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(54) Means for moving a cover of a waste collecting container

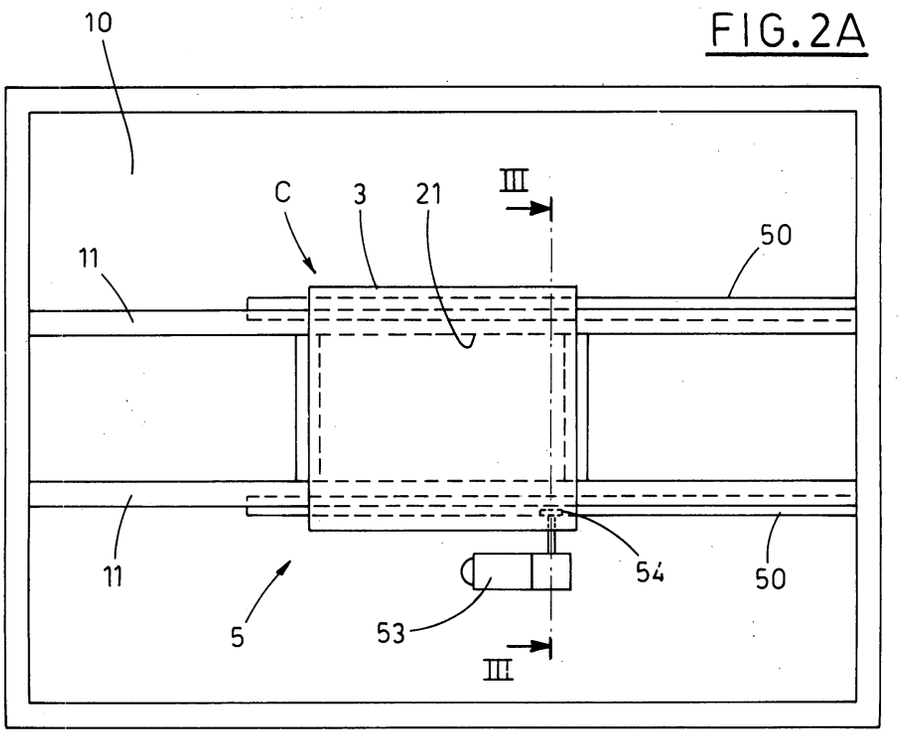
(57) A container (1), embedded in the ground, has a collecting turret (2), connected to the lid (10) of the container (1), and a cover (3), situated below the turret (2) and moving between a close position (C) and an open position (A), in which the turret (2) is respectively separated and communicates with the inner space (1a) of the container (1).

The means (5) for moving the cover (3) include a pair of straight guides (50), arranged horizontal and parallel to each other, connected to the lid (10).

Each of the guides (50) has a profile groove (51), which is made therein longitudinally and which contains, supports and guides a piece of chain (52), made integral with the cover (3).

Motor means (53) have a pinion (54), which engages with one of the pieces of chain (52) in order to cause horizontal motion of the cover (3) from its close position (C) to the open position (A) and vice-versa.

FIG.2A



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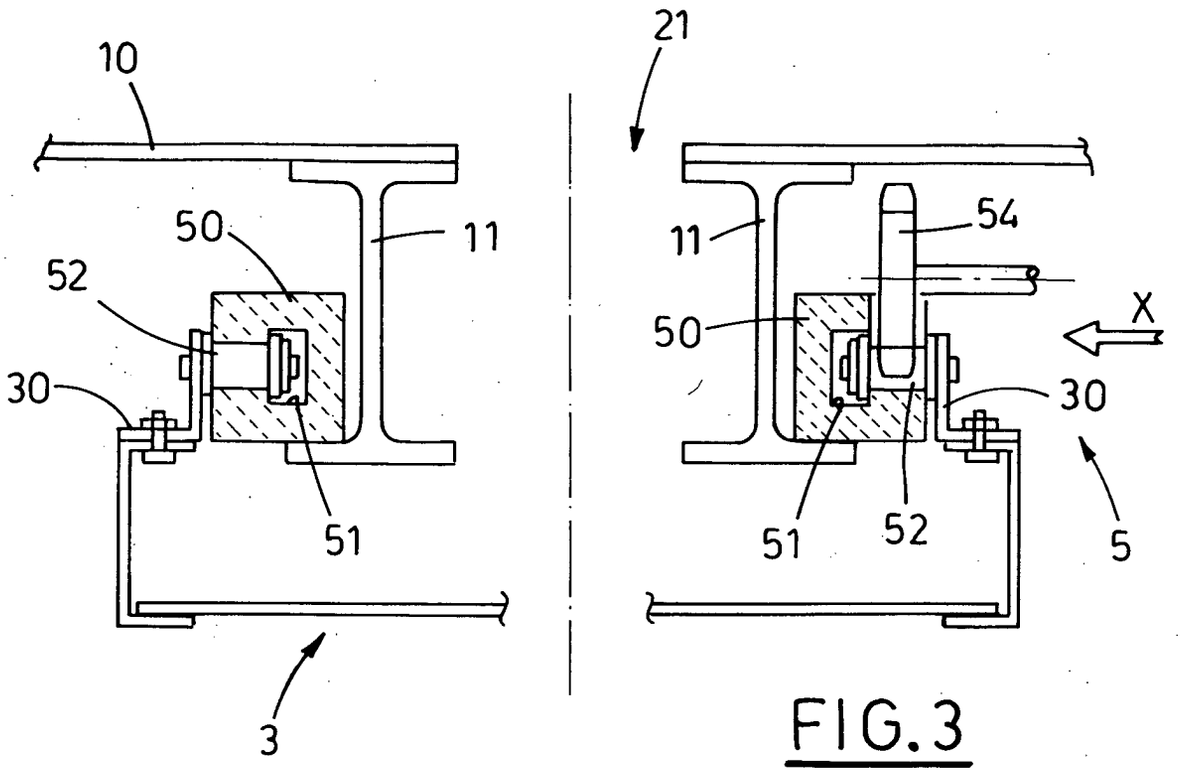


FIG.3

Description

[0001] The present invention relates to apparatuses for collecting solid urban wastes, with particular reference to a collecting container embedded in the ground with an outer discharging turret, into which the users introduce the wastes bags.

[0002] The containers are housed in suitable seats embedded in the ground, so as the upper cover of the container is flush with the street surface.

[0003] The container is connected to lifting means, which extract it from the embedded seat, in order to empty it, discharging the wastes onto a suitably equipped truck.

[0004] According to a first known solution, the cover is made integral with the container and thus, it is lifted together with it during the above mentioned lifting operations.

[0005] According to another known solution, the cover is hinged to a framework anchored to the ground and it must be opened before the container is lifted. In this case, the container is opened from the top.

[0006] Both described solutions include suitable measures, such as seals and similar, to avoid the leaking of bad smells from the container.

[0007] For this purpose a separation cover is situated between the inner space of the turret and the one of the container.

[0008] The separation cover is normally closed, and when a user introduces the wastes bag, it lies on the cover.

[0009] When this operation is completed, after the turret door is closed, the cover is opened, in order to discharge the bag into the container below; after a short time, the cover is closed again.

[0010] According to a preferred constructive solution, the cover is supported laterally by supporting and guiding means, which allow the cover to translate horizontally, substantially parallel to the cover, between extreme positions of aperture and closure.

[0011] This solution ensures big strength, because the cover is always solidly supported.

[0012] However, due to the "not valuable" nature of the application and the necessity to contain the costs and the working conditions, the supporting and guiding means of known solutions are usually rather coarse from the mechanical point of view.

[0013] Consequently, the cover moves with difficulty and low precision, and use of motor means with high speed reduction ratio is unavoidable, so as to obtain strong pushes and slow movements, which is in contrast with the need to reduce the time of the cover being opern.

[0014] Moreover, the gradual accumulation of dirt and waste on the above means, as well as the missing lubricating and maintenance, worsen the operation thereof and, at worst, block them.

[0015] The commercial components having sophisticated mechanisms, e.g. using balls, rolls or the like, guided on very precise paths with very reduced clearance, are not considered suitable, not only because of the costs, but also because they require constant cleaning and regular maintenance, which are both often lacking in this case.

[0016] Therefore, the object of the present invention is to propose means for moving the cover, which ensure high guiding precision and excellent sliding, so that the cover can be opened and closed rapidly.

[0017] Another object is to propose moving means, which are well protected against the wastes and dirt, and which can function in an optimal way for long periods, also without lubricating and/or maintenance operations.

[0018] A further object is to propose cover moving means, which are simple to manufacture and particularly cheap, in accordance with the general standard of the whole construction.

[0019] The characteristic features of the invention will be described in detail in the following, in accordance with the contents of the claims and with the help of the enclosed figures, in which:

- Figure 1 is a partial vertical section view of a container with a relevant discharging turret;
- Figures 2A, 2B are views from the bottom, taken along the line II-II of Figure 1, of the cover of the container with a lid associated thereto, closed and open, respectively;
- Figure 3 is an enlarged section view, taken along III-III of Figure 2A;
- Figure 4 is a view according to the arrow X of Figure 3.

[0020] With reference to the above figures, the reference numeral 1 indicates an embedded waste collecting container of known type, for collection of solid urban wastes.

[0021] The upper lid 10 of the container 1 is set to be flush with the ground level T and has a collecting turret 2, likewise substantially known, which extends upward up to a prefixed height, so as to make it easy for a user to open a door 20 and to introduce a bag of wastes R into the turret 2.

[0022] The lid 10 can be either integral with the container 1 or hinged to a framework fastened to the ground, in accordance with one of the techniques mentioned in the introductory note.

[0023] A cover 3, of known type, is connected to the lower surface of the lid 10 and moves between two positions, A, C, respectively for opening and closing the lower aperture 21 of the turret 2, through which the inner space 2a of the latter communicates with the inner space la of the container 1.

[0024] According to the invention, the cover 3 is sup-

ported slidingly by means 5, which include a pair of straight guides 50, fastened, arranged horizontal and parallel to each other, to the outer sides of longitudinal bars 11, in a symmetrical position, at the sides of the lower aperture 21 of the turret 2.

[0025] The guides 50 are preferably made of a self-lubricating synthetic material having high hardness, low coefficient of friction, e.g. polyzene or the like.

[0026] The guides 50 have profile grooves 51, made therein longitudinally and open along one side of the relevant guide 50.

[0027] According to the symmetric mounting of the guides 50, as shown in Figure 3, the open sides of the latter are turned outwards, with respect to the lower opening 21.

[0028] Each groove 51 contains, supports and guides a piece of chain 52, which has brackets 30, fastened at the side of the links, which remain outer with respect to the guide 50.

[0029] A corresponding side of the cover 3 is made integral with the brackets 30.

[0030] The means 5 for moving the cover 3 include also motor means 53, supported by the lid 10.

[0031] A pinion 54 is keyed onto the outlet shaft of the motor means 5.

[0032] The pinion 54 is positioned, with its axis horizontal, in a region corresponding to a break 510 in the guide 50 and engages with the relative piece of chain 52.

[0033] Thus, rotation of the pinion 54 in either direction, determines a corresponding horizontal translation of the cover 3 between the above mentioned close position C (Figure 2A) and open position A (Figure 2B) and vice-versa, when a bag of waste R is introduced into the turret 2, as already said in the introductory note.

[0034] In the described situation, the pinion 54 is situated beside the cover 3, but the regular movement of the latter is not damaged by the asymmetric application of the force, thanks to a considerable length of the pieces of chain 52, greater than the length of the cover 3.

[0035] Anyway, if it is needed, it is possible to use two pinions 54, connected by a transmission shaft and engaged with the relative pieces of chain 52.

[0036] One of the advantages of the proposed invention, resulting obvious from the above description, lies in the fact that it allows high guiding precision and excellent sliding of the cover movement, with simple and cheap elements.

[0037] It is to be pointed out that the proposed means are protected against wastes and dirt.

[0038] Actually, as it is well seen in Figure 3, the guides 50 are protected by the longitudinal members 11, with respect to the lower aperture 21 of the turret 2, and the open sides of the grooves 51 are turned outwards and most of them is closed by the links of the chain 52, therefore it is nearly impossible for undesired material to enter and block the regular sliding of the pieces of chain 52 in the respective grooves 51.

[0039] Another advantage results from the fact that the correct sliding, between the pieces of chain and the guides of synthetic material made of the above mentioned type, is ensured for long periods, also without lubricating.

[0040] The above advantages allow to open and close the cover rapidly, thus reducing the time, during which bad smells can go out from the inner space of the container.

Claims

1. Means for moving a cover of a container, for collecting waste, the latter having a collecting turret (2) connected to the lid (10) of said container (1), and with said cover (3) situated below said turret (2) and moving between a close position (C), in which the turret (2) is separated from the inner space of said container (1) and an open position (A), in which the turret (2) is in communication with the inner space of said container (1),, with said means (5) **characterized in that** they include:

   at least one pair of straight guides (50), arranged horizontal and parallel to each other, connected to said lid (10), with each of said guides (50) having a profile groove (51), made therein longitudinally, which contains, supports and guides a piece of chain (52), integral with said cover (3);

   motor means (53) having at least one pinion (54), which engages with one of said pieces of chain (52) to cause horizontal motion of said cover (3) from said close position (C) to the open position (A) and vice-versa.

2. Means, as claimed in claim 1, **characterized in that** said guides (50) are made of a self-lubricating material.

3. Means, as claimed in claim 1 or 2, **characterized in that** said guides (50) are made of a synthetic material.

4. Means, as claimed in claim 1, **characterized in that** said guides (50) are fastened to the outer sides of longitudinal bars (11), made in said lid (10) in a symmetrical position, at the sides of the lower aperture (21), through which said turret (2) communicates with said inner space (1a) of the container (1).

5. Means, as claimed in claim 1, **characterized in that** said guides (50) are arranged symmetrical, so that the profile grooves (51) have their openings made in the sides of the respective guide (50), which are turned toward the outside of the cover (3).

6. Means, as claimed in claim 1, **characterized in that** said guides (50) have at least one break (510), so that said pinion (54) engage with the piece of chain (52).

7. Means, as claimed in claim 1, **characterized in that** they include two pinions (54), connected by a transmission shaft, with each of the pinions engaged with one of said pieces of chain (52).

FIG.1

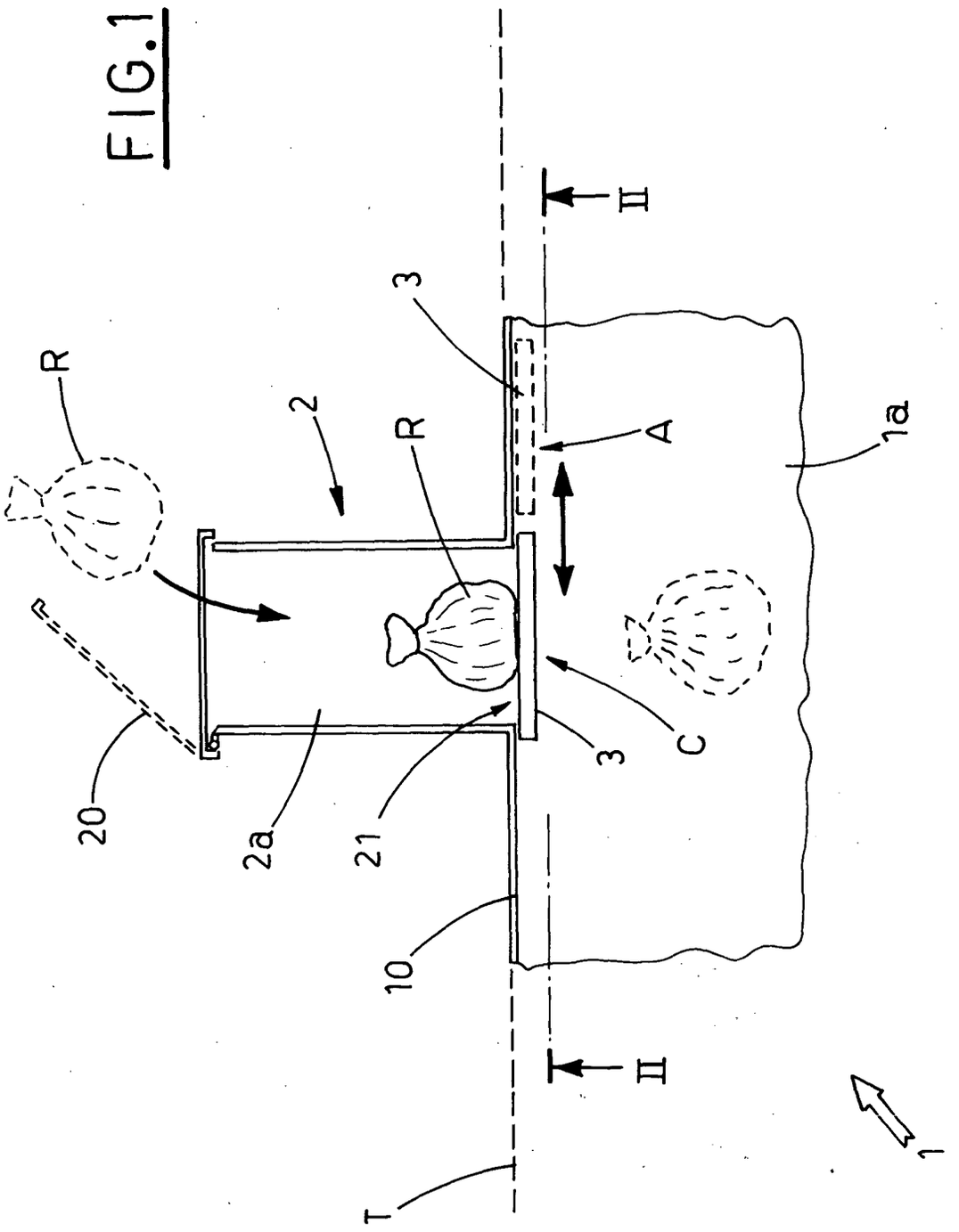


FIG.2A

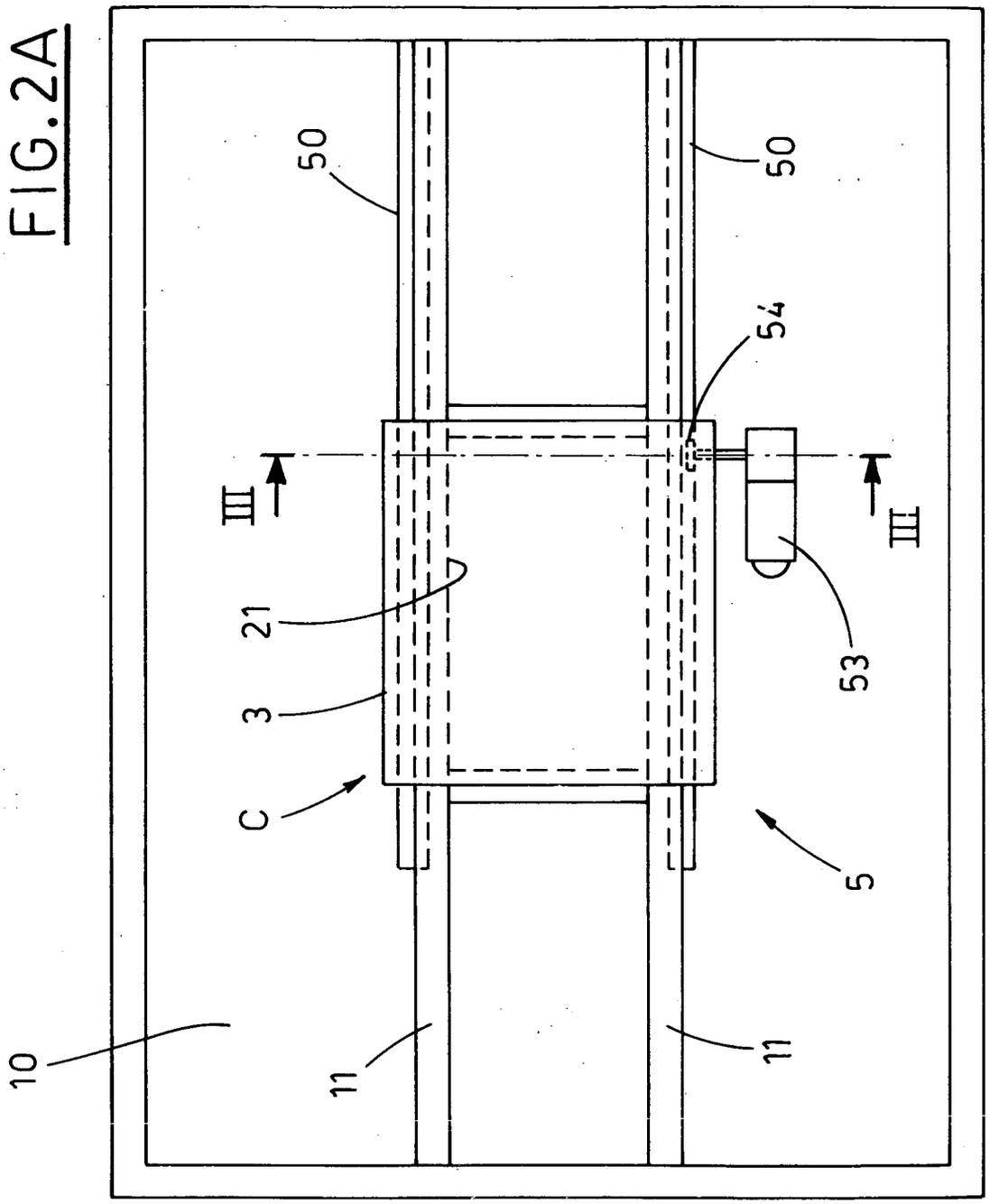
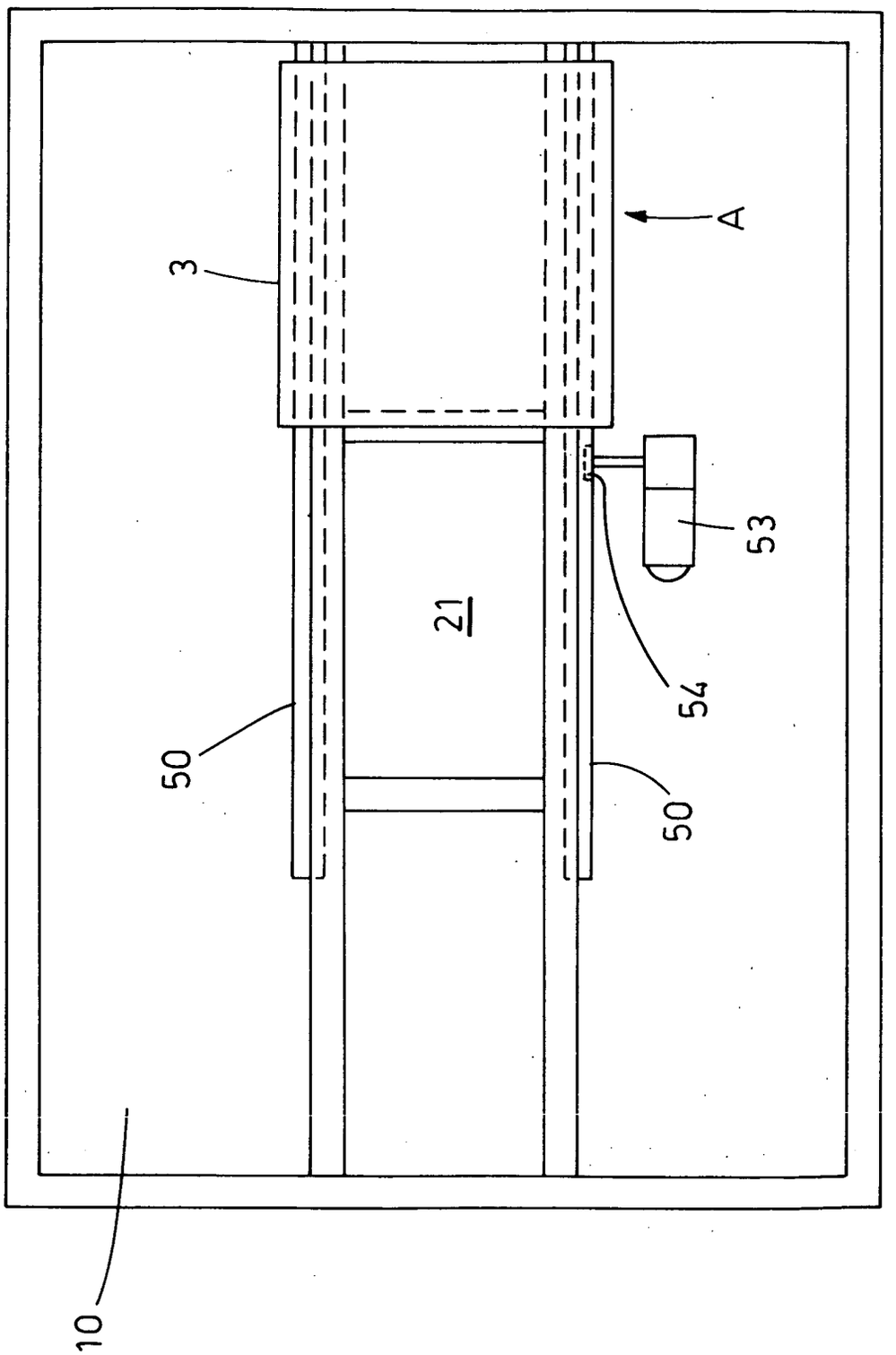


FIG.2B



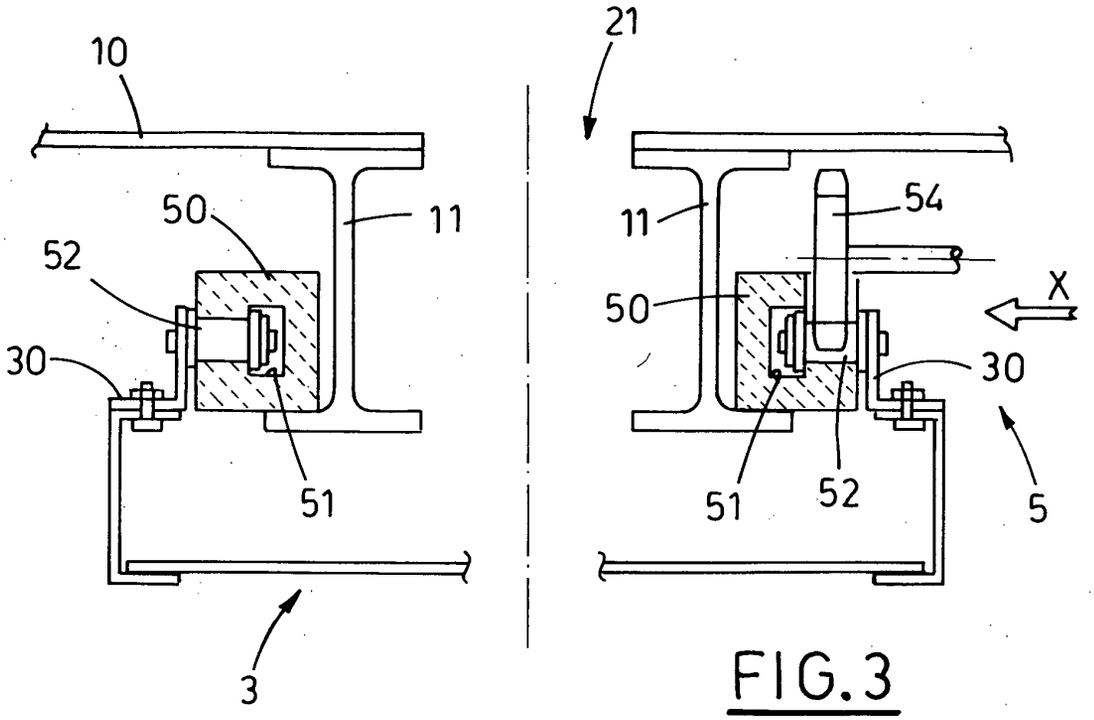


FIG.3

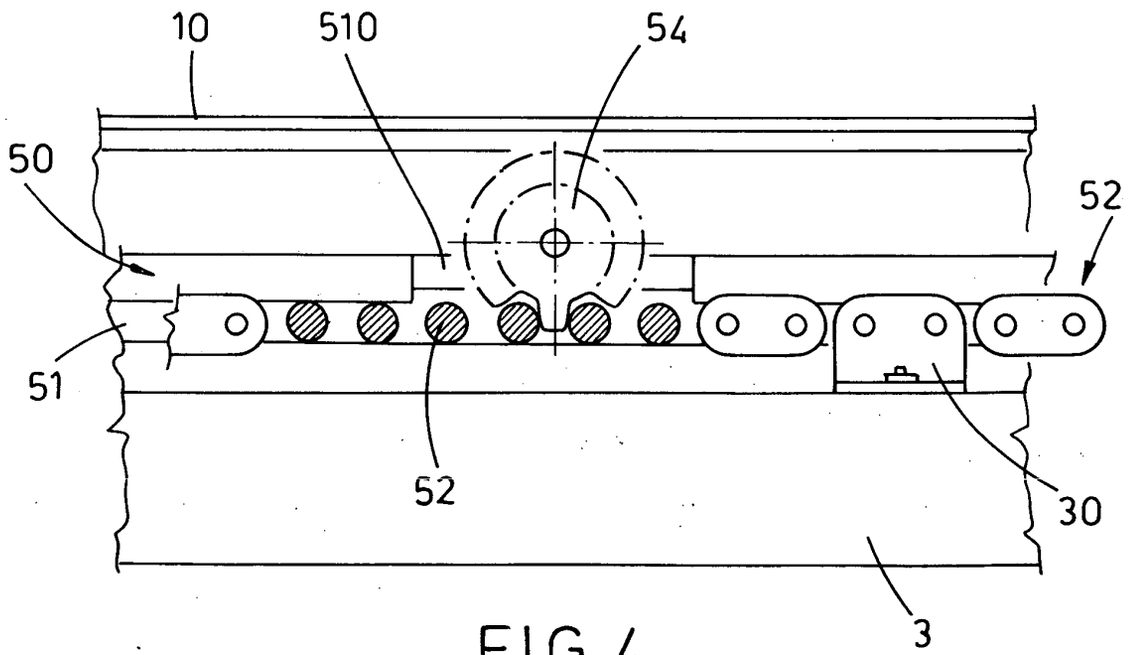


FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 05 00 3852

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	EP 1 061 010 A (ECOGEST SRL) 20 December 2000 (2000-12-20) * the whole document * -----	1	B65F1/10

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 April 2005	Smolders, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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15-04-2005

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