



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.12.2012 Bulletin 2012/50

(51) Int Cl.:
D06F 69/02 (2006.01)

(21) Application number: **11466013.7**

(22) Date of filing: **08.06.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(72) Inventors:
• **Odersky, Michal**
74221 Koprivnice (CZ)
• **Glac, Antonin**
73701 Karvina (CZ)

(71) Applicant: **Primus CE, s.r.o.**
742 58 Pribor (CZ)

(74) Representative: **Malusek, Jiri**
Kania, Sedlak, Smola
Mendlovo namesti 1 a
603 00 Brno (CZ)

(54) **Direct driver system of the flatwork ironer**

(57) Direct driver system of the flatwork ironer consists of the connecting driving component, the driving wheel, the wheel for driving the snub roll, the wheel for driving the roll, which drives the feeding strips, the wheel for driving the roll, which drives the ironing strips, the straining wheel and the motor, where the driving wheel (3), which is simultaneously the wheel for driving the roll,

which drives the ironing strips (8), the wheel (4) for driving the snub roll, the wheel (5) for driving the roll, which drives the feeding strips (9), and the straining wheel (6) are interconnected by the connecting driving component (7), whereas the driving wheel (3) is a hard-set of the roll, which drives the ironing strips (8), whereas the roll, which drives the ironing strips (8) is connected with the driving shaft of the motor (10).

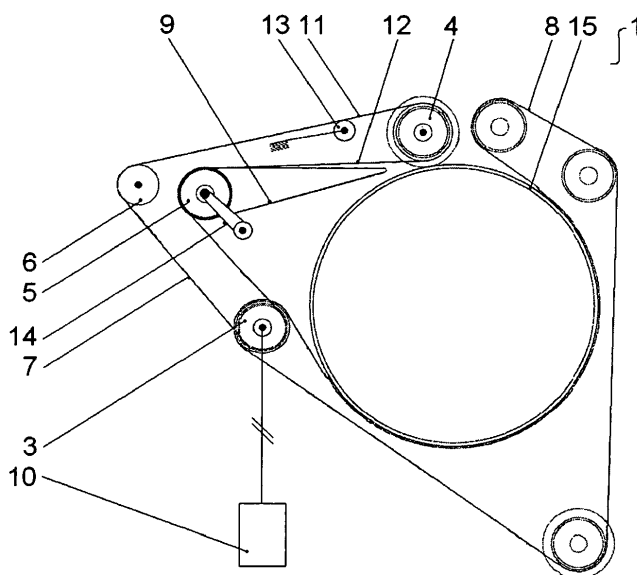


Fig. 2

Description

Background of the invention

[0001] The invention concerns the direct driver system of the flatwork ironer.

State of the Art

[0002] The functional part of the flatwork ironer is performed as an arrangement of an ironing roll, an upper snub roll, a feeding desk with a driving roll of the feeding desk, a driving roll of ironing strips, a roll for straining the ironing strips, set of undriven guiding rolls of the ironing strips, and set of the ironing strips. Each of those active rolls rotate with a different angular velocity and a malfunction of just one of that rolls means breaking down of the whole machinery.

[0003] Driving of the number of the rolls is realized by a single motor, whereas the separate rolls are rotated together due to a set of wheels and belts/chains. The belts/chains are named simply as connecting driving components. Number of the connecting driving components depends on complexity of the specific machine. In CN 2672137 an example of such type of a machine is described, but the wheels are not shown

[0004] In US 1819534 an old type of the flatwork ironer is presented, with a motor, which drives a set of the interconnected driving wheels of rolls via two belts. This method is extremely demanding for maintainance and for lubrication of the whole gear assembly.

[0005] In JP 2009142337 the flatwork ironer with a motor is presented, where the motor drives subsequently six belts and plenty of driven wheels. Said device is extremely complicated and difficult for maintainance, with regard to plenty of applied parts. Consequently to that the device is not suitable for reliable running of the whole machinery.

[0006] In Fig. 1 a most often used driving system is described, which presents the state of the art.

[0007] The driving system is provided by eight wheels interconnected by two connecting driving components 80 and 90. A wheel 20 with an integrated free clutch is driven by motor 10 which is provided by a gearbox. The wheel 20 drives a driving wheel 30 of a roll for driving ironing strips 8 via the primary connecting driving component 80 of a high strength range, whereas the primary connecting driving component 80 simultaneously drives a wheel 50 of a roll for driving feeding strips 9 of a feeding desk. The surface speed of the roll for driving the ironing strips 8, respectively a surface speed of the ironing strips 8, which are driven by driving roll, is gently higher than the surface speed of a snub roll. The primary connecting driving component 80 is strained in small range by wheel 70 during an operation. Straining of the connecting driving component 80 is primary made by feeding wheel 60. Transfer of a movement of the primary connecting driving component 80 to the secondary connecting driving com-

ponent 90 is performed by double wheel 100. The secondary connecting driving component 90 of a low strength range is intended for driving, respectively for braking of the wheel 40 of the snub roll. Straining of the secondary connecting driving component 90 is performed by elastic straining slider 13, which automatically eliminates small inalignment of the system and a waving motion of the snub roll during operation. In case of a malfunction caused by e.g. blackout, when flatwork ironer 2 is stoped, it is possible to mount a handle 14 to the straining wheel 70 with a free clutch. By turning of the handle 14 it is possible to keep the whole machinery in emergency motion to save laundry from its burning.

[0008] It is clear that such driving system is costly in production and in maintainance, because each additional component increases possibility of malfunction. Such malfunction can be spilling out of the bearings of the wheels or rupture of the belt.

[0009] The aim of the invention is to disclose a new type of the direct driving of the flatwork ironer, which simplifies the driving system of the flatwork ironer and reduces production costs, maintainance costs and minimizes the occuring of malfunctions.

Feature of the Invention

[0010] The above mentioned disadvantages are considerably eliminated by use of direct driver system of the flatwork ironer consists of the connecting driving component, the driving wheel, the wheel for driving the snub roll, the wheel for driving the roll, which drives the feeding strips, the wheel for driving the roll, which drives the ironing strips, the straining wheel and the motor, where the driving wheel, which is simultaneously the wheel for driving the roll, which drives the ironing strips, the wheel for driving the snub roll, the wheel for driving the roll, which drives the feeding strips, and the straining wheel are interconnected by the connecting driving component, whereas the driving wheel is a hard-set of the roll, which drives the ironing strips, whereas the roll, which drives the ironing strips is connected with the driving shaft of the motor.

[0011] In an advantageous embodiment the connecting driving component is a chain, a V-belt, a belt or a strip.

[0012] In another advantageous embodiment in the area between the straining wheel and the wheel, which drives the snub roll a straining slider is arranged.

[0013] In another advantageous embodiment in the area between the straining wheel and the wheel, which drives the snub roll a straining wheel is arranged.

Description of the Drawings

[0014] The invention will be further explained by use of drawings, in which Fig. 1 presents a scheme of the direct driver system of the flatwork ironer according to the state of the art, Fig. 2 presents a scheme of the direct driver system of the flatwork ironer according to the in-

vention, Fig. 3 presents an axonometric realistic view of the direct driver system of the flatwork ironer according to the invention shown in Fig. 2 and Fig. 4 presents a side view of the flatwork ironer, which is provided by the direct driver system of the flatwork ironer according to the invention.

Preferred Embodiment of the Invention

[0015] In Fig. 2 the direct driver system 1 of the flatwork ironer 2 is presented, which is provided by four wheels 3, 4, 5, 6 interconnected by connecting driving component 7, which can be performed as a chain, a V-belt, a belt or a strip, where the driving wheel 3 is a part of a roll driving ironing strips 8, where the driving wheel 4 is a part of a swinging arranged snub roll, where the wheel 5 is a part of a roll, which drives feeding strips 9 of a feeding desk, and where the straining wheel 6 engages to strain the connecting driving component 7.

[0016] Driving of the whole direct driver system 1 of the flatwork ironer 2 is performed by motor 10 provided by a gearbox.

[0017] The wheels 3, 4, 5, 6 and the connecting driving component 7 are arranged at one side of the flatwork ironer 2, whereas the motor 10 is arranged on the other side of the flatwork ironer 2. The motor 10 is connected by a free clutch and elastic reaction arm with the driving roll of the ironing strips 8 provided by connected driving wheel 3, so the driving roll of the ironing strips 8 and the driving wheel 3 is simultaneously driven by motor 10. The connecting driving component 7 is strained over the wheels 3, 4, 5, 6 in such a way, that the connecting driving component 7 creates the laid letter "V" by side view onto the flatwork ironer 2, where on its tops the wheels 3 and 4 are arranged and on its interference point of an outside section 11 of the connecting driving component 7 the straining wheel 6 is arranged and on its interference point of an inside section 12 of the connecting driving component 7 the wheel 5 is arranged.

[0018] The inside section 12 of the connecting driving component 7 between the wheels 4 and 5 is a braking branch of the wheel 4 and therefore it is kept in stretch. To avoid an interface between the inside section 12 of the connecting driving component 7 between the wheels 4, 5, and the outside section 11 of the connecting driving component 7 between the wheels 4, 6, an area between those sections is provided by an elastic straining slider 13, which pushes section 11 of the connecting driving component 7 away from the inside section 12 of the connecting driving component 7. It is possible to imagine the elastic straining slider 13 performed as a wheel.

[0019] In case of blackout there is a possibility to mount a handle 14 to the wheel 5, eventually to the wheel 3, for emergency manual driving of the whole wheelwork of the direct driver system 1 of the flatwork ironer 2. This is required as a prevention of burning of the ironed laundry in case of the stop of the direct driver system 1 of the flatwork ironer 2 during ironing, when laundry is in contact

with an ironing roll 15 of high temperature for a long time.

[0020] The handle 14 is arranged in the direct driver system 1 of the flatwork ironer 2 in such a way, that in the off position it is not in functional interconnection with the direct driver system 1 of the flatwork ironer 2. The functional interconnection of the handle 14 with the direct driver system 1 of the flatwork ironer 2 is arisen after its pressing. The handle 14 is provided by unidirectional gear coupling, which will start override in case of pressing onto the handle 14 during running of the machinery. The construction of the handle 14 ensures that, the handle 14 is ejected itself to the position, where it is not in engagement with the direct driver system 1 of the flatwork ironer 2, if the handle 14 is mechanically connected with the direct driver system 1 of the flatwork ironer 2 but there is no press on the handle 14 from the operator.

[0021] To enable moving with the rolls, respectively with the wheelwork of the direct driver system 1 of the flatwork ironer 2 by the handle 14 the gearbox of the motor 10 is provided by a free clutch, which ensures disconnection of the direct driver system 1 of the flatwork ironer 2 from the motor 10 in the case of manual driving by handle 14.

[0022] Now after the above explanation, the whole direct driver system 1 of the flatwork ironer 2 can be compared with the state of the art, which is described hereinbefore. The wheel 3 corresponds with the wheel 20, 30 and 70, the wheel 4 corresponds with the wheel 40, the wheel 5 corresponds with the wheel 50 and the straining wheel 6 corresponds with the straining wheel 60. Consequently to the confrontation of Fig. 1 and Fig. 2 it is clear, that the emplacement of said wheels 3, 4 and 5 within the wheel 6 is the same for both cases of the same flatwork ironer 2. The proposed direct driver system 1 of the flatwork ironer 2 allows to leave out the straining wheel 70, the wheel 20, the secondary connecting driving component 90 and the double wheel 100. Such direct driver system 1 of the flatwork ironer 2 is cheaper, simpler and it increases durability and accuracy of the movement.

Claims

1. Direct driver system of the flatwork ironer consists of the connecting driving component, the driving wheel, the wheel for driving the snub roll, the wheel for driving the roll, which drives the feeding strips, the wheel for driving the roll, which drives the ironing strips, the straining wheel and the motor **characterized in, that** the driving wheel (3), which is simultaneously the wheel for driving the roll, which drives the ironing strips (8), the wheel (4) for driving the snub roll, the wheel (5) for driving the roll, which drives the feeding strips (9), and the straining wheel (6) are interconnected by the connecting driving component (7), whereas the driving wheel (3) is a hard-set of the roll, which drives the ironing strips

(8), whereas the roll, which drives the ironing strips (8) is connected with the driving shaft of the motor (10).

2. Direct driver system of the flatwork ironer according to the claim 1 **characterized in, that** the connecting driving component (7) is a chain, a V-belt, a belt or a strip. 5
3. Direct driver system of the flatwork ironer according to the claim 1 **characterized in, that** in the area between the straining wheel (6) and the wheel (4), which drives the snub roll a straining slider (11) is arranged. 10
4. Direct driver system of the flatwork ironer according to the claim 1 **characterized in, that** in the area between the straining wheel (6) and the wheel (4), which drives the snub roll a straining wheel is arranged. 15 20

25

30

35

40

45

50

55

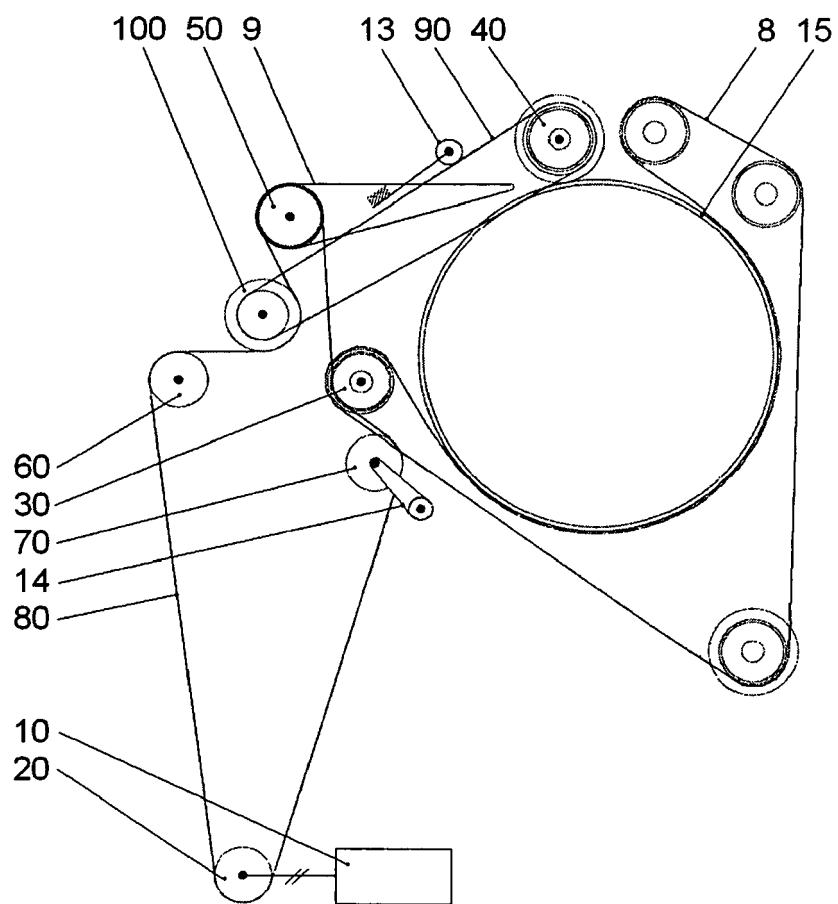


Fig. 1

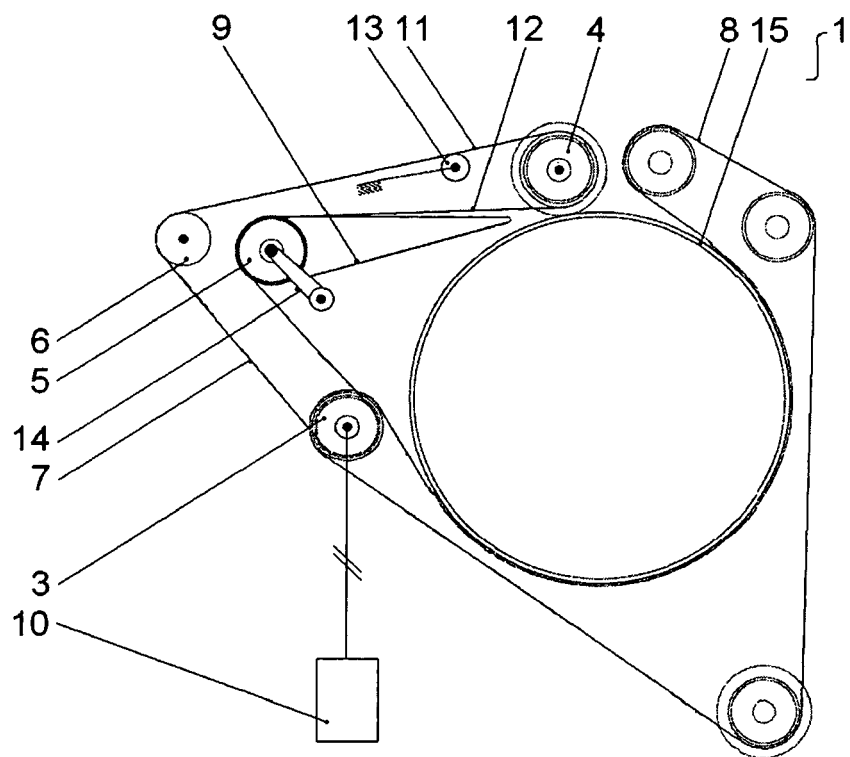


Fig. 2

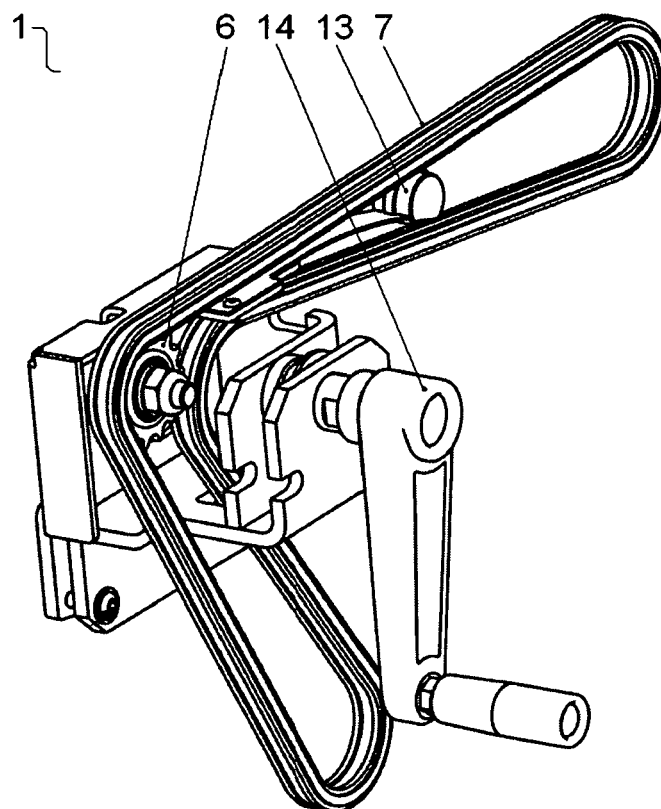


Fig. 3

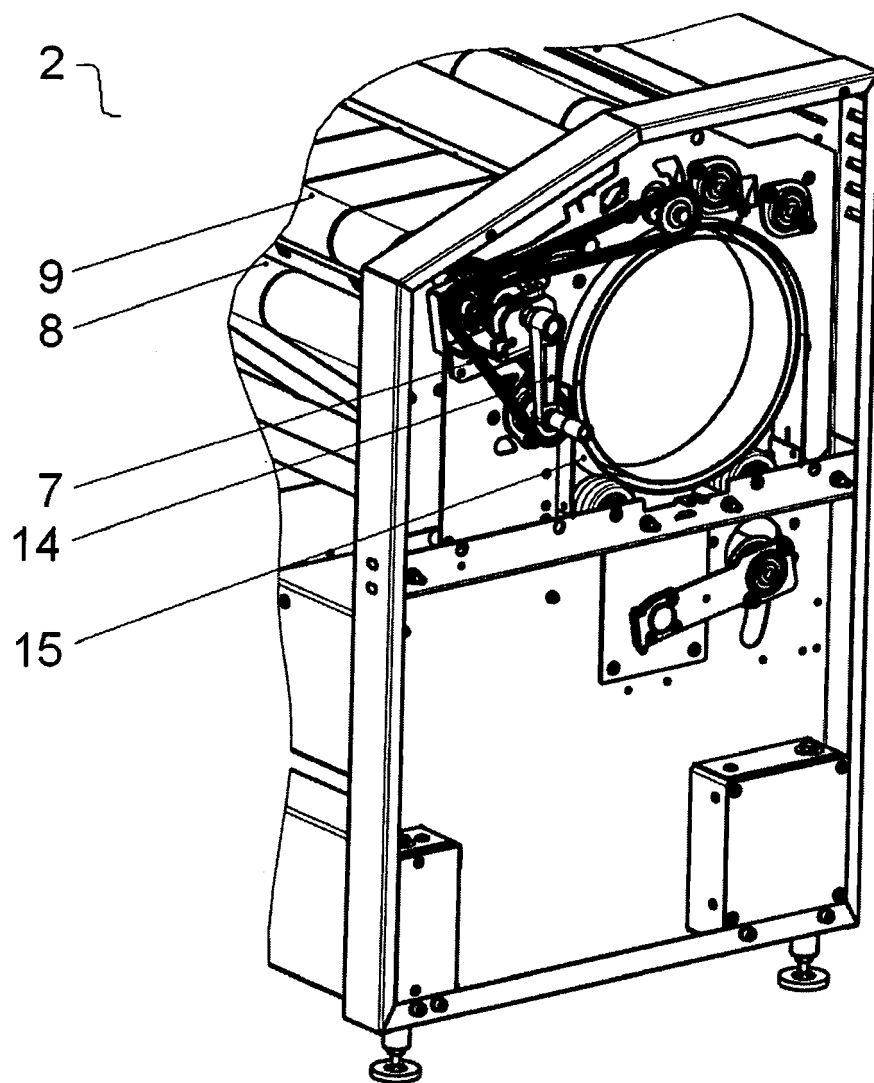


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 11 46 6013

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 3 510 971 A (BRAVETTI LIBERO) 12 May 1970 (1970-05-12) * the whole document *	1-4	INV. D06F69/02
X	US 3 634 956 A (BEHN SHELDON P) 18 January 1972 (1972-01-18) * column 2, line 43 - column 3, line 45; figures 3,4,6 *	1-4	
A,D	JP 2009 142337 A (MUSASHINO KIKAI KK) 2 July 2009 (2009-07-02) * abstract; figures *	1-4	
A,D	CN 2 672 137 Y (HAISHI MACHINERY GROUP CO LTD [CN]) 19 January 2005 (2005-01-19) * figures *	1-4	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
Place of search		Date of completion of the search	Examiner
Munich		28 October 2011	Prosig, Christina
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			

2
EPO FORM 1503 03.82 (P04C01)

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

EP 11 46 6013

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-10-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3510971 A	12-05-1970	BE 720969 A	03-03-1969
		CH 493683 A	15-07-1970
		DE 1801393 A1	05-02-1970
		FR 1604663 A	03-01-1972
US 3634956 A	18-01-1972	NONE	
JP 2009142337 A	02-07-2009	NONE	
CN 2672137 Y	19-01-2005	NONE	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 2672137 [0003]
- US 1819534 A [0004]
- JP 2009142337 B [0005]