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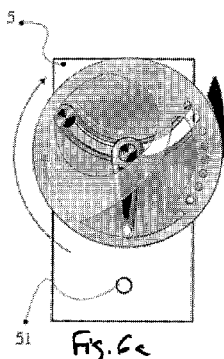
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(54) **Title:** CALIBRATION SYSTEM FOR ADJUSTING STRAPS, SUCH AS WATCH STRAPS OR SUCH AS BELTS WITH LOCKING MECHANISM



(57) **Abstract:** An adjustment system for a fine and precise adjustment of the size of a strap, such as watch strap, or belt with a part that by rotation creates a rectilinear motion of an adjustment pin that moves two parts of a strap/belt relatively to each other to adjust the length of said strap/belt. The adjustment system also comprises a locking system to block the strap in its adjusted position.



CALIBRATION SYSTEM FOR ADJUSTING STRAPS, SUCH AS WATCH STRAPS OR SUCH AS BELTS WITH LOCKING MECHANISM

CROSS-RELATED APPLICATION

The present application claims the benefit of the priority of Swiss patent application Number 01556/12, filed on August 30, 2012 in the name of Roland ITEN, the entire disclosure of which is incorporated herein by reference.

TECHNICAL FIELD

The present invention concerns the field of adjustable straps, such as watch strap or belts.

More specifically, the present invention concerns a calibration system allowing a fine and precise adjustment of the size of a strap such as watch strap or belt.

BACKGROUND ART

Straps for wrist watches with clasps or buckles are known in the art and they have different shapes.

For example, figures 1a to 1c illustrates a first example of a first clasp mechanism 1, 3, 6, 51 attaching the straps 5, 6 of a watch strap.

Examples of clasps/buckles allowing an adjustment of the length of the strap or buckle are for example given in the following documents: EP 1815765, EP 1981365CH 702523, WO 2008064931, GB730846.

SUMMARY OF THE INVENTION

An aim of the present invention is to improve the known clasps and buckles of the prior art.

Another aim of the present invention is to provide a clasp that allows a fine and symmetrical adjustment of the size of the strap/belt and also a stable position and adjusted length of the strap/belt once the desired length has been chosen.

BRIEF DESCRIPTION OF THE DRAWINGS

Figures 1a to 1c illustrate a clasp or buckle of the prior art.

Figures 2a to 2b illustrate views of the principle of an embodiment of the invention;

Figures 3a to 3d and figure 4 illustrate the functioning of an embodiment of the invention;

Figures 5a to 5c illustrate a further embodiment of the invention;

Figures 6a to 6c illustrate the functioning of the further embodiment of the invention;

Figures 7a to 7d illustrate elements of the further embodiment of the invention.

In one embodiment, the invention concerns an adjustment system for a fine and precise adjustment of the size of a strap, such as a watch strap, or a belt, said system comprising at least a rotating part cooperating with an adjustment element which is linked to a part of said strap or belt, such that the rotation of said rotating part creates a motion of said adjustment element that moves two parts of a strap/belt relatively to each other in order to adjust the overall length of said strap/belt.

In one embodiment the motion of the adjustment element may be rectilinear.

In one embodiment the adjustment element may be a pin which cooperates with a hole in a part of a strap or belt.

In one embodiment the adjustment element is linked to a rotating part via an actuating element.

In one embodiment the actuating element is articulated to a rotating part.

In one embodiment the actuating element comprises a chariot with two wheels that moves into a groove of a plate.

In one embodiment the chariot is displaced by the rotating part comprising an inner cam profile that acts on the wheels.

In one embodiment the adjustment mechanism comprises a clicking mechanism with at least a ball and a spring, wherein the clicking mechanism is attached to said plate and cooperates with openings in said rotating part.

In one embodiment, the adjustment element is guided in a groove of a plate.

In one embodiment the rotating part is mounted on the plate.

In one embodiment the system further comprises a blocking system to block the strap in the adjusted position.

In one embodiment the blocking system comprises at least a lever that acts on said strap or belt by friction.

In one embodiment the groove comprises teeth for blocking the movement of the adjustment element.

In one embodiment, the invention concerns a strap, such as a watch strap, or a belt with an adjustment system as defined herein.

In one embodiment, the invention concerns an object, such as a watch or a belt, in combination with an adjustment system as defined herein or a strap as defined herein.

DETAILED DESCRIPTION

The invention and its embodiments will be explained now by reference to the figures.

The adjustable system attached to a fixed strap or half of the belt according to the invention comprises mainly (see figures 2a and 2b) a plate 10 on which is mounted a rotating part 12 to which is eccentrically connected an actuating element 31 by its end 32. The other end of the element 31 comprises a pin 30 (see figures 3a-3d) which is introduced into a groove 11 of the plate 10 and also into a hole 51 of the movable part of the strap 5 or belt such that the rotation of part 12 moves the pin of the element 31 along the groove in a rectilinear motion. This thus allows to move the straps/belts parts (one fixed to the plate 10 and the other one movable) relatively to each other by a rotation of the rotating part 12 that causes a rectilinear motion of the pin 30 and the element 31 connected to the rotating part 12 which has the effect of adjusting the overall length of the strap/belt.

Figure 2a shows a position where the overall length of the strap or belt is shorter and figure 2b where the overall length of the strap or belt is longer this being defined by the position of the pin 30.

Figures 3a to 3d illustrate a blocking mechanism to block the strap/belt once in the desired adjusted position. The blocking mechanism comprises a lever 21 articulated on the side of the adjustment system (for example on plate 10) in

figures 3a and 3b, the blocking mechanism is open to allow adjustment and the pin 30 may move in the groove 30. Once the desired position is reached (i.e. proper size of the strap/belt), the lever 21 is moved in the position illustrated in figures 3c and 3d. In this position, the lever 21 pushes the strap/belt 5 to the left (in the figures) against wall 2 thereby pushing the pin 30 to the left as well to block the system by friction, reference 20 identifying to other side wall between which the strap/belt is positioned. In addition, it is possible to add small teeth in the groove 11 to provide an additional blocking means for the pin 30. Thus by the combination of friction of the belt and the pin 30 cooperating with said teeth in the groove, the system remains in a stable position once the desired adjustment size has been reached. The blocking position of lever 20 is a stable one created for example by the profile of the lever 20 and its rotation on an axis.

Figure 4 further illustrate the blocking mechanism and procedure as explained in relation to figures 3a-3d.

Figures 5a to 7d illustrates another embodiment of an adjustment system for straps or belts.

This system comprises a rotating part 40 with an inner cam profile 41, 42 and adjustment openings 43. It further comprises a lever 31 articulated on a chariot 32 which comprises two wheels 33, the lever comprising a pin 30 for the length adjustment.

It further comprises a plate 10' with a bent groove 12' and a straight groove 11' (as in the first embodiment) and a clicking mechanism 13' for example a ball cooperating with a spring, the ball (once the system is assembled) cooperating with the openings 43.

The assembled system is illustrated in figures 6a to 6c in different positions. Specifically, according to the principle of the present invention, the rotation of

the part 40 on the plate 10' allows a transformation into a rectilinear movement to adjust the length of the strap/belt as explained in more detail now.

In a first position, the chariot 32 is on the left side (figure 6a) and the lever 31 is in a position approximately vertical. By clockwise rotation of the rotating part 40 (see figure 6b), the chariot moves along the cam profile 42 by its wheels 33 to the position illustrated in figure 6b, said wheels moving in the groove 12'. In the position, the end of lever 31 (and the pin 30 it carries) has moved to about the middle of groove 11' thus transforming a rotation movement into a rectilinear movement of the pin 30, thereby allowing an adjustment of the size of the strap/belt. To allow the movement of the chariot, wheels 33 may be made in two parts, one for the guiding in the groove 12', and the other for moving in the cam profile 42.

Figure 6c illustrates further position after a further clockwise rotation of the rotating part 40. Here the chariot has moved to the right side of the groove 12' along the cam profile 42 and the end of the lever is at the top position of the groove 11. In the position, the strap/belt is in its tightest state and lever 21 is used to block the strap/belt in the chosen position, according to the principles of the present invention.

The relative motion of the part 40 (rotation) with respect to the plate 10' therefore creates a movement of the chariot 32 as illustrated in figures 6a to 6c, thus moving the lever 31 end (pin 30) in a longitudinal movement allowing the length adjustment of the strap or belt on which the system is mounted.

The clicking mechanism 13', being applicable to all embodiments, allows a user to feel the movement of the rotating part 40 by the successive "clicks".

In this embodiment, there is also preferably a blocking mechanism similar to the one illustrated for the first embodiment. This blocking mechanism is illustrated in figures 7a to 7d. As in the first embodiment (reference is made above in the

present description to the discussion in the frame of said first embodiment), a lever 21 has two positions, one (figures 7a, 7b) where it allows the adjustment of the strap/belt and the other stable one (figures 7c, 7d) where the strap/belt is blocked. The blocking is obtained by pressing the strap 5 to the left (in the figures) against wall 2 the blocking being due to a friction effect against wall 2. In addition, the groove 11 may comprise inner teeth 111 in against which the pin 30 is pressed to further improve the blocking effect when the lever is in its blocking position.

Of course, the blocking effect may be obtained by both the friction and the teeth 111 of the groove 11 (or 11') or by one only of both if this is sufficient.

Other equivalent blocking means may of course be envisaged for a similar effect.

The system according to the invention thus allows a very fine and simple adjustment to the desired position by the user, by the use of simple means.

The system of the invention may be made in any suitable material, for example metals, precious metals, alloys etc.

Preferably, the system according to the invention is used with a watch strap for a wrist watch. However, the system may be used with other objects, similar or not, such a belts, helmets etc.

The examples given in the present specification are only for illustrative purposes and should not be construed in a limiting manner. Other constructions are possible using equivalent means and within the spirit and scope of the present invention.

CLAIMS

1. An adjustment system for a fine and precise adjustment of the size of a strap, such as watch strap, or a belt, said system comprising at least a rotating part (12;40) cooperating with an adjustment element (30) which is linked to a part of said strap or belt, such that the rotation of said rotating part creates a motion of said adjustment element that moves two parts of a strap/belt relatively to each other in order to adjust the overall length of said strap/belt.
2. The adjustment system as defined in claim 1, wherein the motion of the adjustment element (30) is rectilinear.
3. The adjustment system as defined in claim 1 or 2, wherein the adjustment element is a pin (30) which cooperates with a hole (51) in a part of said strap or belt.
4. The adjustment system as defined in one of the preceding claims, wherein said adjustment element (30) is linked to said rotating part (12) via an actuating element (31,32).
5. The adjustment system as defined in claim 4, wherein said actuating element (31) is articulated to said rotating part (12).
6. The adjustment system as defined in claim 4, wherein said actuating element (31) comprises a chariot (32) with two wheels (33) that move into a groove (12') of a plate (10').
7. The adjustment mechanism as defined in claim 6, wherein said chariot is displaced by said rotating part (40) comprising an inner cam profile (41,42) that acts on said chariot (32).

8. The adjustment mechanism as defined in claim 6 or 7, wherein it comprises a clicking mechanism (13') comprising at least a ball and a spring, wherein the clicking mechanism is attached to said plate (10') and cooperates with openings (43) in said rotating part (40).

9. The adjustment system as defined in one of the preceding claims, wherein said adjustment element is guided in a groove (11) of a plate (10,10').

10. The adjustment system as defined in one of the preceding claims, wherein said rotating part is mounted on said plate (10,10').

11. The adjustment system as defined in one of the preceding claims, wherein it further comprises a blocking system to block the strap in the adjusted position.

12. The adjustment system as defined in claim 11, wherein said blocking system comprises at least a lever (21) that acts on said strap or belt by friction.

13. The adjustment system as defined in one of claims 9 to 12, wherein said groove comprises teeth for blocking the movement of said adjustment element (30).

14. A strap, such as a watch strap, or a belt with an adjustment system as defined in one of the preceding claims.

15. An object, such as a watch or a belt, in combination with an adjustment system as defined in one of the preceding claims or a strap as defined in the preceding claim 14.

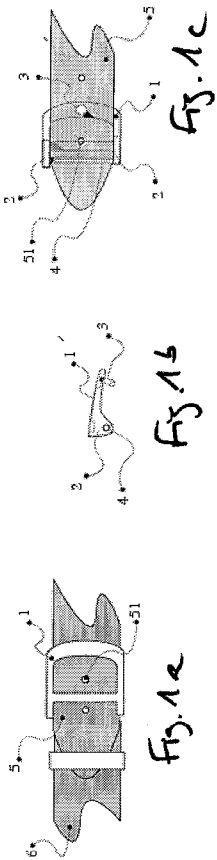


Fig. 1b

Fig. 1c

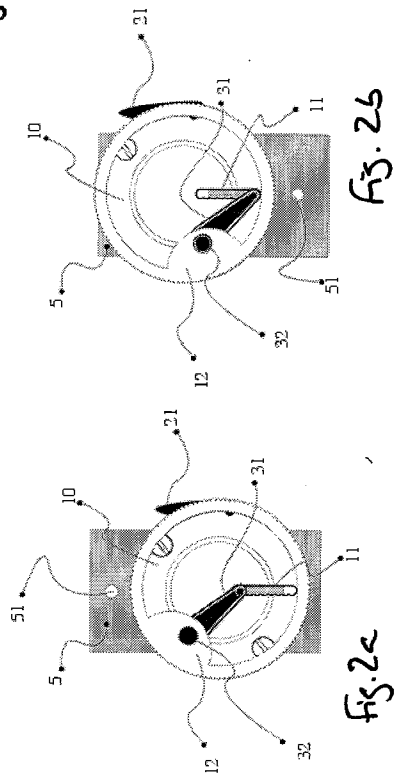


Fig. 2a

Fig. 2b

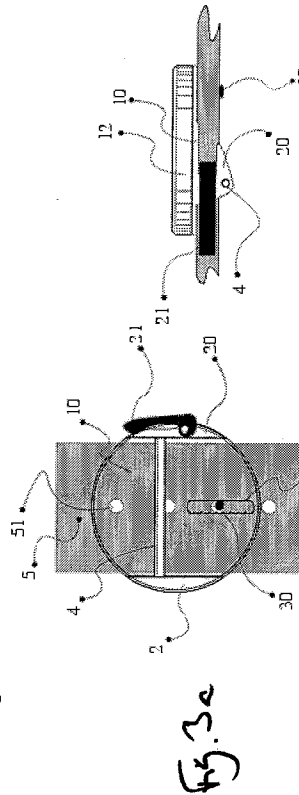


Fig. 3a

Fig. 3b

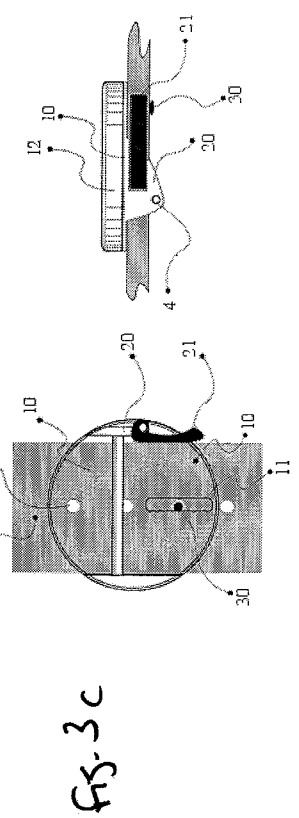


Fig. 3c

Fig. 3d

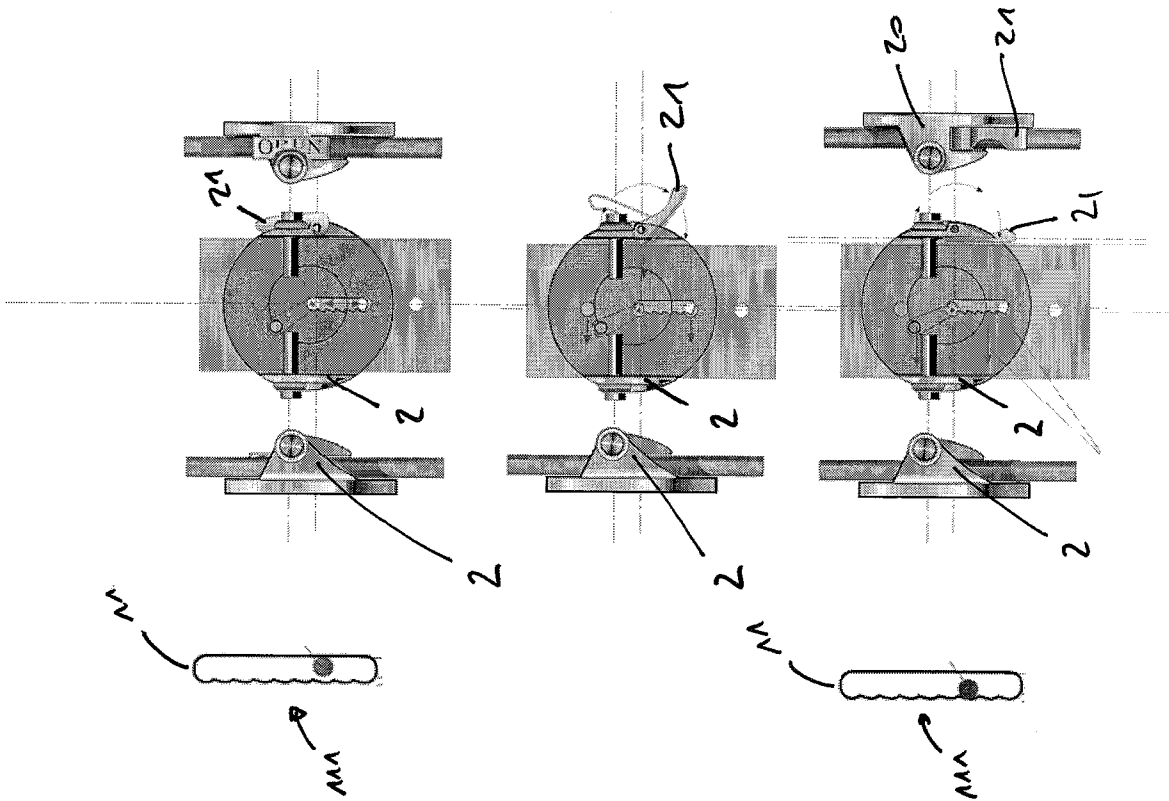
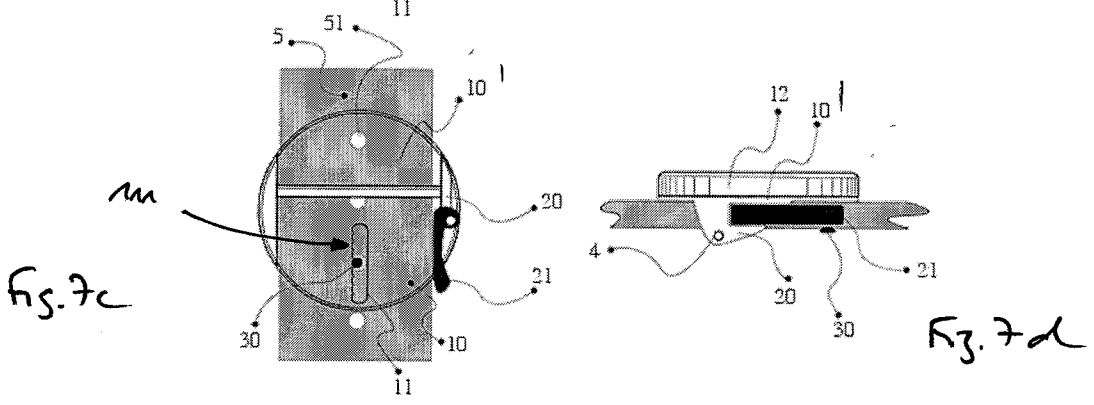
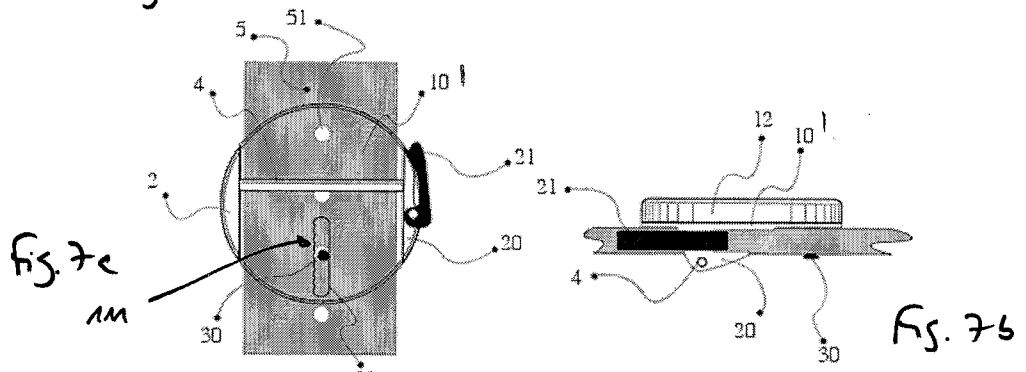
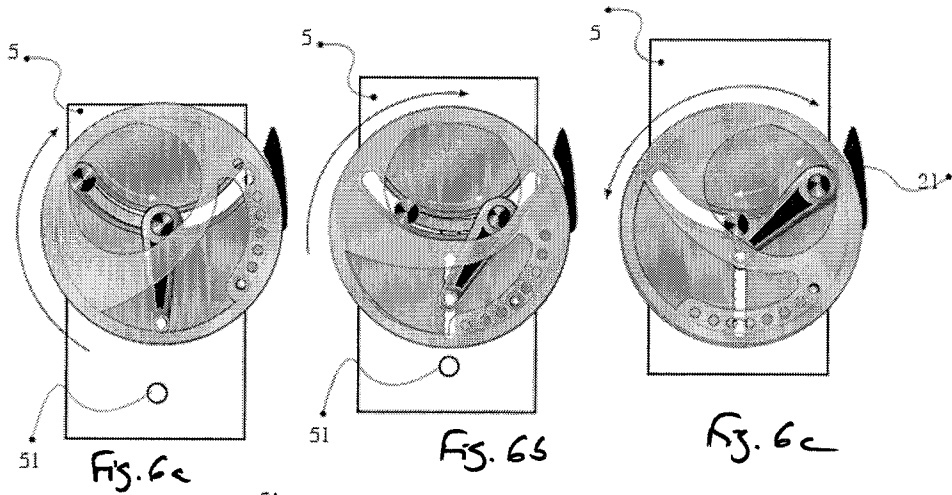
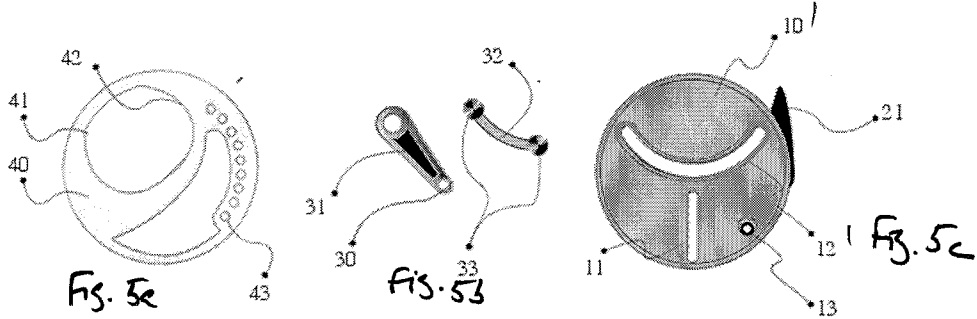


Fig. 4



INTERNATIONAL SEARCH REPORT

International application No PCT/IB2013/058122

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A44C5/22 A43B3/00 A44C5/18
 ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 A44C A41F A44B A43B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 815 765 A1 (MONTRES JOURNE S A [CH]) 8 August 2007 (2007-08-08) cited in the application	1-5,9-15
A	paragraphs [0016], [0018], [0019]; claims 1,4; figures 1-3,5,6 -----	6-8
X	US 2009/184189 A1 (SODERBERG MARK S [US] ET AL) 23 July 2009 (2009-07-23) paragraphs [0018] - [0020], [0053], [0054]; figures 1,3C,3D -----	1,14,15
A	GB 730 846 A (JUAN JOSE VILLANI) 1 June 1955 (1955-06-01) cited in the application abstract; figures 1,2 -----	1,14,15

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 7 November 2013	Date of mailing of the international search report 14/11/2013
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Monné, Eric
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2013/058122

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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