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(54) **Door closer**

(57) The invention relates to a remote control lock system used in doors of houses, offices or rooms or in movable elements. The present invention relates to a novel lock system, which is particularly used for locking doors, improved for preventing doors from being opened by unwanted people, and comprising control unit managing all the system, remote control commanding this unit via radio frequencies, motor actuating the system, and hydraulic piston preventing the door from being opened.

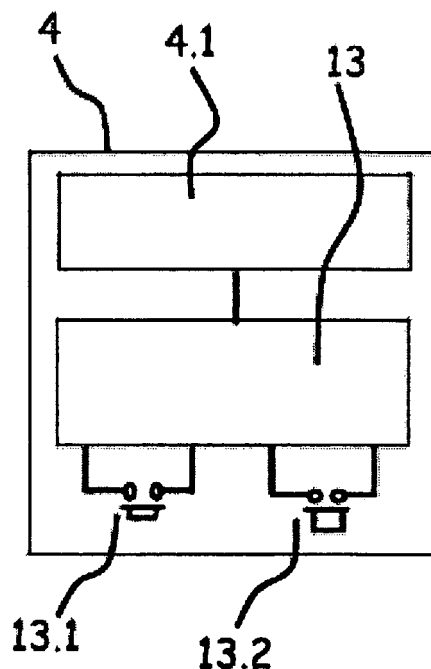


Figure 3

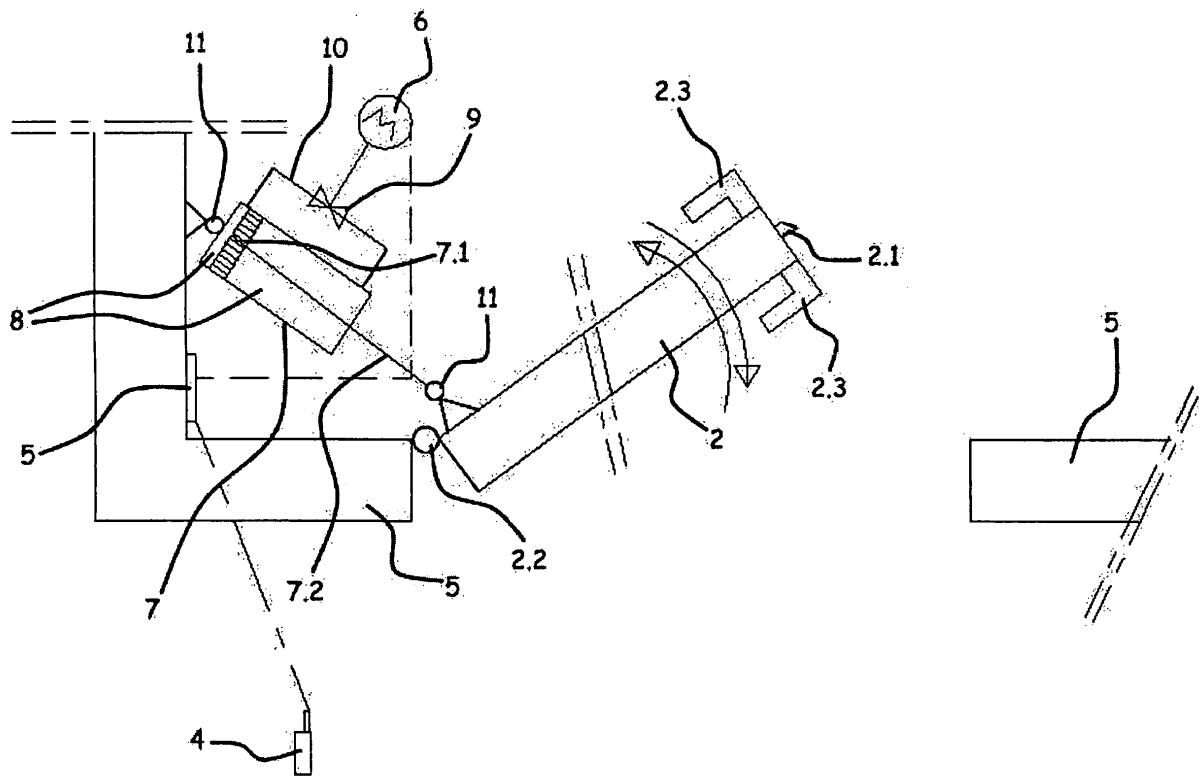


Figure 2

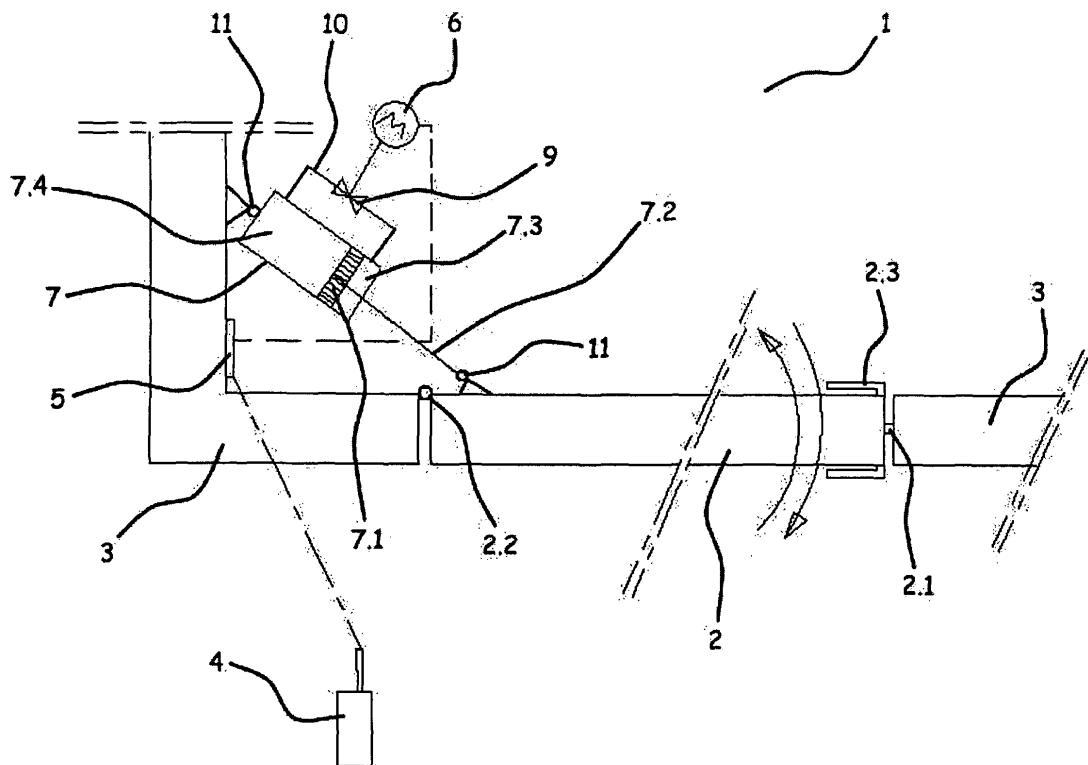


Figure 1

Description

The Related Art

[0001] The invention relates to a remote control lock system used in doors of houses, offices or rooms or in movable components.

[0002] The present invention relates to a novel lock system, which is particularly used for locking doors, improved for preventing doors from being opened by unwanted people, and comprising a control unit managing all the system, a remote control commanding this unit via radio frequencies, a motor actuating the system, and a hydraulic piston preventing the door from being opened.

Background of the Invention

[0003] Nowadays, various locking systems are used for locking doors or keeping them closed. While there are doors including locks which cannot be broken by thieves, there are also doors which are locked or opened by cards, remote control devices or fingerprints instead of keys. There are also electric motor-driven full automatic systems among these.

[0004] Among the examples used in the prior art, the automatic door closer (door hydraulics) is a mechanism, which provides automatic and crash-free closing of the door to which it is mounted, and it is commonly used in building doors. Besides building hydraulics, office, workplace etc. hydraulic application can also be made and it can be applied to all kinds of doors such as building doors, steel doors, furniture and wooden doors, glass doors etc.

[0005] Other examples found in the known status of the art are given below.

[0006] In the European patent no EP1747339B1, a sliding door system having a drive device placed at the upper transom is disclosed. The invention relates to a sliding door system, and this system comprises a drive device at least for a door leaf and an electromechanical actuation device for locking the door leaf in relation to the upper transom. The system also comprises endless traction means guided via a driven pulley of the drive device and tension-resistantly connected to the door leaf. The invention is characterized in that, the driven pulley of the drive device has locking elements located at a flange adjacent to its housing, and the locking elements which are adjustable at the locking elements of the flange are supported at the housing and they adjustable at the locking elements of the flange.

[0007] In the utility model no TR 2004/03488, a door locking system is disclosed, which is electric motor driven and which is full automatic-electronic opened and closed. The invention particularly relates to an automatic door lock system which can be adapted and used in all locks used in wooden, glass, aluminium, and iron doors, and it comprises a motor block which opens and/or closes the lock, to which it is adapted, according to a command taken from the electronic control unit, an accumulator

block which provides the energy to open and/or close the door in case of power cut, an on-off block which gives the command to open and/or close the motor block according to the internal, external, and sensor provided signals, a plug contact which conveys electricity to the motor block, and a door sensor which determines the situation of the door and sends the signals of this situation to the electronic control unit.

[0008] The utility model no TR 2008/03041 relates to an automatic door system, which automatically opens and/or closes the sliding doors that are used manually in commercial vehicles. Automatic opening and closing of the manually used sliding doors in the commercial vehicles are provided with the mechanic part comprising a gear belt (time belt, trigger belt) which is driven by a direct current electric motor and in which exchange ratios are provided via reducer, a belt gear, belt pulleys, a tensioner, a door puller system and lock bolt puller system; and with the electronic control system by which the controls are made for providing the desired engine revolutions, starting up and aborting the operation of the engines, providing the door stay in the desired position, providing the door with the desired speed while opening and closing, pulling and pushing of the door, preventing crushing in the doorway, providing audio and light warnings, providing opening and closing of the door be controlled by the driver and also by remote control device, providing closure of the door by application of opening operation to the door opening handle when it is open and vice versa.

[0009] The European patent no EP1509823B1 relates to an electrical system for controlling at least one gate or door or similar element of the type moved by means of electrical system. It is an electrical system for controlling at least one gate or door or similar element of the type moved by means of at least one corresponding electric motor, comprising; an electric network consisting of two electric wires adapted to allow distribution of power supply and digital information; a central control unit having two terminals adapted to be connected respectively but indifferently to the two wires of the network in order to transmit direct-current power supply and to transmit and receive digital information; three or more peripheral units, each having two terminals adapted to be connected respectively but indifferently to the two wires of the network in order to receive direct-current power supply and to receive and/or transmit digital information.

[0010] In the utility model no TR 2006/03216, an electrical automat, which operates on doors and movable mechanisms, is disclosed. In the utility model, by rotation of the sequential plastic gear, which is connected to the slow speed and gearbox engine fixed to the block connecting the engine and the gears, and the gear, which is connected to the slow speed gearbox engine, the plastic gears, which are engaged with the metal apparatus providing connection by arranging the gears in the desired length, are actuated and thus the iron apparatus, which move according to the position of the mechanism connected to these, brings the mechanism into the desired

position. In case of manual operating at any time, the push button is softly pressed and thus the connection in the block connecting the engine and the gears is separated. In this case, the movable mechanism is controlled by hand. When it is again desired to start the engine, the engine is softly pushed and thus the engine enters into the spring pin push button slot, which provides the connection between the engine and the gears, and then the connection between the engine and the gears is provided.

[0011] In conclusion, the inadequacy of the present solutions and the need for a novel lock system which eliminates the drawbacks found in the prior art, which is improved for preventing the doors from being opened by unwanted people and obtaining a highly secure door in a simple, practical and economic way different from the previous applications, and which comprises a control unit managing all the system, a remote control device commanding this unit via radio frequencies, a valve which, by being closed, prevents the passage of fluid and thus prevents opening of the door, a motor actuating the valve, and a hydraulic piston including fluid in itself have necessitated an improvement in the related technical field.

Purpose of the Invention

[0012] From the known status of the art, the purpose of the invention is to; develop a lock system which can control the fluid found in the hydraulic cylinder chamber by practically controlling the valve via an RF (radio frequency) remote control device.

[0013] Another purpose of the invention is to; develop a lock system for preventing the door from opening via the fluid found inside the hydraulic cylinder by making use of the principle of the liquids not being volumetrically compacted.

[0014] Another purpose of the invention is to; develop a highly secure lock system which can be applied to all kinds of doors and which is easy to install and use.

[0015] Another purpose of the invention is to; develop a practical lock system which can be controlled by only one remote control device and a button without the need for any key, card and etc. additional components.

[0016] Another purpose of the invention is to; develop a lock system which avoids unauthorized interferences to the system with the RF remote control device, which transmits the request of opening and/or closing of the valve via the two control buttons on itself.

[0017] Another purpose of the invention is to; develop a lock system, which can provide problem free valve control, using the accumulator, even when the power taken from the feed unit is cut.

[0018] Another purpose of the invention is to; develop a lock system comprising a feed and accumulator charging unit in order to provide energy to the system and charge the accumulator.

[0019] Another purpose of the invention is to; develop a lock system, in which different engine and different con-

trol units can be used according to the mechanical properties of the valve.

[0020] In order to achieve the above described purposes, a novel lock system is developed for preventing the doors from being opened by unwanted people and obtaining a highly secure door which is simple, practical, and economic, and it comprises;

- an RF receiver module which receives the code sent by the remote control device; a control unit managing all the system and including a microcontroller for decoding the said code, a motor driver driving the motor/engine, and a position detector,
- a remote control device which sends encoded data to the said control unit via radio frequencies and thus orientates it,
- a hydraulic piston which comprises a fluid that is found in its constitution and that can be switched between the front chamber and the rear chamber,
- a pipe which is placed on the said hydraulic piston and which connects the front chamber and the rear chamber and thus provides switching the place of the fluid,
- a valve which is placed on the said pipe and which can prevent passage of fluid according to the commands coming to the engine from the control unit and thus can prevent opening of the door by being pushed, and
- an engine which is connected with the valve and the control unit in order to actuate the valve.

[0021] In order to achieve the said purposes, a novel lock system is developed, which comprises a feed and accumulator charging unit in order to provide the required energy for operation of the system and in order to charge the accumulator.

[0022] The structural and characteristic features of the invention and all advantages will be understood better in detailed descriptions with the figures given below and with reference to the figures, and therefore, the assessment should be made taking into account the said figures and detailed explanations.

Figures for Better Understanding of the Invention

[0023]

Figure-1; is the top view of the lock system, which is the subject of the invention, while the door is in closed position.

Figure-2; is the top view of the lock system, which is the subject of the invention, while the door is in open position.

Figure-3; is the schematic view of the remote control device of the lock system, which is the subject of the invention.

Figure-4; is the schematic view disclosing the operation of the control unit of the lock system, which is

the subject of the invention.

Parts Numbers

[0024]

- 1- Lock system
- 2- Door
- 2.1- Lock Bolt
- 2.2- Hinge
- 2.3- Handle
- 3- Wall
- 4- Remote Control Device
- 4.1- RF Transmitter Module
- 5- Control Unit
- 5.1- Microcontroller
- 5.2- Motor Driver and Position Detector
- 5.3- RF Receiver Module
- 6- Motor
- 7- Piston
- 7.1- Movable Part
- 7.2- Starting Handle
- 7.3- Front Chamber
- 7.4- Rear Chamber
- 8- Fluid
- 9- Valve
- 10- Pipe
- 11- Juncture point
- 12- Feed and Accumulator Charging Unit
- 13- Button Control and Encryption Unit
- 13.1- Button in ON mode
- 13.2- Button in OFF mode

Detailed Description of the Invention

[0025] In this detailed description, the preferred embodiments of the lock system (1), which is the subject of the invention, will only be disclosed as an example for better understanding of the subject, and will not form any limiting effect.

In Figure-1, the top view of the lock system (1), which is the subject of the invention, is given while the door (2) is in closed position. The door (2) mounted on the wall (3) via the hinge (2.2) seems to be closed via the lock bolt (2.1) on the other side. The said lock system (1) comprises a piston (7), which is connected to the door (2) via a juncture point (11) placed at the backside of the door (2), and which is connected to the wall (3) that is in cross-wise position with the door (2), via another juncture point (11). Fluid (8) material is found inside the said piston (7), and due to the motion of the movable part (7.1) inside the piston (7) and since this fluid (8) can not be compacted, it goes between the front and rear chambers (7.3, 7.4) of the piston (7) by passing through the pipe (10).

[0026] In Figure-2, the top view of the lock system (1), which is the subject of the invention, is given while the door (2) is in open position. Under normal conditions, a person, who opens the lock bolt (2.1) by holding the door

(2) from the handle (2.3), pushes the door (2) towards inside in order to enter. This pushing movement causes the starting handle (7.2) connected to the door (2) via a juncture point (11) placed at the backside of the door (2), and the movable part (7.1) connected this starting handle, be pushed ahead. Therefore, the fluid (8) found inside the piston (7) moves from the rear chamber (7.4) to the front chamber (7.3) by passing through the pipe (10). In order to provide this movement, the valve (9) placed on the pipe (10) has to be left open.

[0027] In Figure-3, the schematic view of the remote control device (4) of the lock system (1), which is the subject of the invention, is given. The ON (13.1) and OFF (13.2) modes of the control and encryption unit (13) is shown here. In cases where opening of the door (2) is not wanted due to security or other reasons, the lock system (1) works as described below. Code is sent to the control unit (5) using the remote control device (4), which operates via radio frequency (RF). The microcontroller (5.1) located in the said control unit (5) decodes the code coming from the remote control device (4) and received via RF receiver module (5.3), and if the code is correct, then transmits it to the motor driver and position detector (5.2).

[0028] In Figure-4, the schematic view disclosing the operation of the control unit (5) of the lock system (1), which is the subject of the invention, is given. The information transmitted to the motor and the position detector (5.2) is then transmitted to the motor (6) in order to make it close the valve (9). When the valve (9) is in closed position, the fluid (8) located inside the piston (7) is prevented from moving between the chambers (7.3, 7.4). In this case, the movable part (7.1) and the starting handle (7.2) connected to this part are completely fixed, and thus the person who tries to open the door (2) can not push the door (2). Since the fluid (8) found inside the piston (7) can not be compressed due to the laws of physics, the door (2) can not be opened by pushing and thus the desired security is provided.

[0029] The invention is a lock system (1) developed for providing security, and it is characterized in that; it comprises:

- RF receiver module (5.3) receiving the code sent by the remote control device (4); control unit (5) managing all the system and including a microcontroller (5.1) for decoding the said code, a motor driver driving the motor/engine (6), and a position detector (5.2),
- remote control device (4) which sends encoded data to the said control unit (5) via radio frequencies and thus orientates it,
- hydraulic piston (7) which comprises a fluid (8) located in its body and can replace between the front chamber (7.3) and the rear chamber (7.4),
- pipe (10) placed on the said hydraulic piston (7) and connects the front chamber (7.3) and the rear chamber (7.4) to provide replacing of the fluid (8),

- valve (9) placed on the said pipe (10) and can prevent passage of fluid (8) according to the commands (5) coming to the engine (6) from the control unit (5) and thus can prevent opening of the door (2) by being pushed, and
- engine (6) connected with the valve (9) and the control unit (5) in order to actuate the valve (9).

[0030] The said lock system (1) also comprises a feed and accumulator charging unit (12) in order to provide the required energy for operation of the system (1) and in order to charge the accumulator.

[0031] The protection scope of this application has been specified under claims and cannot be limited to the descriptions only given as sampling above. It is obvious that a person skilled in the related art can apply the innovation disclosed by this invention into similar purposed other areas by means of changing the parts in form and using similar structures. Therefore, it is also clear that such embodiments lack of novelty and inventive step criteria.

Claims

1. The invention is a lock system (1) developed for providing security, and it is **characterized in that**; it comprises:

- RF receiver module (5.3) receiving the code sent by the remote control device (4); control unit (5) managing all the system and including a microcontroller (5.1) for decoding the said code, a motor driver driving the motor/engine (6), and a position detector (5.2),
- remote control device (4) which sends encoded data to the said control unit (5) via radio frequencies and thus orientates it,
- hydraulic piston (7) which comprises a fluid (8) located in its body and can replace between the front chamber (7.3) and the rear chamber (7.4),
- pipe (10) placed on the said hydraulic piston (7) and connects the front chamber (7.3) and the rear chamber (7.4) to provide replacing of the fluid (8),
- valve (9) placed on the said pipe (10) and can prevent passage of fluid (8) according to the commands (5) coming to the engine (6) from the control unit (5) and thus can prevent opening of the door (2) by being pushed, and
- engine (6) connected with the valve (9) and the control unit (5) in order to actuate the valve (9).

2. A lock system (1) according to Claim 1, and it is **characterized in that**; it comprises a piston (7) connected to the door (2) via a juncture point (11) placed at the backside of the door (2) and connected to the wall (3) that is in crosswise position with the door (2),

via another juncture point (11).

3. A lock system (1) according to Claim 1, and it is **characterized in that**; it comprises a starting handle (7.2) in order to provide the connection of the said piston (7) with the door (2) from the juncture point (11) placed at the backside of the door (2) and in order to convey the motion coming from the door (2) to the movable part (7.1); and a movable part (7.1) connected to the said starting handle (7.2) and provides movement of the fluid (8).
4. A lock system (1) according to Claim 1 and it is **characterized in that**; it also comprises feed and accumulator charging unit (12) in order to provide the required energy for operation of the system (1) and in order to charge the accumulator.

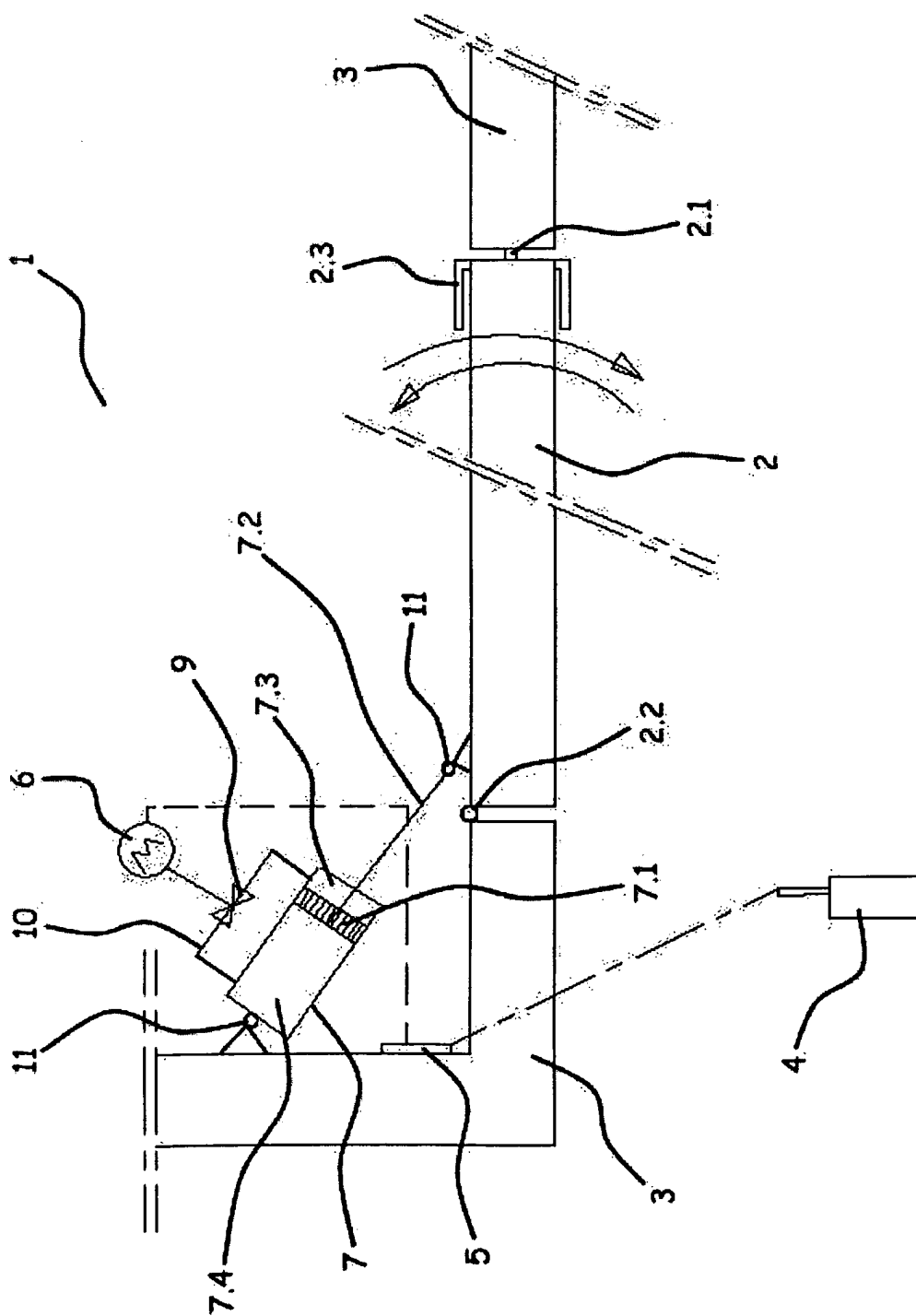


Figure 1

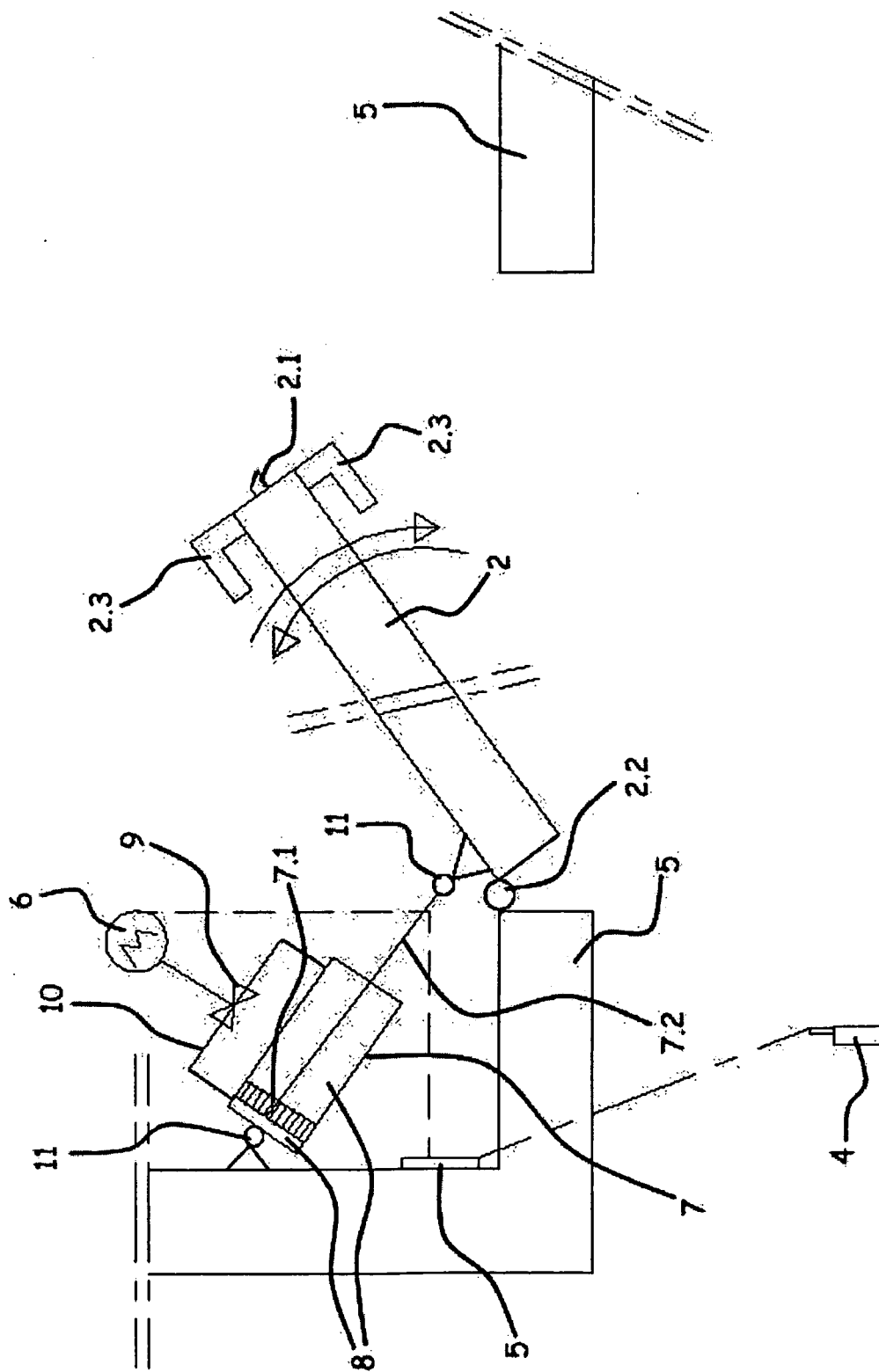


Figure 2

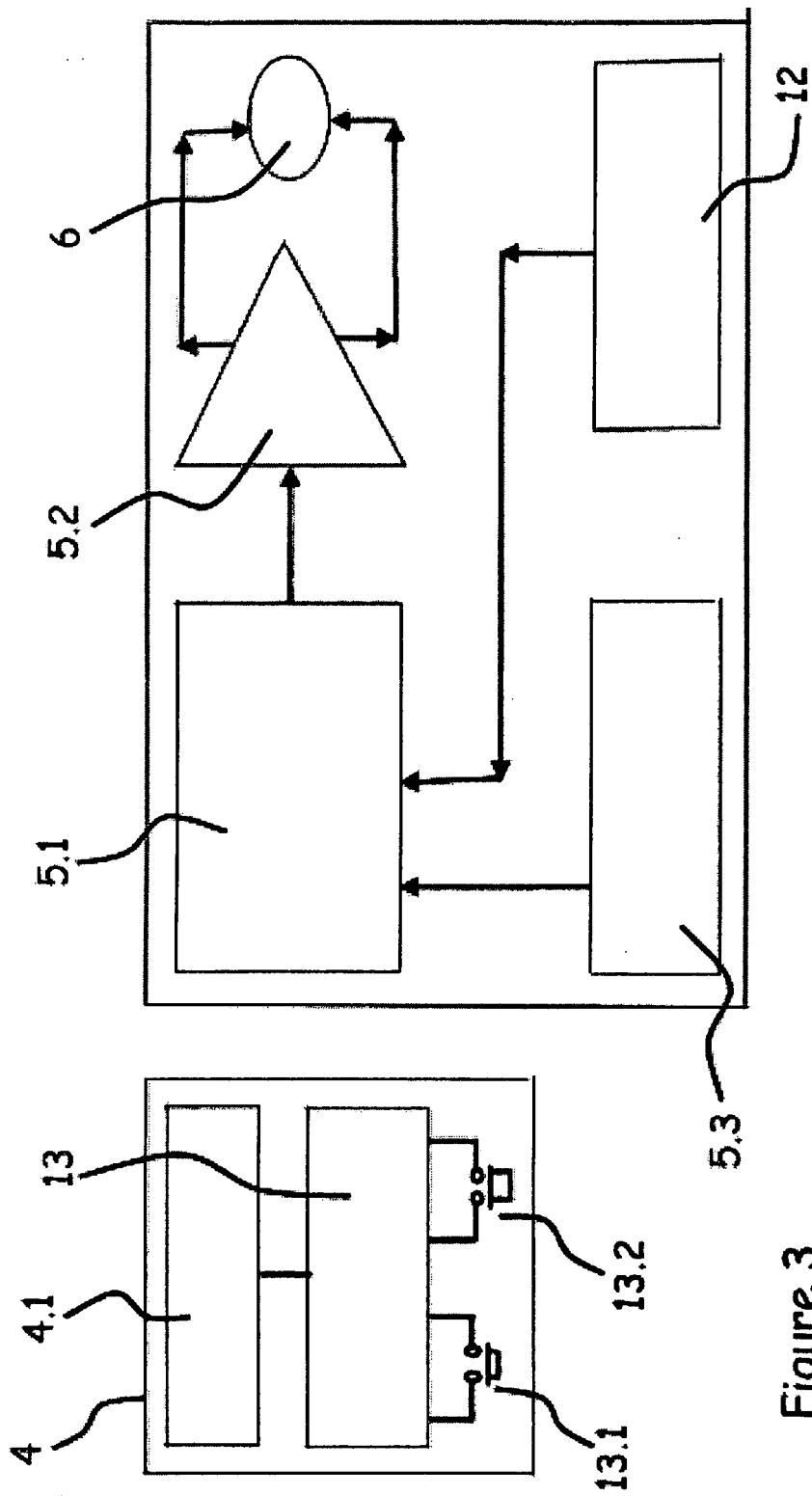


Figure 4

Figure 3



EUROPEAN SEARCH REPORT

Application Number
EP 10 00 4265

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2008/115543 A1 (LANIGAN WILLIAM P [US]) ET AL) 22 May 2008 (2008-05-22)	1-4	INV. E05F15/02 E05F15/04 E05F15/20
Y	* paragraph [0022] - paragraph [0042]; claim 1; figures 1-6 *	1-4	
Y	----- US 5 050 346 A (ECCLESTON JON E [US]) 24 September 1991 (1991-09-24) * column 4, line 31 - column 7, line 29; claim 1; figures 1-7 *	1-4	
Y	----- FR 2 409 363 A1 (BELIN JACQUES [FR]) 15 June 1979 (1979-06-15) * page 2, line 26 - page 4, line 26; claims 1,4,9; figures 1,2 *	1-4	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E05F
Place of search		Date of completion of the search	Examiner
Munich		9 September 2010	Balice, Marco
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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EPO FORM 1503 03.82 (P04C01)

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

EP 10 00 4265

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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09-09-2010

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 2008115543	A1	22-05-2008	NONE		
US 5050346	A	24-09-1991	CA	2043524 A1	31-01-1992
FR 2409363	A1	15-06-1979	NONE		

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1747339 B1 [0006]
- EP 1509823 B1 [0009]