



(11)

**EP 1 626 028 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**15.02.2006 Bulletin 2006/07**

(51) Int Cl.:  
**B66F 7/06** <sup>(2006.01)</sup>

(21) Application number: **04380169.5**

(22) Date of filing: **11.08.2004**

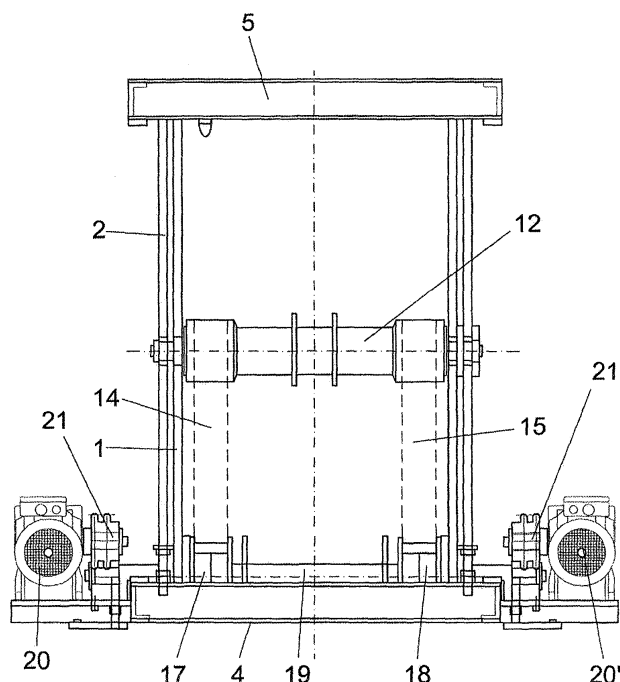
(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HU IE IT LI LU MC NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL HR LT LV MK**  
  
(71) Applicant: **Transportes Continuos Interiores S.A.**  
**08754 Barcelona (ES)**

(72) Inventor: **Lopez Alba, Adelardo**  
**08754 Papiol (Barcelona) (ES)**  
  
(74) Representative: **Toro Gordillo, Ignacio Maria**  
**Viriato, 56-1o izda.**  
**28010 Madrid (ES)**

(54) **Power-operated scissor lift table**

(57) A power-operated scissor table, provided with a base (4) and an upper platform or tabletop (5) connected by means of a scissor-type mechanism (1-2) actuated by means of a pair of thrust shafts (12-13) susceptible to approaching one another or moving away from one another with the collaboration of a pair of belts (14) and (15), wrapping around said shafts, which are fixed to the structure of the table at one of their ends through tension members and are fixed at their other end to respective wrap sheaves (17) and (18) assembled on a common

shaft (19), the invention consists of coupling to the ends of said shaft (19) respective geared motors (20-20'), assisted by respective clutches (21-21'), such that one of said motors is operative while the other one is in a standby situation, and such that with the collaboration of an electronic circuit, when the operative motor undergoes a failure, said motor remains out of service and is declutched from the shaft (19), making the other motor automatically clutch said shaft and passing to an operative situation, keeping the functioning capacity of the table uninterrupted in spite of the failure it has undergone.



**FIG. 3**

## Description

### OBJECT OF THE INVENTION

[0001] The present invention refers to a lift table, i.e. a table whose platform or tabletop is susceptible to adopting different positions in height with the collaboration of a scissor-type mechanism, such as those used in repair shops, warehouses, and the like.

[0002] The object of the invention is to achieve a table which, in addition to performing its function as such lift element, provides maximum functional assurances against a possible failure in its drive mechanisms, and in parallel, provides great operating ease from the maintenance point of view.

### BACKGROUND OF THE INVENTION

[0003] Lift tables are known with a scissor-type lift system, in which the arms of the scissor are assembled with rotational possibility with regard to the table base and the tabletop at one of their ends, whereas at the other end they are susceptible to moving on guides operatively arranged in said elements, such that the scissor is susceptible to being folded in a practically horizontal and lower position corresponding to the position of the lower limit of the tabletop, and being extended from this position until reaching maximum height for said tabletop.

[0004] To carry out the actuation of said arms of the scissor, lift tables usually incorporate one or more conveniently power-operated spindles. In this sense it is worth mentioning European patent EP 0724540, in which a lift table with a scissor-like lift system is disclosed, in which a motor acts by means of a threaded spindle on several pivoting connecting rods in turn acting on the scissor arms, causing the table to lift or lower.

[0005] Said spindles, due to their nature and functionality, require a relatively costly maintenance, which makes them inadvisable.

[0006] In trying to avoid this drawback, the applicant is the holder of European patent EP 1342429, in which a scissor lift table is disclosed which, starting from the basic structure of a standard scissor table, focuses its features on the use, as a transmission means between the drive motor and the scissor arms, consisting of several belts fixed at one of their ends by the anti-rotation support assembled on the geared motor, whereas at their other end they are fixed to a thrust shaft, acting on the scissor, in turn acting, through its intermediate area, on a second thrust shaft which they wrap around.

[0007] Said geared motor is located on the imaginary longitudinal axis of the table and the belts are symmetrically located at both sides of said axis.

[0008] This solution, perfectly valid from the theoretical point of view, has drawbacks in practice which are mainly focused on two aspects:

- A possible failure in the geared motor or in one of

the transmission belts functionally renders the table useless.

- The location of the geared motor under the tabletop, specifically in correspondence with the longitudinal shaft thereof, as previously commented, makes access to said motor in maintenance tasks considerably difficult, obliging in such circumstances that the tabletop is completely lifted, which is sometimes difficult to achieve.

### DESCRIPTION OF THE INVENTION

[0009] The table proposed by the invention, starting from the idea of using belts as transmission elements between the drive means and the scissor, acting on the previously mentioned thrust shafts, solves the drawbacks set forth previously in the two commented aspects in a completely satisfactory manner.

[0010] To that end, more specifically and according to one of the features of the invention, the table incorporates two geared motors coupled to a common shaft through respective clutches, such that under normal conditions, it is one of these geared motors that is operative and clutched to said common shaft, whereas the other one is inoperative and declutched, while due to a possible failure in the operative motor, the declutching of the latter and the automatic clutching and running of the second motor which operatively replaces the first one occurs automatically.

[0011] It is thus assured that the operation of the table is continuous, since it is rather unlikely, practically impossible, for the simultaneous failure of the two motors to occur in practice, such that the broken-down motor can be repaired or replaced while the other one is operating.

[0012] According to another one of the features of the invention, said geared motors are located in side areas of the table, outside of the structure and tabletop thereof, which implies very easy access thereto in maintenance works.

### DESCRIPTION OF THE DRAWINGS

[0013] To complement the description being made and for the purpose of helping to better understand the features of the invention, according to a preferred embodiment example thereof, a set of drawings is attached as an integral part of said description, in which the following has been shown with an illustrative and non-limiting character:

Figure 1 schematically shows a side elevational view of a power-operated scissor lift table carried out according to the object of the present invention.

Figure 2 shows an upper plan view of the table of the previous figure, lacking its tabletop, to show its structure more clearly.

Figure 3 finally shows a profile view of the same ta-

ble.

## PREFERRED EMBODIMENT OF THE INVENTION

**[0014]** In view of described figures, it can be observed how the lift table proposed by the invention comprises scissor arms (1-2) hinge-assembled on an intermediate pivot shaft (3), these arms (1) and (2) being collapsible at one of their ends with regard to the table base (4) and the tabletop (5) through the respective pivot shafts (6) and (7), whereas at their other end said arms (1) and (2) are finished off in rolling elements (8) and (9), sliding on the guides (10) and (11) operatively arranged on the base (4) and the tabletop (5).

**[0015]** Acting on the opposite sides of the scissor arms (1) and (2) are two transverse thrust shafts (12) and (13), parallel to the rotating shaft (3) of the scissor arms, and which cause the hinging of the scissor as they approach one another for the upward movement of the tabletop (5) and vice versa, said thrust shafts (12) and (13) being connected by means of a pair of side belts (14) and (15) fixed at one of their ends, with the collaboration of respective tension members (16), to one of said shafts, and which, after wrapping around both thrust shafts (12) and (13), are directed towards respective conveniently power-operated wrap sheaves.

**[0016]** However, from this basic and standard structure, and according to the invention, the wrap sheaves (17-18) of the belts (14) and (15) are keyed to a common shaft (19), to which respective geared motor groups (20-20') are coupled at the same time at their ends, which are located outside of the frame of the table, as is observed in any of Figures 2 and 3, with the special particularity that said geared motors (20-20') are connected to the common shaft (19) through respective clutches (21-21') which allow the mechanical connection to/disconnection from said shaft.

**[0017]** An electronic control circuit of said geared motors, not shown in the drawings because it can be of any standard type, makes one of said motors (20) exclusively operate normally, and that in turn it is kept clutched to the shaft (19), whereas the other motor (20') is disconnected and inoperative.

**[0018]** Due to a possible failure in the operating drive group detected by any suitable sensor, the electronic circuit interrupts the power supply of the motor (20) operating until that moment, causes the declutching thereof from the shaft (19) and simultaneously establishes the power supply for the other motor (20') and its clutching to the shaft (19), therefore the functioning capacity of the table is not interrupted despite the failure which has occurred.

**[0019]** Due to its easy and direct accessibility, the out-of-service motor (20) can easily be removed for its repair or replacement.

**[0020]** Another feature which this table can have is that of using the two motors (20 and 20') so that they operate in a unitary or redundant manner, without clutches, and

with a manual mechanism for their coupling/decoupling, for example on the transmission chains.

**[0021]** Having sufficiently described the nature of the invention as well as a preferred embodiment example, it is stated for all suitable purposes that the materials, shape, size and arrangement of the described elements can be susceptible to modification, as long as this implies no alteration of the essential features of the invention, which are claimed below.

## Claims

1. A power-operated scissor lift table, of the type of those incorporating a lower base and an upper platform or tabletop, connected to one another by means of a scissor-type mechanism on which two thrust shafts act, which thrust shafts are enveloped by a pair of belts fixed at one of their ends to the structure of the table and to conveniently power-operated wrap sheaves at their other end, **characterized in that** coupled at their ends to the rotation axis (19) for said wrap sheaves (17) and (18) of the belts (14) and (15) are the respective geared motors (20-20'), assisted by also respective clutches (21-21'), these elements being controlled by an electronic circuit which determines that under normal working conditions, one of the geared motors (20) is supplied and its corresponding clutch (21) is in a clutched position, whereas the other geared motor (20') is out of service and decoupled from the shaft (19) through its clutch (21'), while due to a possible failure in the operating motor (20), said circuit cancels the power supply thereof, causes the declutching of its clutch (21) and simultaneously causes the power supply of the other geared motor (20') and the actuation of its clutch (21') for its coupling to the drive shaft (19) of the sheaves (17) and (18).
2. A power-operated scissor lift table according to claim 1, **characterized in that** said geared motors (20-20'), with their corresponding clutches (21-21'), are arranged outside of the structure of the table in a freely and directly accessible position for facilitating their maintenance.
3. A power-operated scissor lift table according to previous claims, **characterized in that** the clutches can be replaced with manual coupling mechanisms.

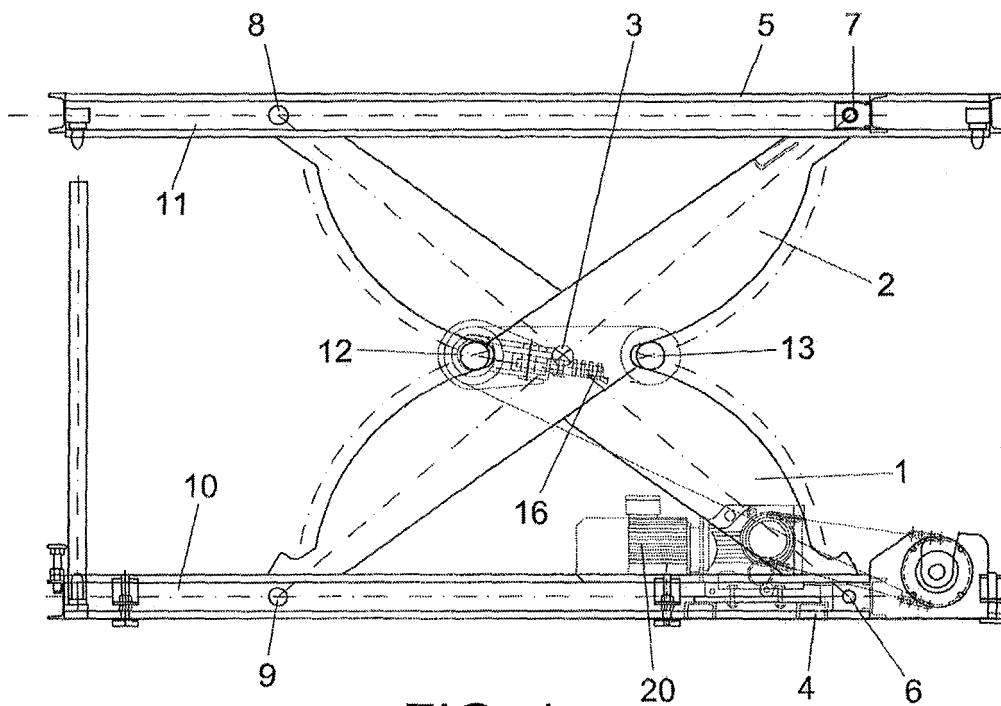


FIG. 1

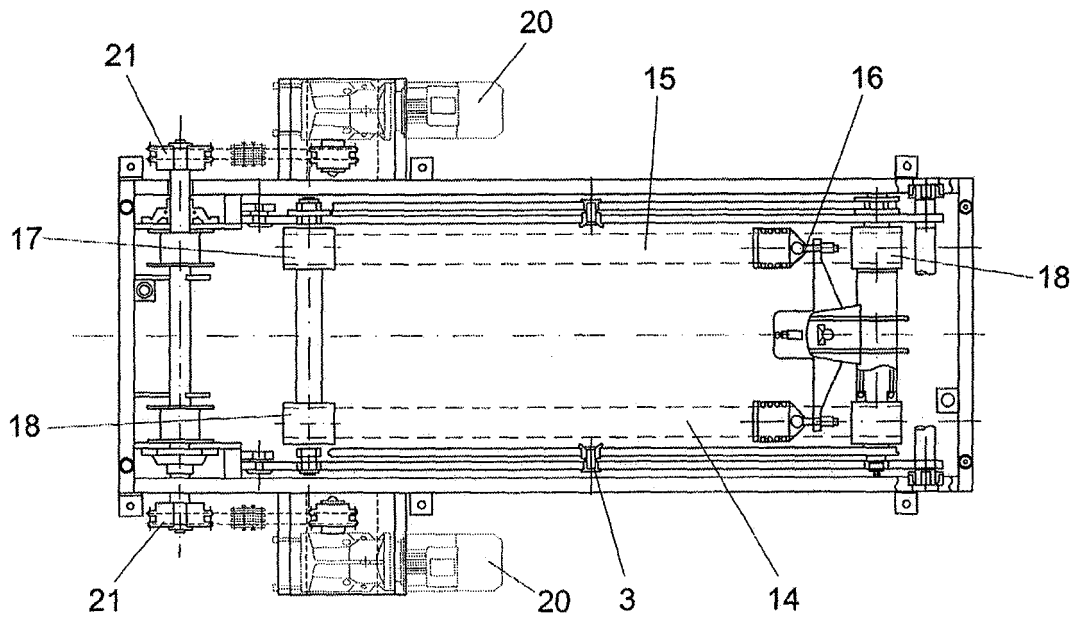


FIG. 2

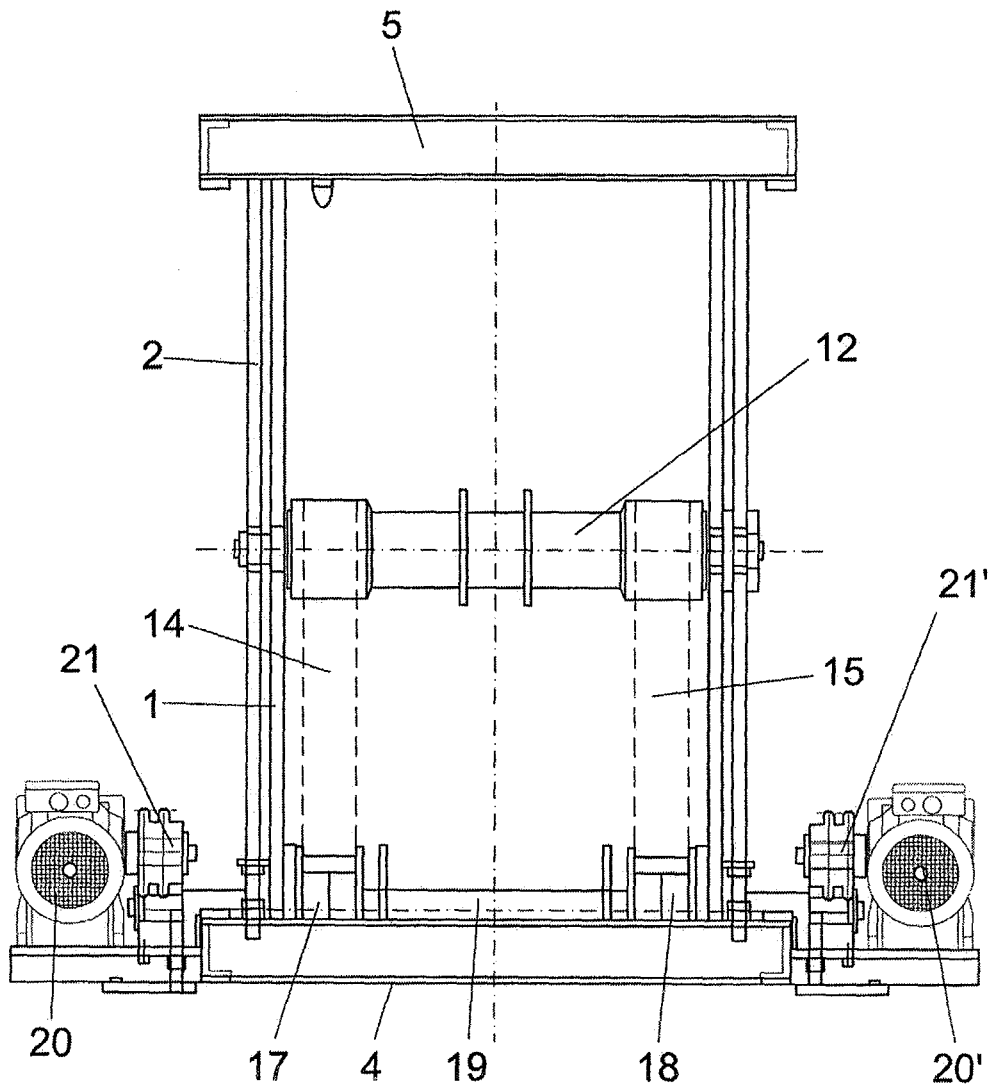


FIG. 3



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 04 38 0169

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.7)
D,A	EP 1 342 429 A (TRANSPORTES CONTINUOS INTERIOR) 10 September 2003 (2003-09-10) * the whole document *	1	B66F7/06
D,A	EP 0 724 540 A (STAMM JOHANN) 7 August 1996 (1996-08-07) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B66F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 11 January 2005	Examiner Sheppard, B
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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 ..... &amp; : member of the same patent family, corresponding document</p>			

1  
EPO FORM 1503 03 82 (P04C01)

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

EP 04 38 0169

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.

11-01-2005

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 1342429	A	10-09-2003	CA	2420985 A1		07-09-2003
			EP	1342429 A1		10-09-2003
			US	2003168646 A1		11-09-2003
-----						
EP 0724540	A	07-08-1996	DE	4336662 A1		04-05-1995
			AT	149474 T		15-03-1997
			DE	9320946 U1		14-06-1995
			DE	59401988 D1		10-04-1997
			WO	9511852 A1		04-05-1995
			EP	0724540 A1		07-08-1996
			ES	2102258 T3		16-07-1997
			JP	9508882 T		09-09-1997
			US	5694864 A		09-12-1997
-----						