(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 295 992 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
26.03.2003 Bulletin 2003/13

(51) Int Cl.[7]: **E01F 13/06**

(21) Application number: **02077876.7**

(22) Date of filing: **16.07.2002**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **24.09.2001 IT BS20010079**

(71) Applicant: **Rib S.r.l.**
24014 Castenedolo, Brescia (IT)

(72) Inventor: **Bosio, Giuseppe**
25014 Castenedolo, Brescia (IT)

(74) Representative: **Kuborn, Jacques**
Office Hanssens S.P.R.L.
Square Marie-Louise, 40 - bte 19
1000 Bruxelles (BE)

(54) Electromechanical barrier

(57) This invention relates to an electromechanical barrier, which comprises a movable bar (10) fixed and turning with a shaft (14) supported in a body, and at least one spring balancing means to balance the bar during its movements between an open and closed positions. A secondary shaft (20) is housed in the body parallel to the bar rotating shaft (14), a driving gear (21) couples the bar rotating shaft (14) to said secondary shaft (20) so that one turn of the former corresponds to one turn in proportion of the latter, and said at least one spring balancing means (22) is connected with said secondary shaft (20).

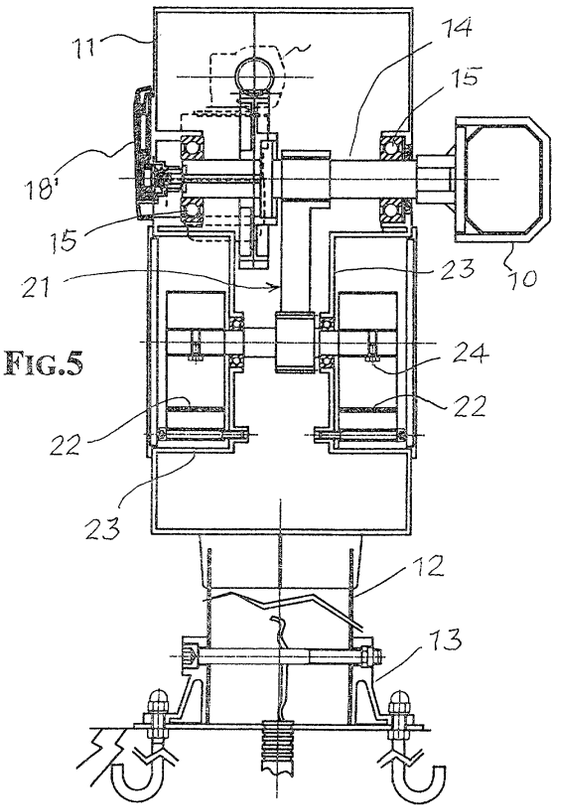

FIG.5

EP 1 295 992 A2

Description

Field of the Invention

[0001] The present invention concerns an electromechanical barrier with a movable bar barrier, and refers in particular to an innovative control system and balance of the bar in such a barrier.

State of the Art

[0002] An electromechanical barrier is known, which includes a movable bar attached to and rotating with a shaft. This shaft is driven by a motorised unit through a gear transmission housed in a body or framework, and at least one elastic means is provided for balancing the bar when moving, which loads when said bar moves from the open to the closed position. The elastic means is made up of at least one spiral, helical or leaf spring having one end fixed to the rotating shaft and the other end fixed to the body or framework.

[0003] Basically, the elastic means is placed coaxially to the rotating shaft of the bar, either directly attached to this shaft or through the interposition of a cylindrical support.

[0004] Such an arrangement, even though functional, is however capable of improvement in some aspects in order to reduce the overall size and improve its operation and performance.

Object and Summary of the Invention

[0005] It is in fact the an object of the present invention to propose and achieve an electromechanical movable barrier of the abovementioned type, where the spring or springs are no longer coaxial, that is around the rotating shaft of the bar, but positioned on an additional axis, parallel to the rotating axis and cinematically associated with it.

[0006] An advantage which stems from this new combination and position of the elements lies in the reduction at least in width, more precisely in the direction of the motor shaft axis, of the overall size of the body or framework which encloses the control and balancing units. In fact the positioning of the balancing spring or springs on an axis parallel to the rotating shaft means the length of this shaft can be reduced and the spring or springs positioned in a zone apart from said shaft, preferably below the latter, however not effecting the overall size.

[0007] A further advantage of the present invention is found in the reduction in the force required in balancing the bar, this means in other terms that, spring or springs forces used being equal, it will be possible to balance the opening and closing movements of heavier and longer bars.

Brief description of Drawings

[0008] The object and advantages expressed above are reached, in compliance with the invention, using an electromechanical barrier according to claim 1 and which will hereinafter be described in reference to the enclosed indicative but not limitative drawings, in which:

Figs. 1, 2 and 3 are three views of electromechanical barriers equipped for different modes of installation; and
Figs. 4 and 5 are two different cross-sections at right angles to each other of the barrier in a version anchored to the ground.

Detailed Description of the Invention

[0009] The electromechanical barrier represented includes a revolving bar 10, which can be straight or at an angle, have round, polygonal or some other shape in section, depending on needs. The bar 10 is mounted on a body or frame 11, which holds the devices required to make the barrier operating and which may be in the form of a supporting post 12 to anchor it to the ground (Fig. 1), for example with a bracket 13 as shown in Figs 4 and 5, or a wall (Fig. 2) or a ceiling (Fig. 3).

[0010] The bar 10 is attached to a rotating shaft 14 protruding from one side of the body 11, which is supported by bearings 15 and driven by an electric motor 16 with a first step-down gear 17 and a second step-down gear 18, which in the example illustrated are both the worm screw - worm wheel type.

[0011] A release group 18', which is well known and does not require a description, works in conjunction with the rotating shaft 14. The electric motor 16 is powered and controlled by an electric actuator device 19 also placed in the body 11.

[0012] According to the invention, in the body 11, parallel to the rotating shaft 14, a secondary rotating shaft 12 is provided, which is coupled to the rotating shaft 14 by means of a driving gear 21. One or two balancing springs 22 are connected to the secondary shaft 20, each one housed in a separate box or housing 23 acting also as a means for supporting said secondary shaft. The balancing spring or springs 22 can be spiral, as shown in Figs. 4 and 5, helicoidal or of another type, each with one end 24 attached to the secondary shaft 20 and the other end anchored to the stationary box or housing 23.

[0013] The group is such that when the bar is actuated to move from the open to the closed position, the spring or springs load balancing the effect of the weight of the bar itself; when the bar then passes from the closed to the open position the springs react, assisting the action of the power unit thus facilitating the movement of the bar.

Claims

1. An electromechanical barrier, comprising

- a movable bar (10) fixed and turning with a rotating shaft (14) supported in a body or supporting frame,
- a power apparatus actuating the rotating shaft (14) by means of a reduction unit, powered and managed by electronic control,
- at least one spring balancing mean to balance the bar during its movements between an open and closed positions,

characterised in that a secondary rotating shaft (20) housed in said body parallel to the bar rotating shaft (14), **in that** a driving gear (21) couples said rotating shaft (14) to said secondary shaft (20) so that one turn of the former corresponds to one turn in proportion of the latter, and **in that** one spring balancing means (22) is connected with said secondary shaft (20).

2. The electromechanical barrier according to claim 1, wherein the driving gear between the bar rotating shaft (14) and the secondary shaft (20) includes gearwheels meshing to each other.

3. The electromechanical barrier according to claim 1, wherein the secondary shaft (20) operates in union with one or more balancing springs (22) , each one having one end fixed to said secondary shaft and the other anchored to a stationary means.

4. The electromechanical barrier according to claim 3, wherein each balancing spring (22) is placed in a stationary box or housing which helps to support the rotating secondary shaft.

5. The electromechanical barrier according to the previous claims, wherein each balancing spring (22) is spiral, helicoidal or of another spring type.

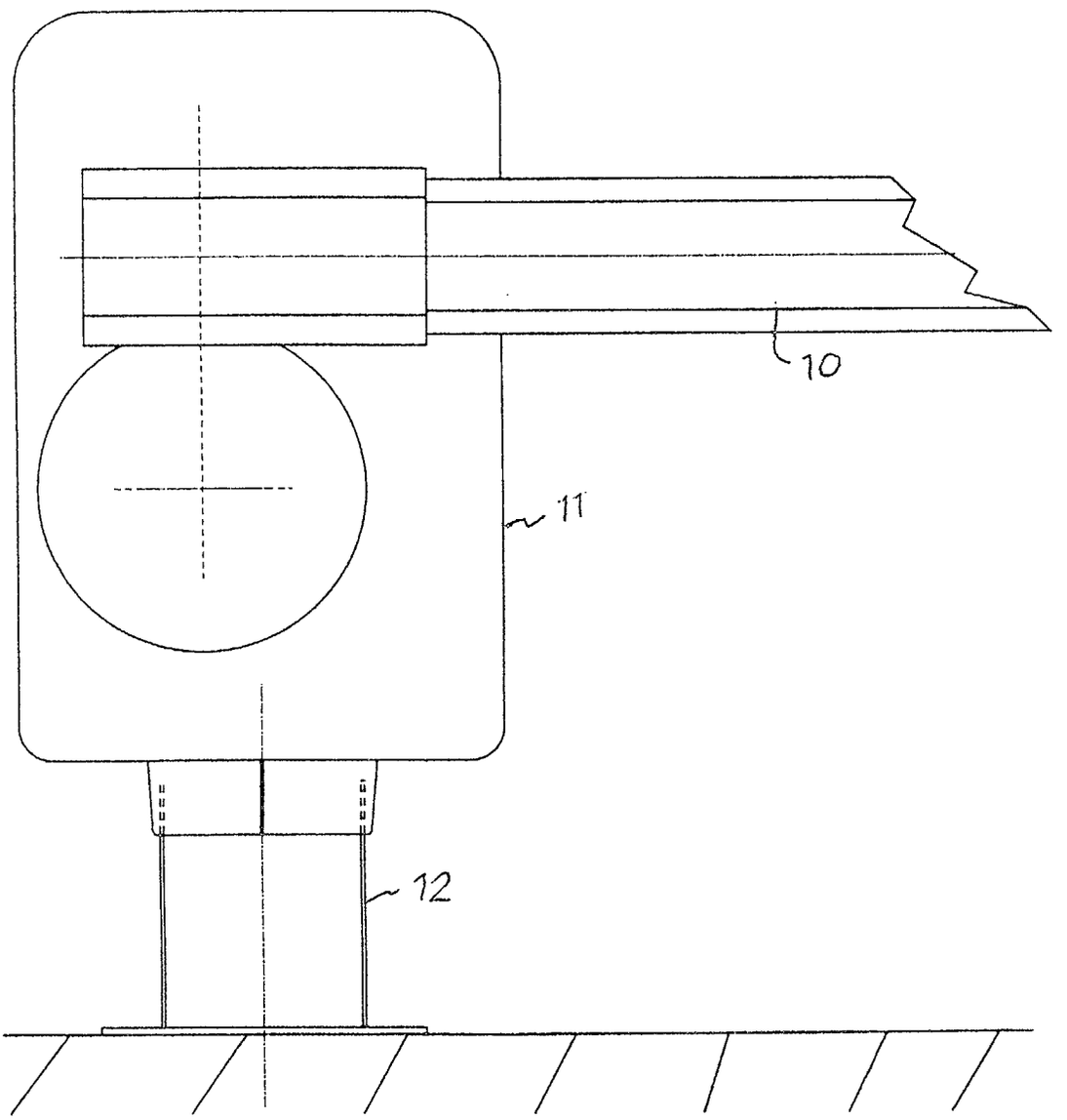

FIG.1

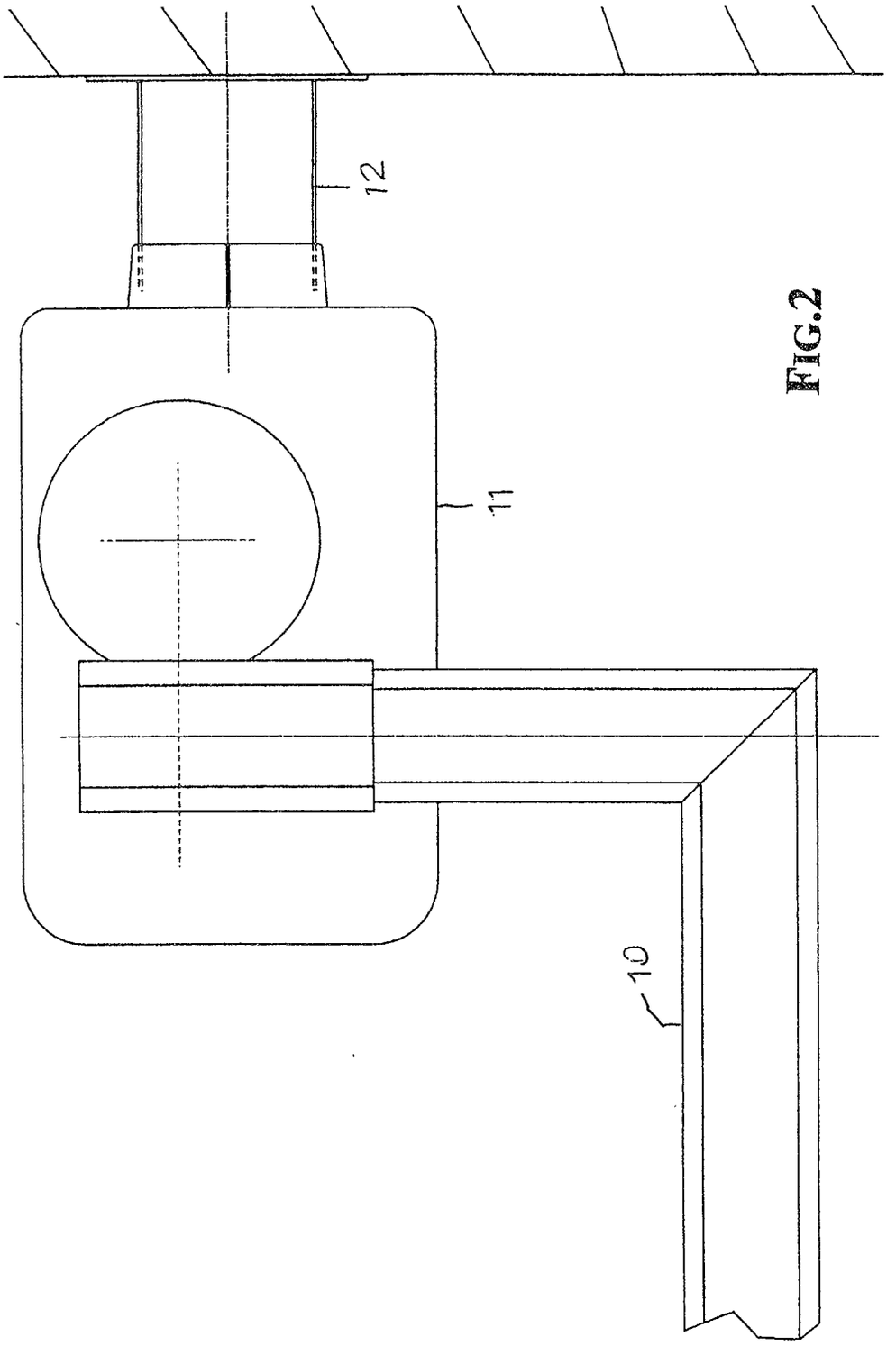

FIG.2

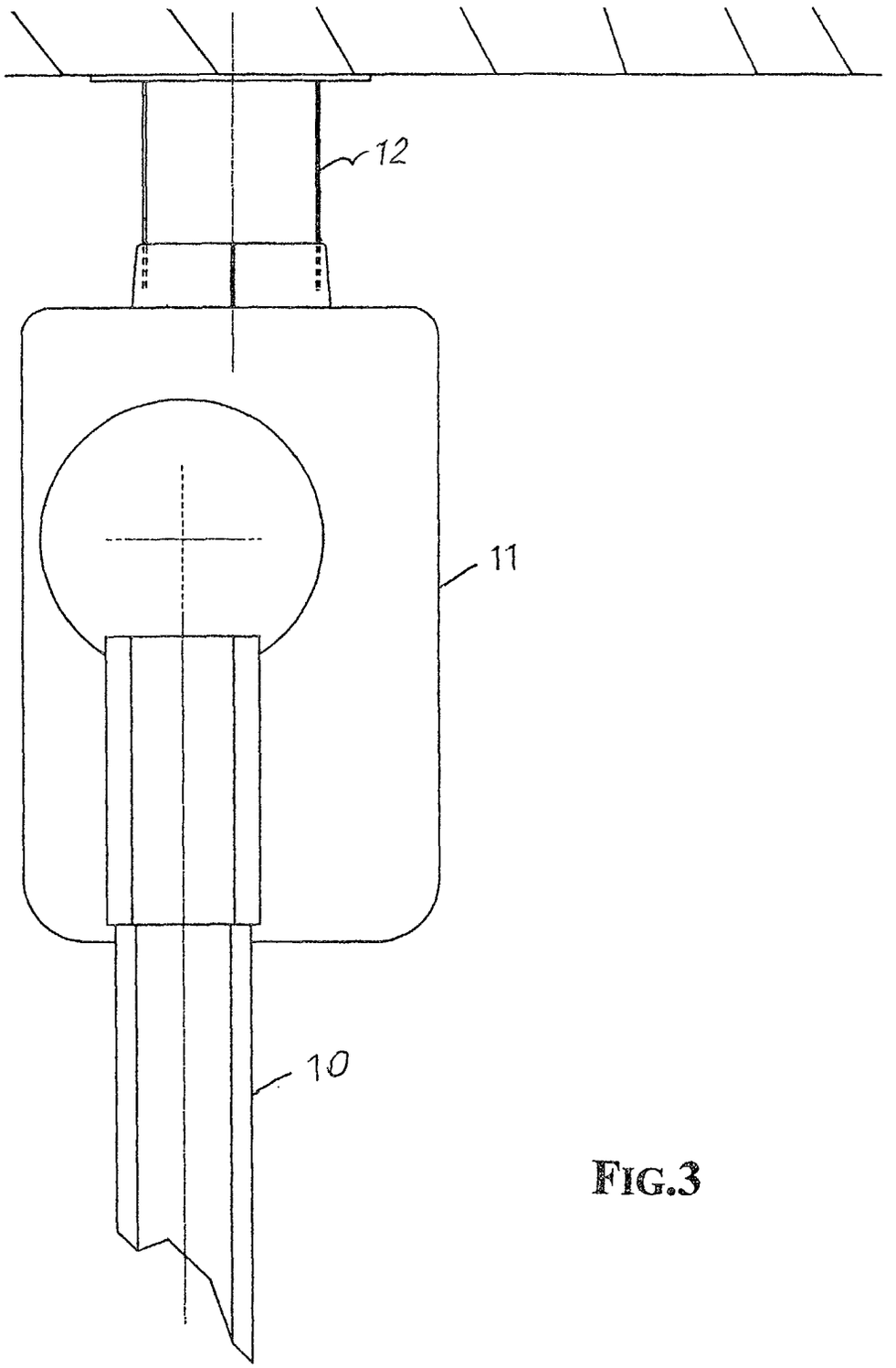

FIG.3

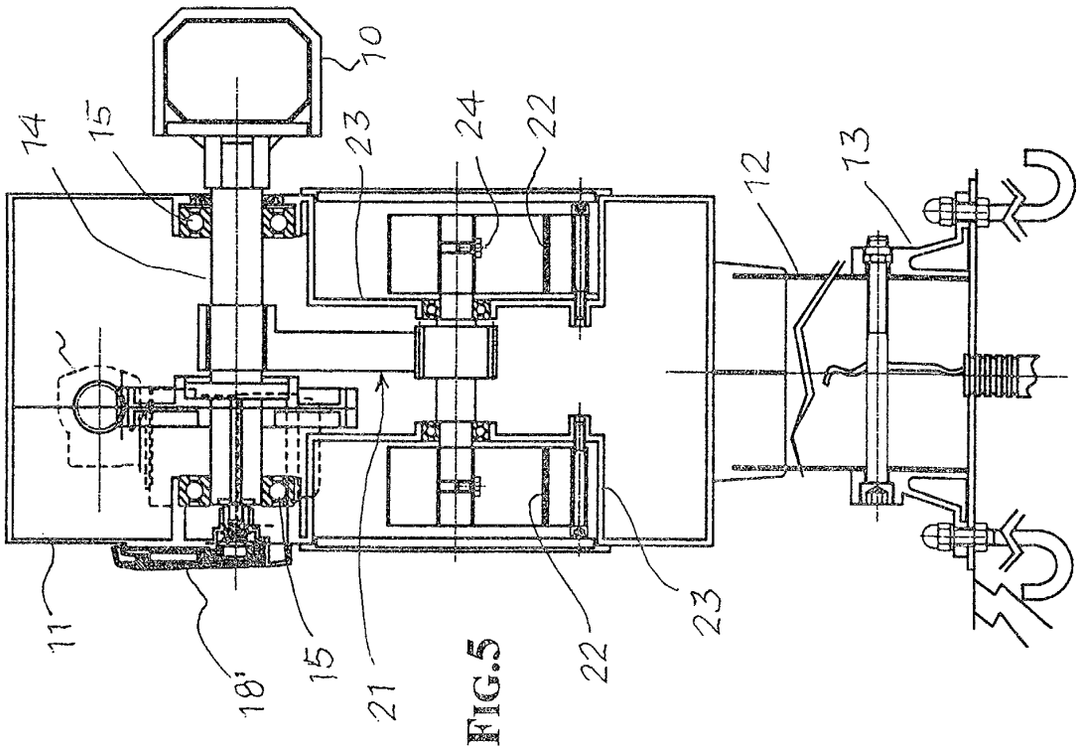
10
14
15
23
24
22
12
13
11
18'
15
21
22
23

FIG.5

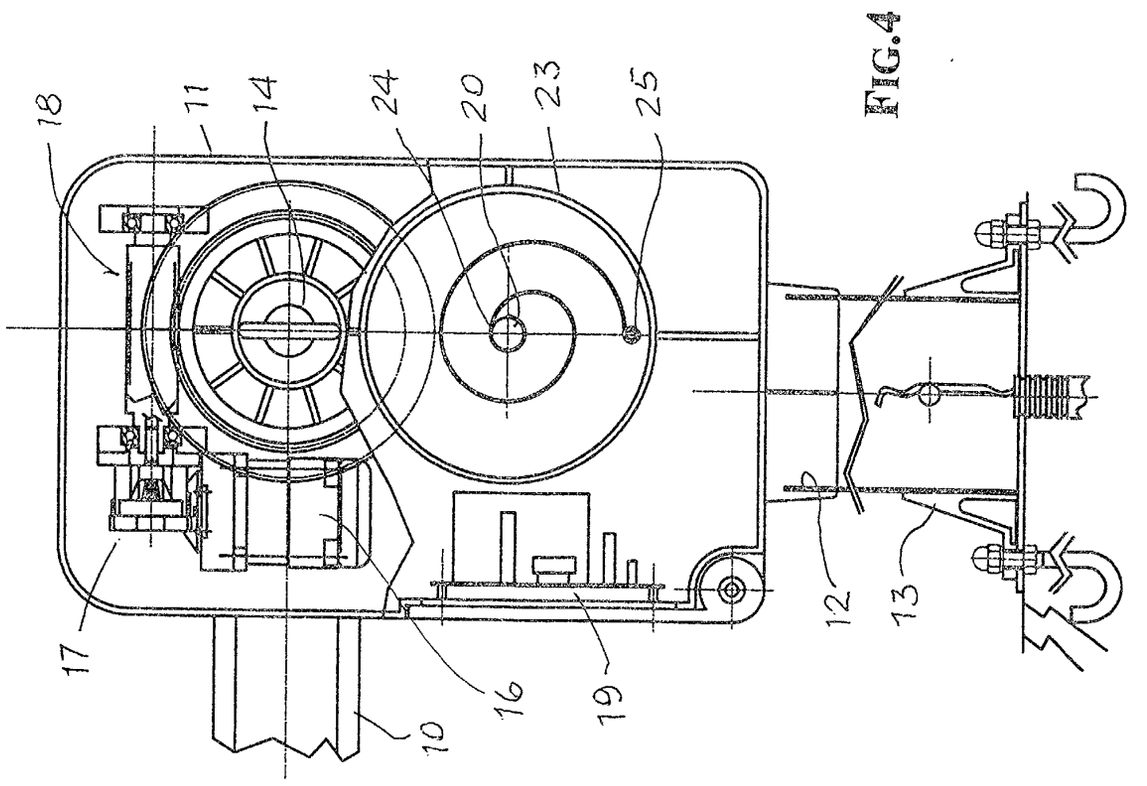
18
11
14
24
20
23
25
17
16
19
10
12
13

FIG.4