

"ACTUATOR WITH A MECHANICAL STOP FOR MOVING GATES"

The present invention relates to an actuator for moving gates.

5 In the prior art hydraulic actuators are known for gates comprising two opposite actuator cylinders aligned axially and protruding oppositely from a central body provided with an output pinion that is controlled by the cylinders. These types of actuators are generally intended to be buried in a
10 suitable recess at a pivotal point of the gate to be moved, so that the power output can be connected appropriately to the gate.

Known actuators require additional mechanical stops for adjusting the end stop positions of the gate that is moved.
15 This entails additional work at the moment of installing the gate opener and requires particular expertise on the part of the installer because mechanical stops that are not correctly positioned may lead to hazards during the use of the gate opener.

20 Further, the mechanical stops are exposed to possible damage that could prevent the correct operation thereof over time. Lastly, known mechanical stops are normally positioned on the floor and hinder and encumber walkable areas and become hazardous obstacles in the event of snow or ice.

25 A general object of the present invention is to remedy the aforesaid drawbacks, by providing an actuator for gates that does not require external mechanical stops.

In view of this object it was decided to devise, according to the invention, an actuator for gates comprising two

opposite actuating cylinders aligned axially and protruding oppositely from a central body provided with an output pinion controlled by the cylinders, characterized in that each cylinder has in the head a stop element for stopping
5 the movement of the piston thereof to the head that is manually adjustable in position by an external movement element.

In order to make the explanation of the innovative principles of the present invention and the advantages thereof over
10 the known art clearer, a possible embodiment applying such principles will be disclosed below with the help of the attached drawings. In the drawings:

- figure 1 is a schematic perspective view of an actuator made according to the principles of the present invention;
- 15 - figure 2 is a partial section view of a detail of the actuator in figure 1.

With reference to the figures, in figure 1 there is shown a hydraulic actuator for gates, generally indicated by 10, which comprises two opposite actuating cylinders 11, 12
20 that are aligned axially and protrude oppositely from a central body 13. From the central body 13 an output pinion 14 protrudes upwards that is rotated in the two directions by the hydraulic cylinders, according to a mechanism, generally a rack mechanism, which is not further shown or
25 disclosed here, as it is well known and easily imaginable by those skilled in the art. The actuator is generally intended to be buried in a suitable recess to have the pinion suitably connected to the gate to be moved.

Each cylinder 11, 12 has in the head 15, 16 a stop element

for stopping the movement of the piston thereof 17, 18 to the head, which is manually adjustable in position by an external movement element (in the figure there is shown only the movement element 19 corresponding to the stop of
5 the cylinder 12, the other cylinder being symmetrical).

In figure 2 there is shown in greater detail the zone of a head, with the corresponding piston and the mechanical stop. The other head is substantially specular and is not therefore shown in detail. As can be seen well in figure 2, the stop
10 element 20 comprises advantageously a telescoping element 21 that is arranged axially in the head for protruding more or less towards the piston following the axial rotation of the external movement element. In particular, the telescoping element comprises advantageously a bush 21 that is slidably
15 received but is not rotatable in a seat 22 on the internal face of the head and on which an internal end 23 of the movement element 19, made as a threaded pivot, is tightened axially to command the movement thereof. The movement element has an opposite rotation end (for example provided with a
20 hexagonal fitting for a suitable tool) that protrudes on the outside of the head and is advantageously protected by a removable non-rotating cover 24.

Advantageously, on the face facing the head the piston 18 comprises a central seat 25 that is intended to receive the
25 free end of the bush 21 when the piston reaches the adjusted stop position, with the bush that rests against the bottom of the central seat (as shown by the dashed line).

At this point it is clear how the set objects are reached. The prior-art external mechanical stops are replaced by

mechanical stops integrated into the actuator that enable, by manual adjustment, precise arresting abutments/physical mechanical stops to be defined. The abutment is adjusted by rotating the threaded pivot clockwise or anticlockwise,
5 which is equipped for receiving from the exterior.

This rotation makes the internal bush move axially in the direction determined by the sense of rotation. The stroke of the piston of the actuator is thus interrupted and the piston goes to abut on the bush.

10 The disclosed device is totally integrated and is well protected in the hydraulic actuator. This enables fixed arresting abutments to be obtained without the help of external mechanical stops positioned on the ground that obstruct and encumber walkable areas and become hazardous
15 obstacles in the event of snow or ice. The device can easily be calculated for resisting the stress of the automation, thus ensuring arrests that are safe and reliable over the long term.

The arrest position is adjustable by rotating the pivot
20 accurately, and it is possible to modify the position of the arrest at any moment by accessing the recess in which the actuator is normally contained.

Naturally, the above description of an embodiment applying the innovative principles of the present invention is given
25 only by way of example of such innovative principles and must not therefore be used to limit the scope of what is claimed herein. For example, the actuator may have a different embodiment from what is shown here by way of example. The power output may also be different from a rotating pinion.

CLAIMS

1. Actuator (10) for gates comprising two opposite actuating cylinders (11, 12) aligned axially and protruding oppositely from a central body (13) provided with an output pinion (14) controlled by the cylinders, each cylinder having in the head a stop element (20) for stopping the movement of the piston thereof (17, 18) to the head that is manually adjustable in position by an external movement element (19), the stop element comprising a telescoping element that is arranged axially in the head for protruding more or less towards the piston following the axial rotation of the external movement element, characterized in that the telescoping element comprises a bush (21) slidably received in a seat (22) on the internal face of the head and on which there is axially screwed an internal end (23) of the movement element (19) for commanding the movement thereof, the movement element (19) having an opposite rotation end that protrudes on the outside of the head.
2. Actuator according to claim 1, characterized in that the rotation end is provided with a removable protection cover (24).
3. Actuator according to claim 1, characterized in that the piston comprises a central seat (25) on the face thereof facing the head that receives the free end of the bush (21) when the piston reaches the adjusted stop position with the bush that rests against the bottom of the central seat.