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(54) **Mechanical actuator for sliding door panels.**

(57) A mechanical actuator for sliding door panels with a motor (6) and a speed reduction unit (4, 6), characterised in that said motor and said speed reduction unit

are housed in a buriable casing (9) which emerges from the ground by a minimum portion (14) housing a horizontal shaft (8) on which an operating pinion (20) for the door panel (24) is keyed.

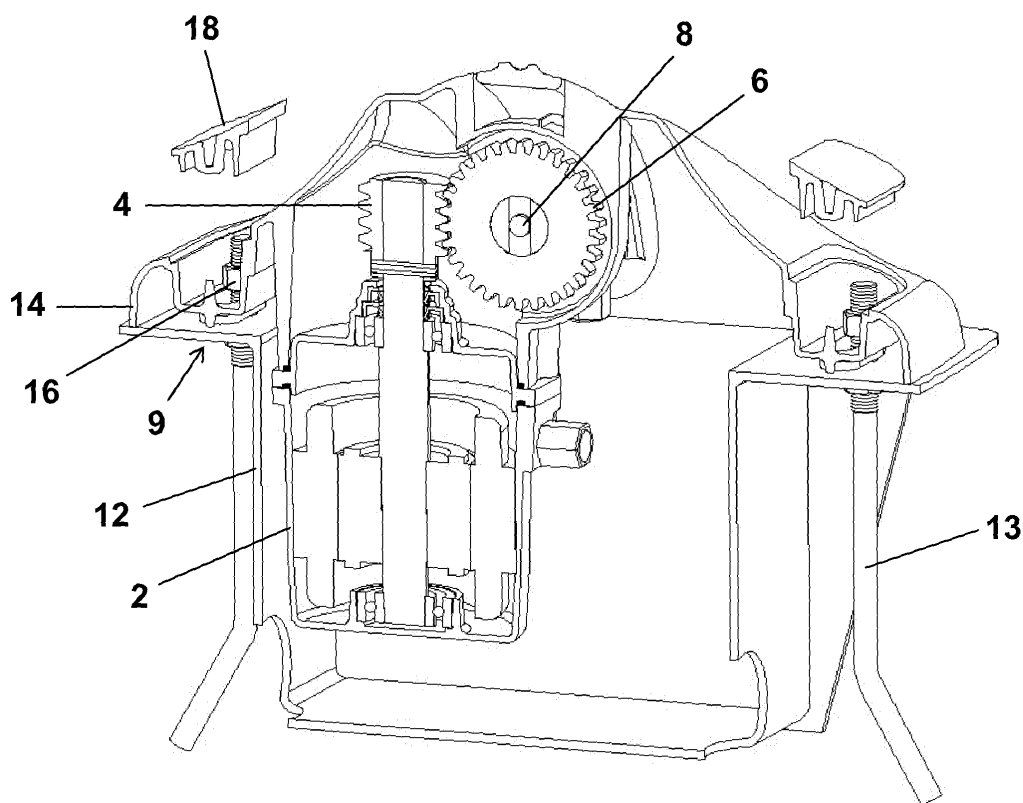


FIG. 2

Description

[0001] The present invention relates to a mechanical actuator for sliding door panels; these generally comprise an electric motor and a speed reduction unit housed in a container of more or less parallelepiped shape, with a vertical wall from which there emerges a pinion engaging a rack rigid with the door panel to be moved.

[0002] The container is positioned within the area closed by the door panel to be moved, in proximity thereto generally on a suitable concrete base, and extends upwards to represent an obstacle to the movement and parking of motor vehicles within the area closed by the door panel. The container is also subject to damage by children, animals, bicycles and motorcycles.

[0003] According to the invention, these drawbacks are eliminated by a mechanical actuator for sliding door panels as claimed in claim 1.

[0004] The present invention is further clarified hereinafter with reference to the accompanying drawings, in which:

Figure 1 is an overall perspective view of the actuator of the invention installed in proximity to a sliding door panel to be moved,

Figure 2 is a partly sectioned enlarged partial view of the actuator.

[0005] As can be seen from the figures, the actuator of the invention comprises an electric motor 2 of vertical axis with its exit shaft emerging upwards and carrying a lead screw 4 engaging a helical gear 6 keyed onto a horizontal shaft 8. The entire assembly is housed in a casing 9 of high-impact plastic material or aluminium, comprising a lower portion 12 containing the motor 6 and intended to be buried, and preferably fixed by studs 13 embedded in cast concrete.

[0006] Sealedly fixed to the lower portion 12 there is an upper portion 14 housing the speed reduction unit, which is formed from the lead screw 4 and the helical gear 6.

[0007] The upper portion 14 and lower portion 12 are preferably joined together by said studs 13, on which nuts 16 are screwed, housed in cavities provided in the upper portion 14 and closable by suitable caps 18.

[0008] The dimensions of the projecting portion 14 are just sufficient to contain the helical gear 6, so that the total height of this upper portion 14 emerging from the ground is minimal and, because of its rounded shape, means that the overall size of the motor with speed reduction unit is virtually negligible.

[0009] The horizontal shaft 8, on which the helical gear 8 is keyed, emerges laterally from the upper portion 14 of the casing 9 and carries keyed thereon a pinion 20, which engages the rack 22 of the door panel 24 to be moved.

[0010] The operation of the actuator of the invention is traditional in that by rotating the electric motor 2 in one

or other direction, the pinion 20 rotates via the linkage consisting of the lead screw 4, the helical gear 6 and shaft 8, to provide translational movement of the door panel 24 by virtue of the engagement between the pinion 20 and the rack 22.

[0011] However that which distinguishes the actuator of the invention from traditional actuators is the very small overall size of the actuator, most of which is buried with only a portion of minimal height emerging, just sufficient to allow engagement between its exit pinion 20 and the rack 22 applied to the door panel 24 to be moved.

[0012] Because of this minimal size, the actuator does not hinder vehicle movement within the area closed by the door panel 24, and because of its shape considerably reduces the risk of being damaged by the vehicles themselves, by motorcycles, by children or by animals.

Claims

1. A mechanical actuator for sliding door panels with a motor (6) and a speed reduction unit (4, 6), **characterised in that** said motor and said speed reduction unit are housed in a buriable casing (9) which emerges from the ground by a minimum portion (14) housing a horizontal shaft (8) on which an operating pinion (20) for the door panel (24) is keyed.
2. An actuator as claimed in claim 1, **characterised in that** the casing (9) comprises a lower portion (12) fixed by studs (13) embedded in concrete, in which a seat is provided for housing said lower portion (12).
3. An actuator as claimed in claim 2, **characterised in that** the upper portion (14) of the casing (9) is fixed to the lower portion (12) by said studs (13) which fix said lower portion (12) to the concrete.
4. An actuator as claimed in claim 3, **characterised in that** the upper portion (14) of the casing (9) is provided with cavities housing the upper end of the studs (13) and the nuts (16) for fixing said upper portion to them.
5. An actuator as claimed in claim 4, **characterised by** comprising a closure cap (18) for each cavity.
6. An actuator as claimed in claim 1, **characterised in that** said casing (9) is constructed of high impact plastic material.
7. An actuator as claimed in claim 1, **characterised in that** said casing (9) is constructed of aluminium.

FIG. 1

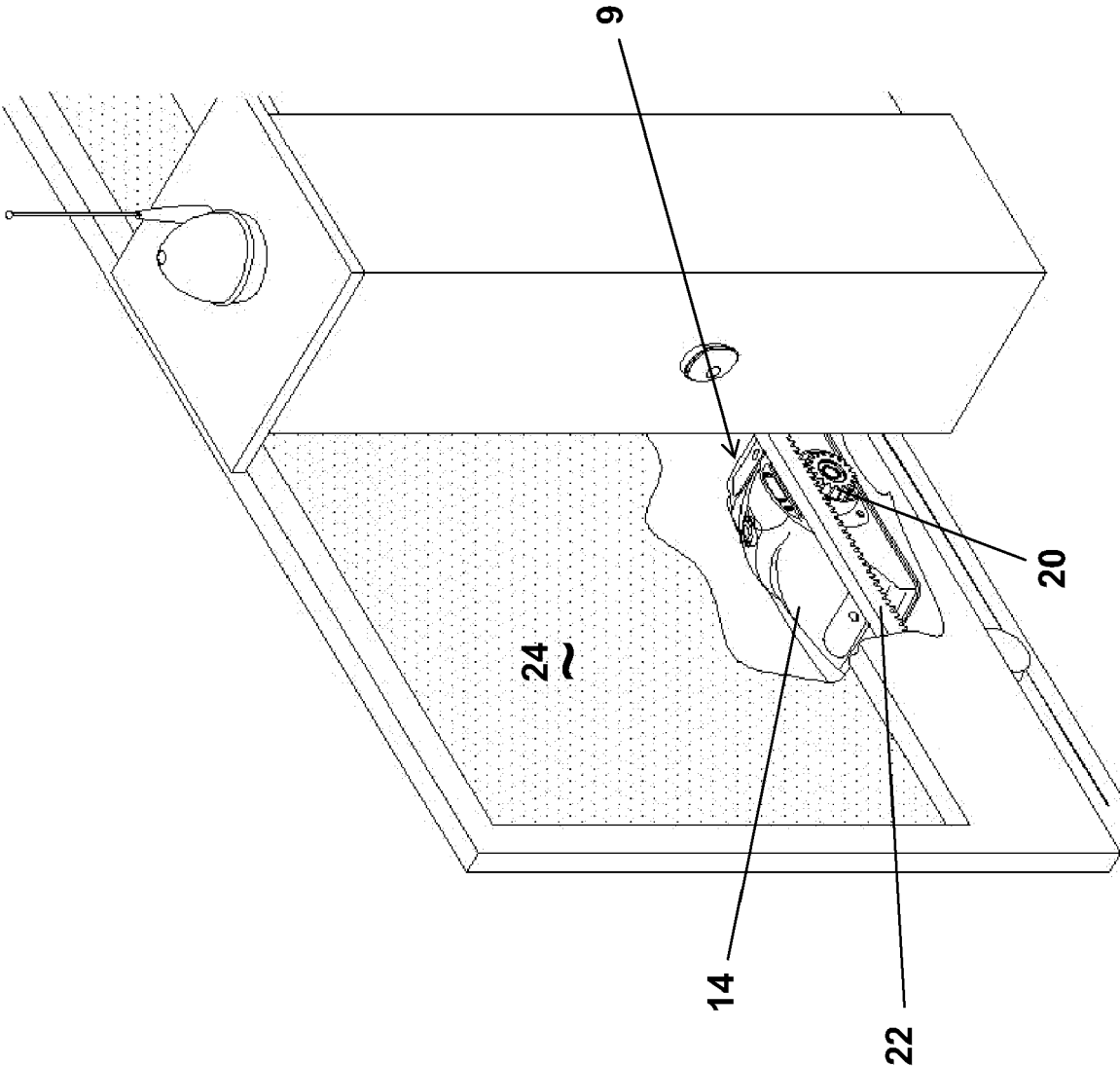


FIG. 2

