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(54) **Electric gearmotor for metal rolling gates**

(57) This invention concerns an electric gearmotor for metal rolling gates equipped with a mechanical irreversibility device fitted between a motor and a gear mo-

tor, it being provided that this device may be excluded in the case of emergencies by pulling a cable which pulls back the driving shaft on which said device is keyed.

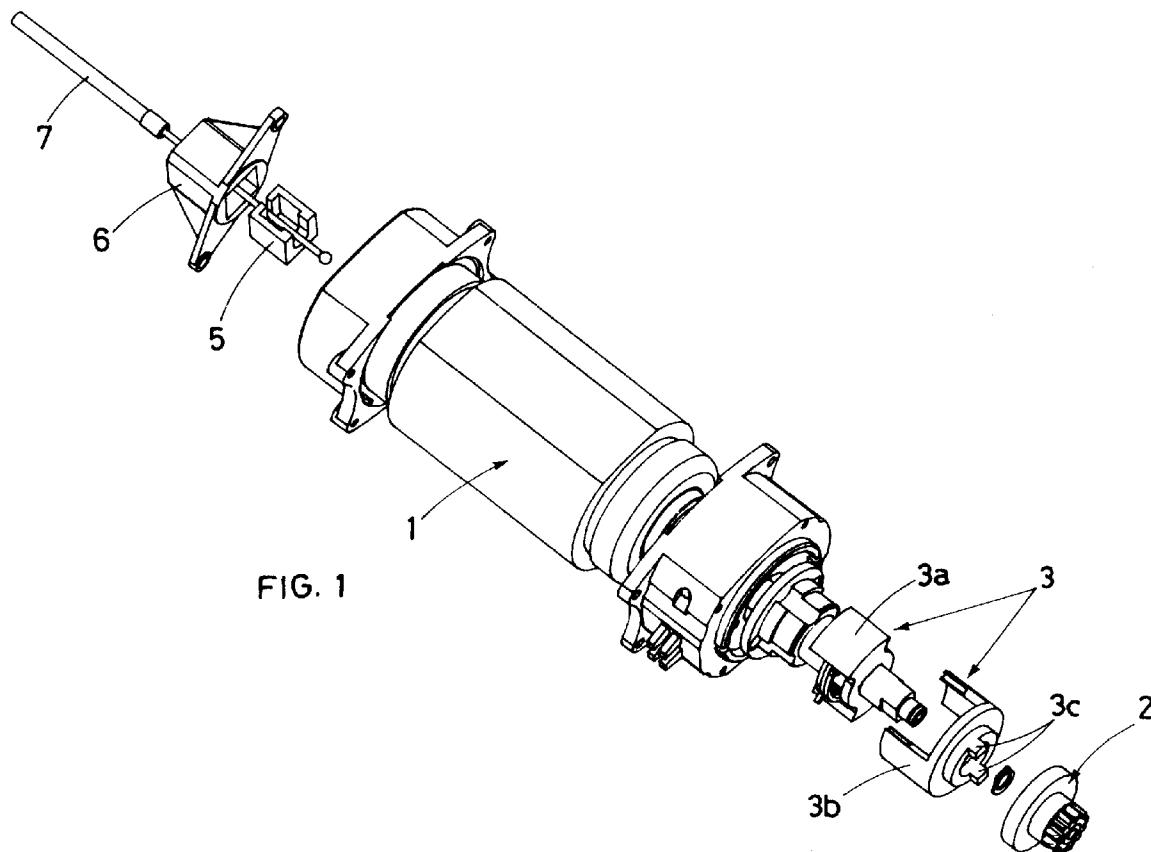


FIG. 1

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Description

This design patent application concerns an electric gearmotor for metal rolling gates counter-weighted by springs, equipped with a mechanical irreversibility device fitted between the gearmotor and the motor.

More precisely said irreversibility mechanism is fitted at one end of the driving shaft which performs a short axial stroke thanks to which it is possible to move away and uncouple the mechanism from the gearmotor.

As mentioned above, the gearmotor in question is mounted above all on rolling gates counter-weighted by springs which, as such, may also be lifted manually in that the weight of the rolling gate is balanced by a series of springs which wind during the downward stroke of the gate and unwind during the upward stroke.

In this type of compensated rolling gates customers often request an irreversible gearmotor for two main reasons: first and foremost the irreversibility of the gearmotor ensures the stable and automatic stop of the rolling gate in any position and opening stage, even if the design or calibration of the compensation springs is not perfect.

Secondly, the irreversibility of the gearmotor prevents the rolling gate from being lifted manually by burglars when lowered; in this sense the irreversibility of the gearmotor offers further security against burglary attempts with respect to the locks or keys generally used on compensated rolling gates.

In current gearmotors for compensated rolling gates the irreversibility of the movement is ensured by an electric brake mounted on the driving shaft opposite to that of the gearmotor.

The start-up of the motor entails the automatic deactivation, even if not instantaneous, of the electric brake, which is operated by a spring and automatically and instantaneously stops the driving shaft as soon as the electric supply is cut off.

These gearmotors are always fitted with a device for the manual release of the electric brake, for emergency situations, when it is necessary to lift or lower the rolling gate even in the case of temporary power failure of the electric plant or the mains.

Said manual release device is generally operated by pulling a metal cable attached to the electric brake.

The purpose of this invention is to design a new gearmotor model for metal rolling gates, counter-weighted by springs, whose movement irreversibility is provided by a completely mechanical device in which the emergency cable that excludes said device is attached to one end of the driving shaft.

The use of said mechanical irreversibility device offers two main advantages: the first is an economical saving in that the mechanical device is less expensive than the above electric brake; the second is an operating advantage in that said device can instantaneously stop the driving shaft in the case of a power failure, contrary to the electric brake whose action is not instantaneous.

The gearmotor according to the invention uses a mechanical irreversibility device which is commonly known which permits the drive of the rotary motion only if said motion is introduced on one of the two elements of the drive which is on the other hand prevented in the reverse direction. Said irreversibility device is mounted at the end of the driving shaft immediately in front of the gearmotor which is connected to the irreversibility device by a mobile front connecting coupling.

The driving shaft is supported so as to perform a backward axial stroke in order to release the irreversibility device from the gearmotor, in case of emergency in order to allow the manual movement of the rolling gate.

The backward stroke of the driving shaft can be activated by a special emergency cable attached to the driving shaft on the opposite end with respect to the end on which the irreversibility device is mounted.

In order to move the driving shaft backwards, it is necessary to overcome the antagonist force of the spring designed to push the irreversibility device against the gearmotor so as to activate and stabilise the front connection between these two components thus indirectly ensuring irreversibility of the motion until such time as the emergency cable is pulled.

For major clarify the description of the invention continues with reference to the enclosed drawings which are intended for purposes of illustration and not in a limiting sense whereby:

- fig. 1 is an exploded axonometric view of a section of the gearmotor according to the invention;
- fig. 2 is a cross-section on an axial plane of the gearmotor according to the invention whereby the irreversibility device and the gearmotor are shown in engaged position;
- fig. 3 is a cross-section on an axial plane of the gearmotor according to the invention whereby the irreversibility device and the gearmotor are shown in disengaged position.

With reference to the above drawings the gearmotor according to the invention consists of a conventional electric motor (1) and a gearmotor (2) between which is fitted an irreversibility device (3) consisting of two elements (3a and 3b) coupled so as to allow transmission of the motion only in one direction.

In the case in question, transmission is possible only if the motion is introduced on the element (3a) keyed at one end of the shaft (1a) of the motor (1).

The other element (3b) of this device (3) is provided with teeth (3c) which permit a front connection type coupling between the device (3) and the gearmotor (2). The shaft (1a) of the motor (1) is supported so as to perform a short axial stroke (d) which makes it possible to engage and disengage the device (3) and the gearmotor (2) which are coupled by means of a spring (4) fitted on the shaft (1a) and pressing against the element (3a)

keyed on the shaft in order to push and keep the device (3) pressed against the gearmotor (2). A fork bracket (5), sliding within a housing (6) and fixed to the motor (1) casing, is hooked at the end of the shaft (1a) opposite to the end on which the device (3) is keyed.

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The emergency cable (7) is in turn attached to said bracket (5); it being provided that by pulling the cable (7) it is possible to slide back the shaft (1a) in order to disengage the device (3) from the gearmotor (2). Naturally said cable (7) should be pulled with enough force to overcome the resistance of the spring (4) which presses against the above element (3a) - belonging to the irreversibility device (3) - keyed on shaft (1a).

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Claims

1. An electric gearmotor for metal rolling gates of the type consisting of a conventional electric motor (1) and a gearmotor (2) characterised by:

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- a conventional irreversibility device (3) consisting of two elements (3a and 3b) coupled so as to allow transmission of motion only from the driving shaft (1a) to the gearmotor (2) which is connected to the device (3) a mobile front connecting coupling;
- a driving shaft (1a) supported so as to perform a short axial stroke (d) which makes it possible to engage and disengage the device (3) and the gearmotor (2) which are normally engaged by means of a spring (4) fitted on the shaft (1a) and pressing against the element (3a) keyed on the shaft (1a);
- a fork bracket (5) hooked at the end of the shaft (1a) opposite to the end on which the device (3) is keyed and sliding in a housing (6) fixed to the casing of the motor (1);
- an emergency cable (7) in turn attached to said bracket (5).

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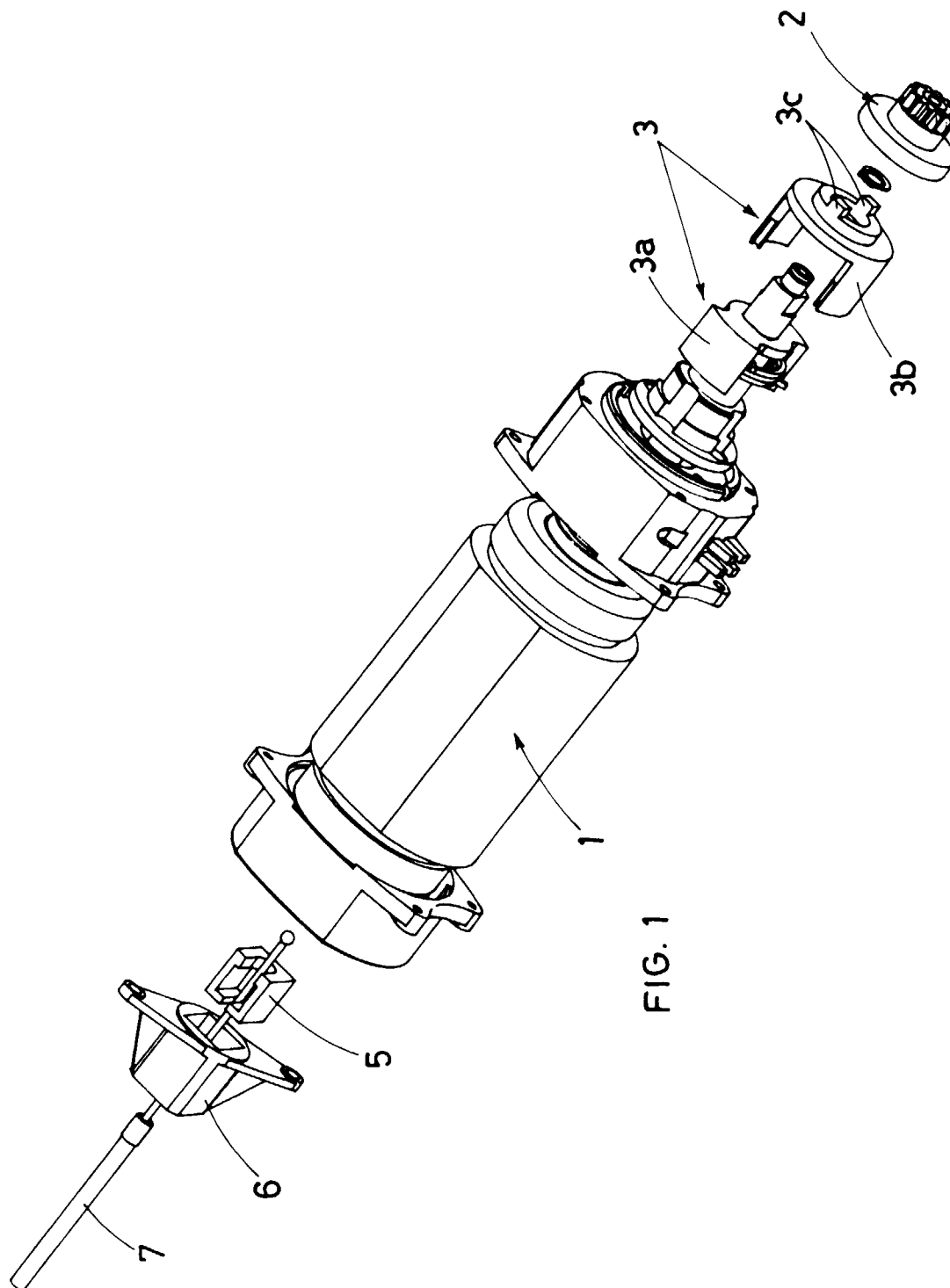


FIG. 1

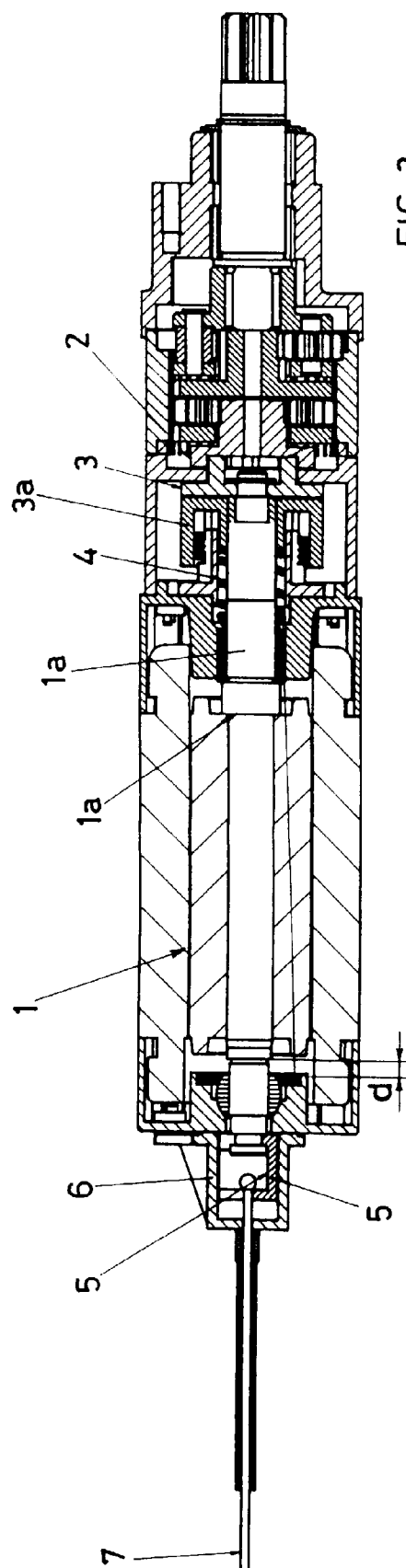


FIG. 2

FIG. 2

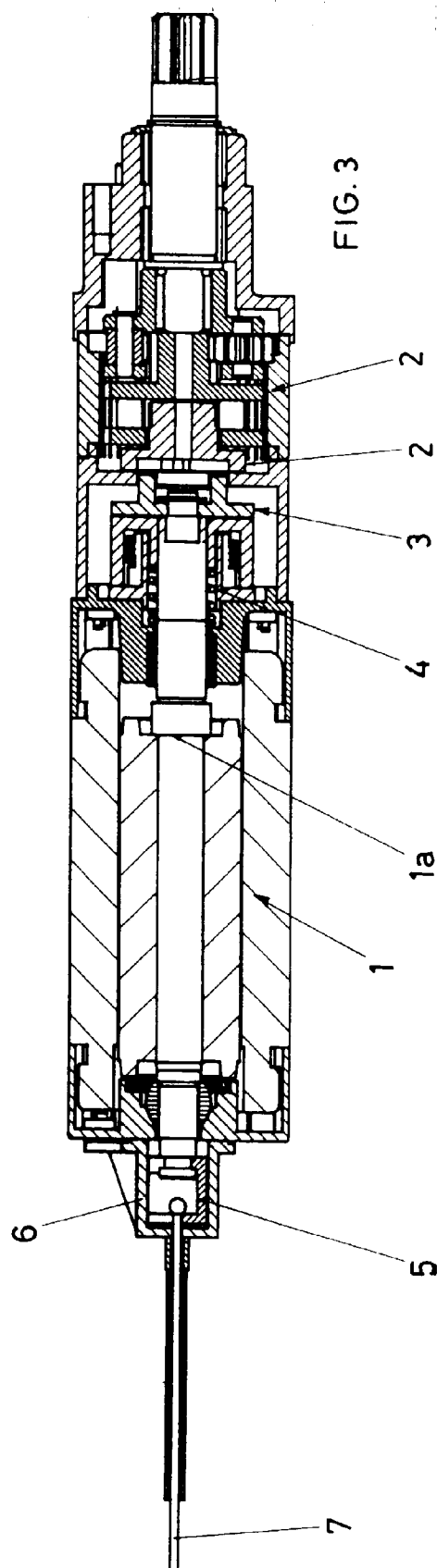


FIG. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 97 83 0648

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.6)
A	EP 0 497 711 A (SIMU) * the whole document *	1	E06B9/74
A	US 4 519 487 A (SOMFY) * the whole document *	1	
A	DE 36 08 988 A (HUBER, L.) * the whole document *	1	
A	US 5 052 235 A (MITSUBISHI DENKI KABUSHIKI KAISHA) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E06B
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 3 March 1998	Examiner Knerr, G
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