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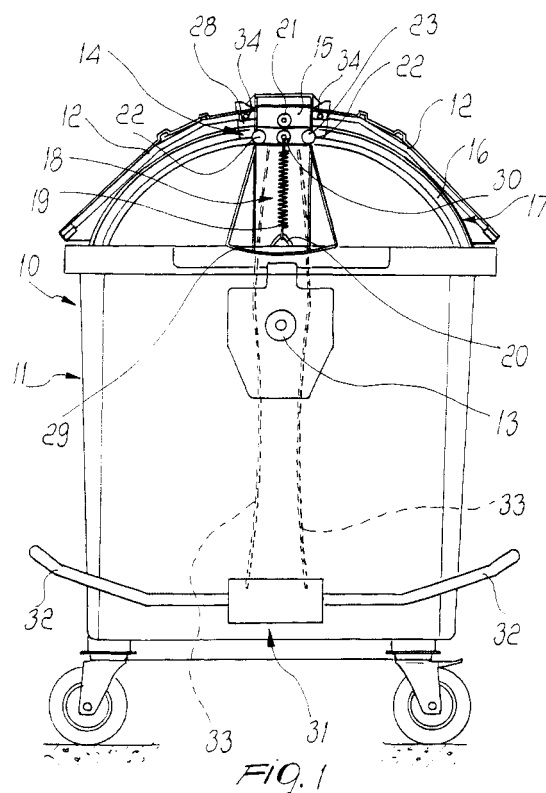
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(54) **Wheeled bin for collecting municipal solid waste**

(57) A wheeled bin (10) for collecting municipal solid waste comprises a hollow containment body (11) which is closed by at least two openable hinged lids (12) for loading and unloading waste and is laterally provided with coaxial fixed pins (13) to be engaged for lifting and emptying by waste removal equipment, the bin further comprising, for each engagement side, a device (14) for opening/closing the at least two lids which is constituted by a wheeled slider (15) which can slide along an arc-shaped guide (16) formed in a supporting structure (17) which is fixed in an upward region to the lateral engagement edge of the body (11) of the wheeled bin; the at least two lids (12) are pivoted to the slider (15) on mutually opposite sides, the slider (15) is connected to an elastic element (18) whose other end is connected to the upward region of the body (11) of the wheeled bin (10), in an upper position with respect to the corresponding engagement pin (13).



Description

[0001] The present invention relates to a wheeled bin particularly for municipal solid waste.

[0002] It is known that the attention dedicated to automating and simplifying the waste disposal process is currently on the rise.

[0003] In particular, an efficient waste disposal process considerably reduces the costs incurred by the user and by public administrations.

[0004] In particular, research in automation and simplification of this process is increasingly orientated toward integration in equipment involved in waste disposal.

[0005] One of the main pieces of equipment used by users and by operators is certainly the wheeled bin, many of which are distributed on the streets.

[0006] In particular, the wheeled bins must be easily usable by users, but they must equally well integrate with other pieces of equipment meant to remove waste and convey it to landfills or incinerators.

[0007] In particular, said equipment is constituted in most cases by vehicles provided with variously structured and equipped containers which in any case have lifting arms which are adapted to tip the bin in order to unload its contents.

[0008] In particular, notwithstanding the variety of constructive shapes, currently commercially available bins with two-sided loading comprise a hollow containment body which is closed by at least two hinged openable lids for loading and unloading the waste and is laterally provided with mutually coaxial and fixed pins for engagement and lifting by waste removal equipment in order to empty said bins.

[0009] Although the wheeled bins adequately perform their function, they are not free from drawbacks.

[0010] In particular, in addition to being often awkward for users, they are difficult to integrate with waste removal equipment.

[0011] More specifically, handling by means of rear-loading trucks, which are the most widely used type, is impossible because the structures meant to engage said pins interfere with other superstructures or with lid movement devices.

[0012] The aim of the present invention is to provide a wheeled bin for municipal solid waste which solves the above-noted drawbacks of conventional wheeled bins with two-sided loading, particularly by being provided with an engagement region for emptying means which is absolutely free from elements which are not directly related to the emptying operations.

[0013] Within the scope of this aim, an important object of the present invention is to provide a wheeled bin which, while ensuring optimum integration with waste emptying equipment, can be used easily and without risks by users.

[0014] Another object of the present invention is to provide a wheeled bin which can be manufactured in

various types and is therefore flexible for different applications.

[0015] Another object of the present invention is to provide a wheeled bin which can be manufactured at competitive costs with respect to conventional bins and with commercially available technologies.

[0016] This aim, these objects and others which will become apparent hereinafter are achieved by a wheeled bin for municipal solid waste, comprising a hollow containment body which is closed by two openable hinged lids for loading and unloading waste and is laterally provided with mutually coaxial fixed pins for engagement and lifting, for emptying, by waste removal equipment, characterized in that it comprises, for each engagement side, a device for opening/closing said at least two lids which is constituted by a wheeled slider which can slide along an arc-shaped guide which is formed in a supporting structure fixed in an upward region to the lateral engagement edge of the body of the wheeled bin, said at least two lids being pivoted to said slider on mutually opposite sides, said lids being connected, in a downward region, to an elastic element whose other end is connected to the wheeled bin, in an upper axial position with respect to the corresponding engagement pin.

[0017] Further characteristics and advantages of the present invention will become apparent from the following detailed description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a side elevation view of a wheeled bin according to the invention;

Figure 2 is a detail view of the wheeled bin according to the invention;

Figure 3 is a sectional view of a detail of the wheeled bin of Figure 1;

Figure 4 is a perspective view of the detail of Figure 3.

[0018] With particular reference to Figures 1 to 4, a wheeled bin for municipal solid waste, according to the invention, is generally designated by the reference numeral 10.

[0019] The wheeled bin 10 comprises a hollow containment body 11 which is closed, in this case, by two identical hinged openable lids 12 for loading and unloading waste and is laterally provided with mutually coaxial and fixed pins 13 to be engaged and lifted for emptying by waste removal equipment, not shown.

[0020] The wheeled bin 10 comprises, for each engagement side, a device, generally designated by the reference numeral 14, for opening/closing the lids 12; the device 14 is constituted by a wheeled slider 15 which can slide on a corresponding arc-shaped guide 16 formed in a supporting structure 17 which is fixed in an upward region to the lateral edge of the body 11 of the wheeled bin 10.

[0021] The lids 12 are pivoted to the slider 15 on mutually opposite sides and are connected, in a downward region, to an elastic element 18 which in this case is constituted by a helical spring in which one end 19 is connected, in this case by means of a slot or ring 20, to the wheeled bin 10 in an upward axial position with respect to the corresponding engagement pin 13.

[0022] In particular, in this case the slider 15 is provided with a wheel 21 which rolls on the structure 17.

[0023] The slider 19 is further provided with two end portions 22 with corresponding circular ends 23 which are inserted in the guide 16 in order to prevent any derailment of said slider 19.

[0024] In particular, the axes of the end portions 22 and the axis of the wheel 21 are mutually parallel and lie along the vertices of an imaginary triangle.

[0025] The slider 19 is also provided with a section 24 with an internal engagement 25 which is connected to the other end of the elastic element 18.

[0026] The wheeled bin 10 also comprises a supporting cross-member 26, shown in dashed lines in the figures, whose ends are inserted in corresponding box-like elements 27 which are fixed to the corresponding sliders 19.

[0027] The lids 12 are connected to the corresponding sliders 19 by means of corresponding brackets 28 which are fixed thereto.

[0028] Each one of the sliders 19 is provided with a housing 29 for protecting users and operators and is provided with an external movement pin 30.

[0029] The wheeled bin 10 also comprises opening/closure means which are available for operation by the user, generally designated by the reference numeral 31, which are constituted by pedal-operated levers 32 which are connected to respective actuation cables 33 which are in turn connected to corresponding pins 34 fixed to corresponding lids 12.

[0030] In this embodiment, the structure 17 is axially flat in an upward region so as to form a region 35 of stable equilibrium for the corresponding slider 15.

[0031] In practice, operation is as follows: when each one of the sliders is arranged in the corresponding flat region 35 of the supporting structure 17, they are in stable equilibrium, with the lids 12 likewise perfectly rested on the corresponding structures 17 and in a condition which substantially closes access to the body 11 of the wheeled bin 10.

[0032] Users can access the inside of the wheeled bin according to the above-described embodiment simply by acting on the means 31 and more specifically on the levers 32, lifting one of the two lids without moving the sliders 15.

[0033] However, when the operators are removing the waste that is present inside the wheeled bin, the removal equipment can easily and immediately access the pins 13, since the devices 14 are arranged above them and can in no way interfere with the engagement step.

[0034] Moreover, when the wheeled bin 10 is moved

for tipping on whichever side from which it is engaged, the sliders move accordingly, so as to produce an overall translatory motion of the lids 12 and expose one of the sides for accessing the wheeled bin 10.

[0035] In practice it has been observed that the present invention has achieved the intended aim and objects.

[0036] In particular, it should be noted that the wheeled bin according to the invention allows removal of the waste contained therein without interfering with the pins during engagement and is therefore adapted for both lateral-loading and rear-loading vehicles.

[0037] It should also be noted that this solution in no way affects the operating efficiency for users, who can handily access the inside of the wheeled bin without particular difficulty or effort.

[0038] Attention is also drawn to the extreme safety of the wheeled bin according to the invention, since all potentially dangerous devices are enclosed in a protective housing.

[0039] Attention is also drawn to the constructive simplicity of the present invention, which can be manufactured at costs which are certainly competitive with respect to similar devices.

[0040] The present invention is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0041] The technical details may be replaced with other technically equivalent elements.

[0042] The materials and the dimensions may be any according to requirements.

[0043] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

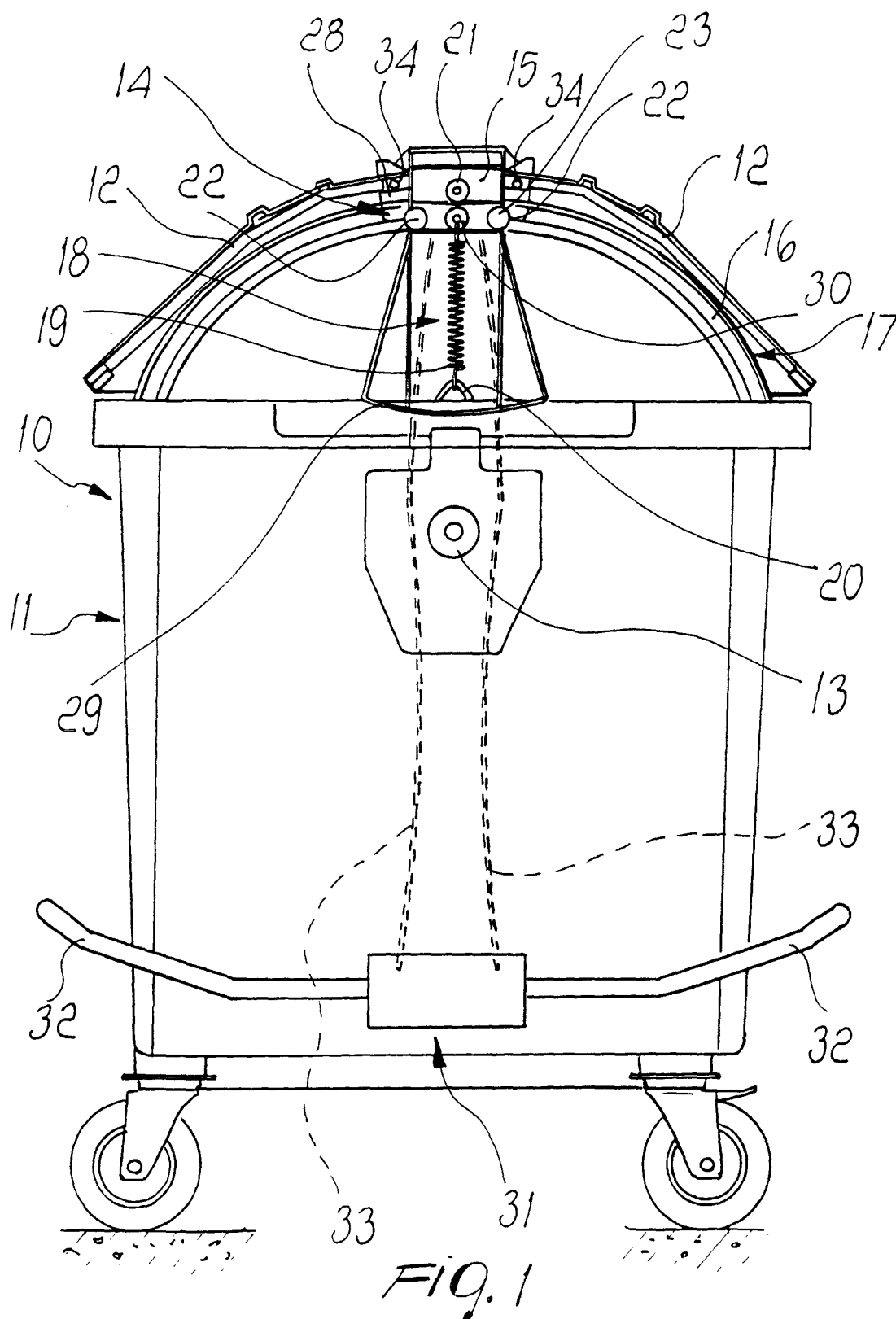
Claims

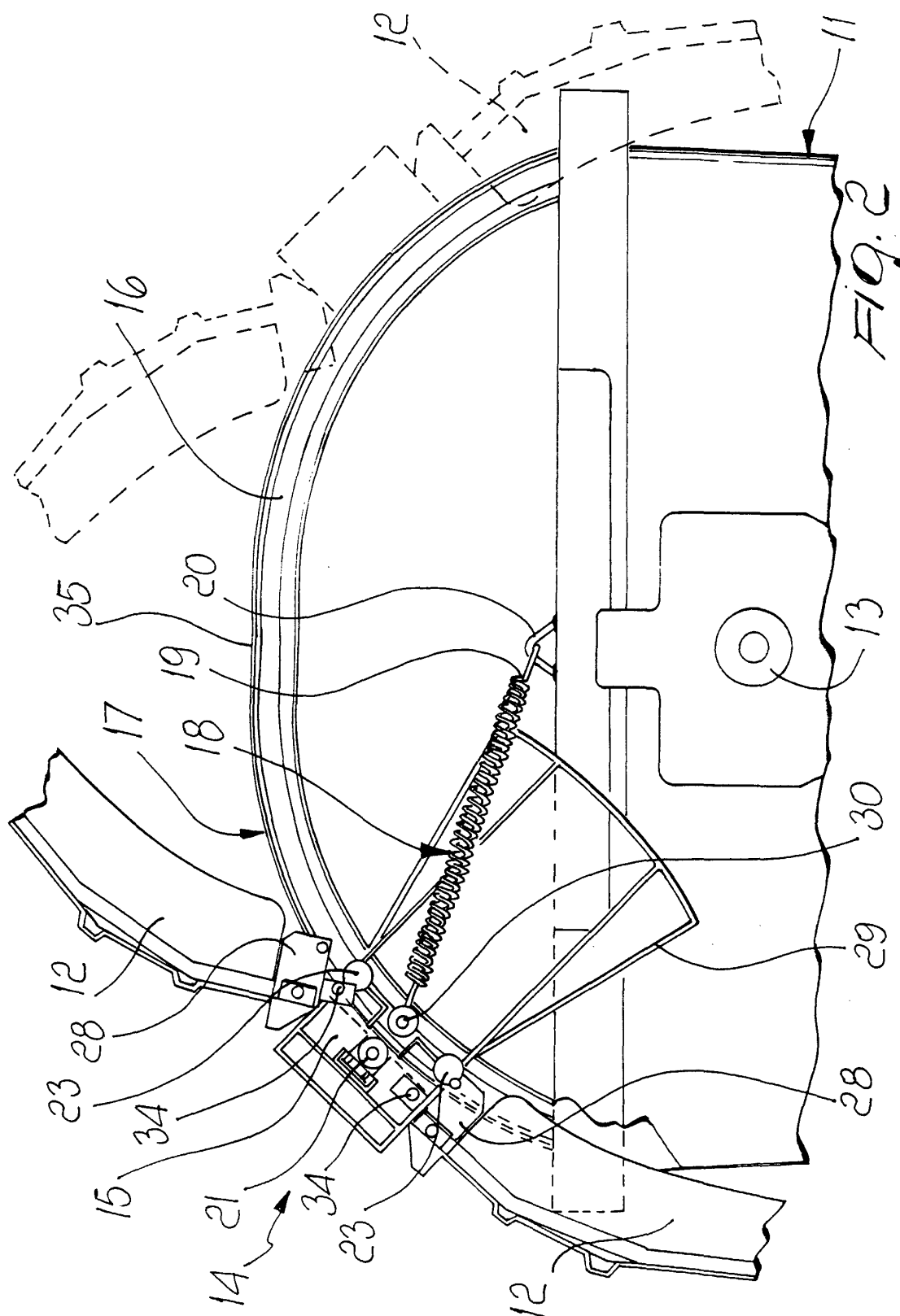
1. A wheeled bin for municipal solid waste, comprising a hollow containment body which is closed by at least two openable hinged lids for loading and unloading waste and is laterally provided with mutually coaxial fixed pins for engagement and lifting, for emptying, by waste removal equipment, characterized in that it comprises, for each engagement side, a device for opening/closing said at least two lids which is constituted by a wheeled slider which can slide along an arc-shaped guide formed in a supporting structure which is fixed in an upward region to the lateral engagement edge of the body of the wheeled bin, said at least two lids being pivoted to said slider on mutually opposite sides, said lids being connected, in a downward region, to an elastic element whose other end is connected to the

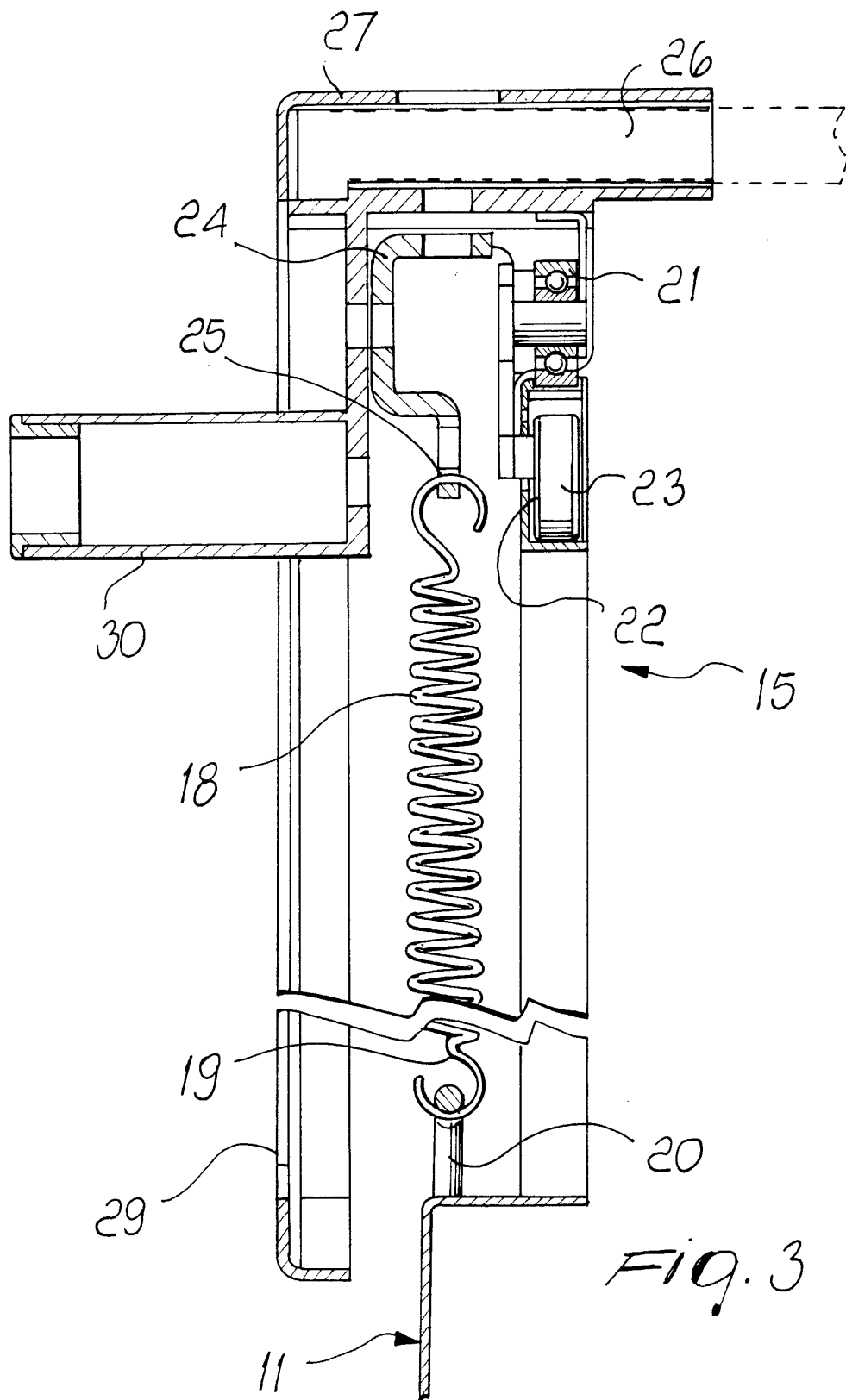
wheeled bin, in an upper axial position with respect to the corresponding engagement pin.

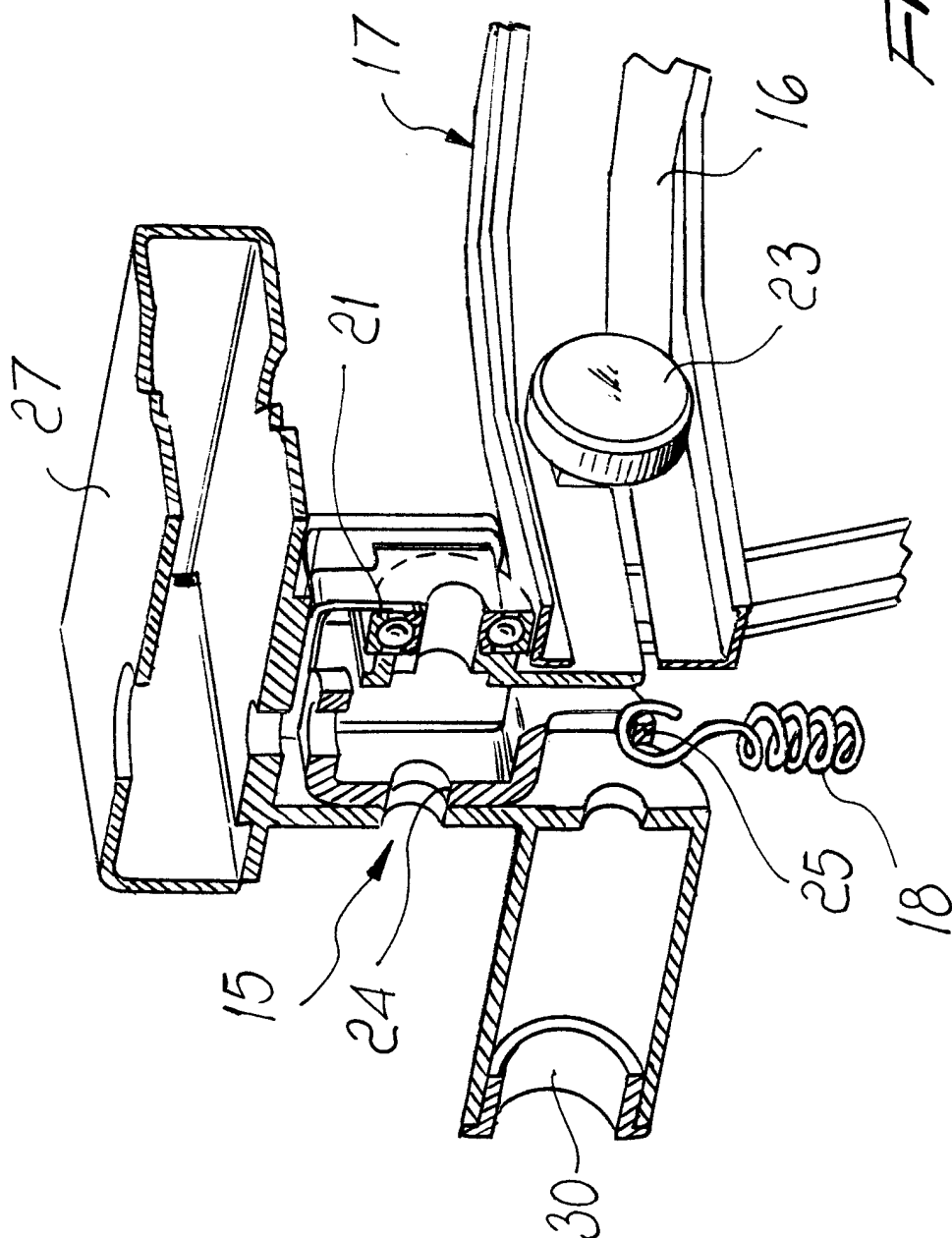
2. The wheeled bin according to claim 1, characterized in that each one of said sliders is wheeled by means of a wheel which rolls on said supporting structure. 5
3. The wheeled bin according to claim 1, characterized in that each one of said sliders is provided with two end portions having a disk-like end which is inserted in said guide so as to prevent derailments of said slider. 10
4. The wheeled bin according to claim 2, characterized in that said wheel and the corresponding end portions have mutually parallel axes which lie on the corners of an imaginary triangle. 15
5. The wheeled bin according to claim 1, characterized in that said slider comprises a section with internal engagement which is connected to the end of said elastic element that lies opposite with respect to the body of the wheeled bin. 20
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6. The device according to claim 5, characterized in that said elastic element is fixed to the upper edge of said body by means of a slot which is fixed thereto. 30
7. The wheeled bin according to claim 1, characterized in that said elastic element is constituted by a helical spring. 35
8. The wheeled bin according to claim 1, characterized in that it comprises a supporting cross-member with ends which are inserted in, and connected to, respective box-like elements, each of which is fixed to the corresponding slider. 40
9. The wheeled bin according to claim 1, characterized in that said lids are connected by means of corresponding brackets which are fixed to the corresponding sliders. 45
10. The wheeled bin according to claim 1, characterized in that the upper part of each one of said supporting structures is flat so as to form a region of stable equilibrium for the corresponding slider. 50

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European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 10 0291

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)
X	IT 1 136 024 B (OMB SPA) 27 August 1986 (1986-08-27) * figures 1-4,7-9 *	1,7-9	B65F1/16
A	DE 34 41 886 A (VIB SRL) 5 June 1985 (1985-06-05) * page 12, line 22 - page 16, line 17 * * figures 1,2 *	1,7,9	
			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		20 June 2000	Smolders, R
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			

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

EP 00 10 0291

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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20-06-2000

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