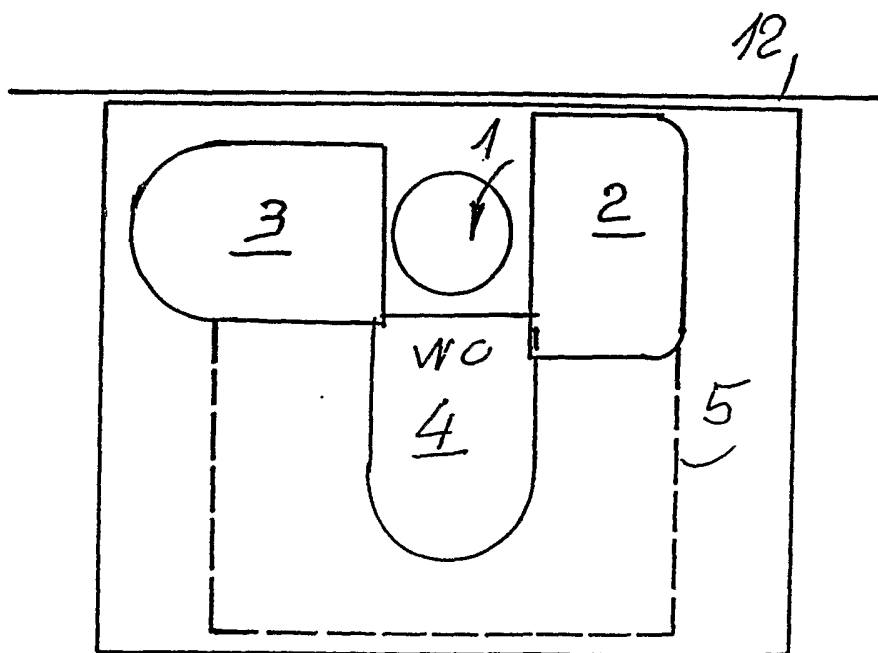


Fig. 8b

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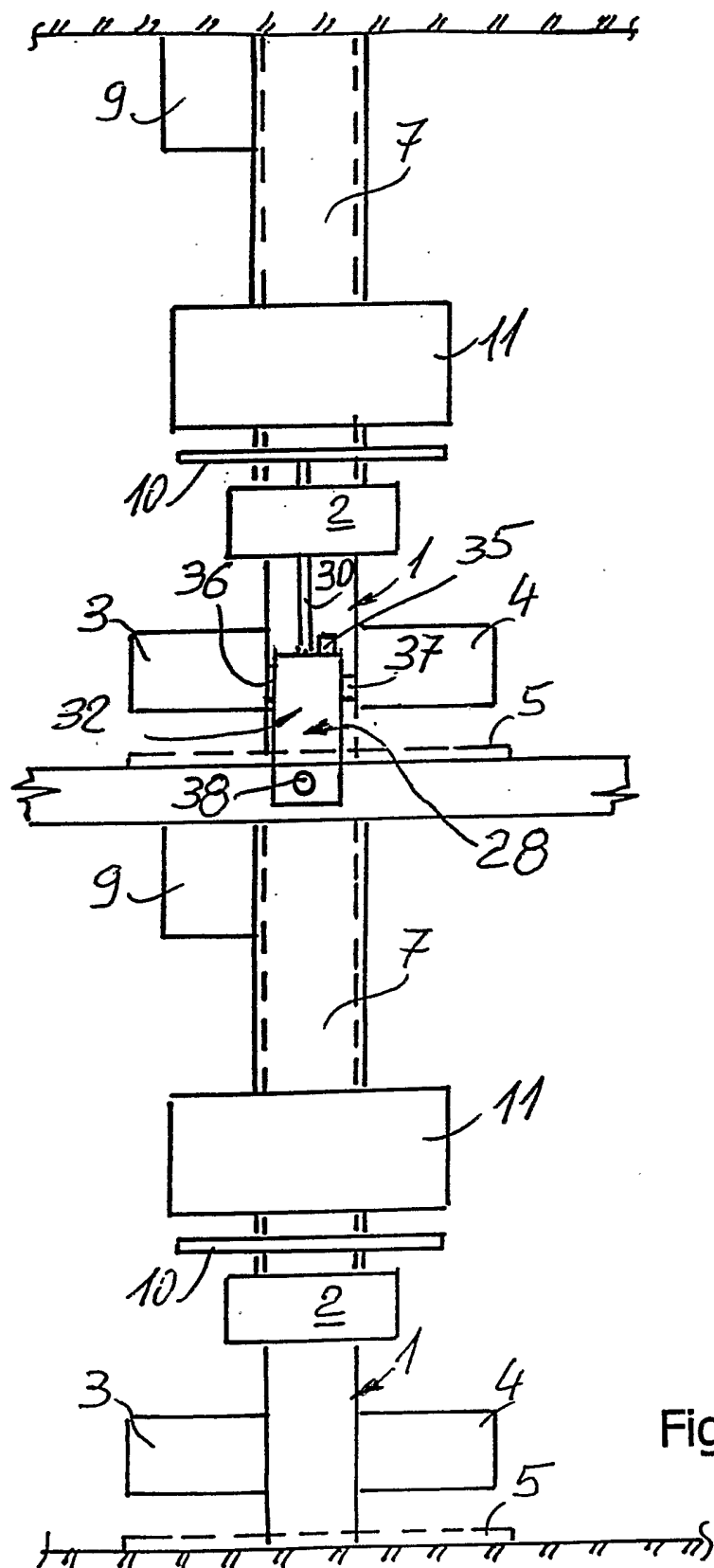


Fig. 9

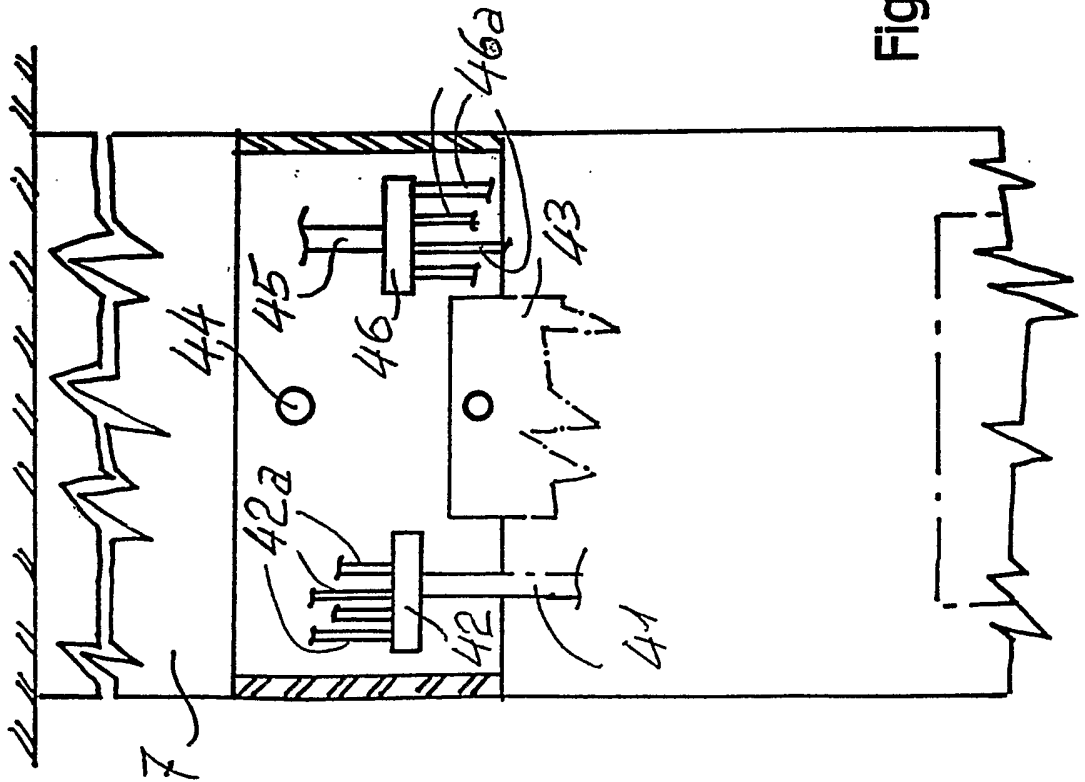


Fig. 10

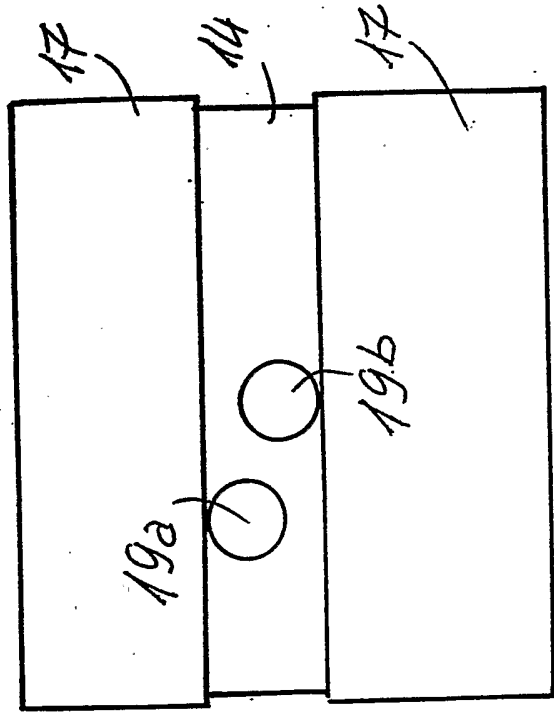


Fig. 11

# INTERNATIONAL SEARCH REPORT

Int. Application No  
PCT/IT2005/000399

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 A47K4/00 E03C1/01

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 A47K E03C

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	CH 573 242 A5 (BUCHER, RENE) 15 March 1976 (1976-03-15)	7-13
A	the whole document	6
X	GB 2 376 183 A (PAUL ANTHONY * HERNON) 11 December 2002 (2002-12-11)	7-11
A	page 2, line 3 - page 14, line 15; figures 1-6	1
X	EP 0 091 340 A (REVEL, FRANCIS) 12 October 1983 (1983-10-12)	7,8,12,13
A	page 2, line 25 - page 3, line 30; figures 3,4,6,7	1
X	DE 298 15 217 U1 (HYMER AG) 30 September 1999 (1999-09-30)	7,8
A	page 2, line 18 - page 7, line 15; figures 2-5	1
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Date of the actual completion of the international search  <b>20 October 2005</b>	Date of mailing of the international search report  <b>07/11/2005</b>
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <b>Fajarnés Jessen, A</b>
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Intern al Application No  
PCT/ LI 2005/000399

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