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(54) **ANTI-FOLDS SOLEPLATE AND IRON COMPRISING SAID SOLEPLATE**

(57) The present invention is directed to a soleplate having a curved edge on at least 50% of the length of the edge of the soleplate in distal position with respect to the tip, wherein the radius of curvature of the curved edge in the at least 50% of the length of the edge is equal to or higher than 4 mm. Particularly, the soleplate according to the invention is characterized by a conventional shape next to the tip, while, starting from a point not exceeding about the middle of the soleplate, the soleplate

itself, preferably, has, next to the edge, a radius of curvature large enough to produce an uplift of the soleplate itself with reference to the ground plane (and thus with reference to the fabric during the ironing) extremely gradual and which would allow smoothing of the fabric, and to avoid the involuntary formation of folds.

The invention is also directed to a iron comprising said soleplate.

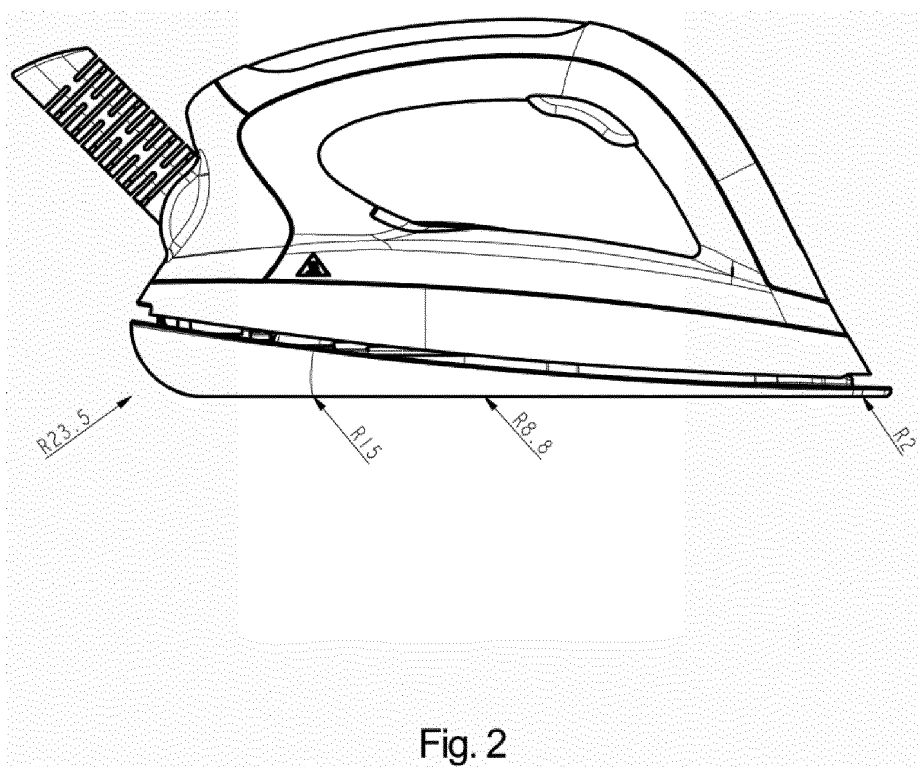


Fig. 2

Description

[0001] . The present invention relates to a soleplate for an iron, said soleplate having a particular shape allowing not to create unwanted folds on the fabric during lateral movement of the iron.

[0002] . Irons normally on the market have an ironing soleplate essentially flat, or, sometimes which ends with a 90° or 180° edge having a very narrow radius of curvature, of the order of a few millimetres.

[0003] . A typical problem that occurs during the ironing with a common iron is that, during the lateral movement of the iron, e.g. in perpendicular direction compared to the handle direction, some folds are formed on the fabric. These folds are due to the fact that when the fabric is not properly stretched, during the lateral movement the soleplate pushes it in the same direction of the movement until a fold is created on the fabric, which fold is then ironed. In this way, the obtained result of ironing is just the opposite of the desired one, i.e. folds are formed which are difficult to remove since they are ironed. This fact causes a meaningful loss of time while ironing clothes or linen.

[0004] . The present invention relates to a soleplate for iron having a shape able to significantly reduce unwanted creation of folds during ironing. More generally the present invention relates to an ironing soleplate having improved handling and slipping properties.

[0005] . Particularly, the soleplate according to the invention is characterized by a conventional shape next to the tip, while, starting from a point not exceeding about the middle of the soleplate, the soleplate itself, preferably, has, next to the edge, a radius of curvature large enough to produce an uplift of the soleplate itself with reference to the ground plane (and thus with reference to the fabric during the ironing) extremely gradual and which would allow smoothing of the fabric, and to avoid the involuntary formation of folds.

. Fig. 1 shows a view from the bottom of a soleplate according to the invention.

. Fig. 2 shows a lateral view of an iron comprising the soleplate of Fig. 1.

. Fig. 3 represents a view of Fig. 1, where the section planes used in following figures are indicated.

. Fig. 4 represents the soleplate section according to plane G-G.

. Fig. 5 represents the soleplate section according to plane A-A.

. Fig. 6 represents the soleplate section according to plane B-B.

. Fig. 7 represents the soleplate section according to plane C-C.

. Fig. 8 represents the soleplate section according to plane D-D.

. Fig. 9 represents the soleplate section according to plane E-E.

. Fig. 10 represents the soleplate section according to plane F-F.

[0006] . The present invention is thus related to an iron soleplate wherein the radius of curvature of the curved edge is of at least 4 mm, preferably at least 7 mm, on at least 50% of soleplate edge in distal position with respect to the tip.

[0007] . In one embodiment, the radius of curvature varies continuatively, from a value lower than 2 mm on the tip, to a value higher or equal to 10 mm, preferably at least 20 mm, on the back end of the soleplate.

[0008] . Further, the radius of curvature in a single soleplate section can vary and can be lower in a first section and increase in the second stretch. The increase can be so high as to produce a second stretch of the soleplate that is plane ($r = \text{infinity}$).

[0009] . Thus, the soleplate according to the invention has a curved edge on at least 50% of soleplate edge length, more preferably at least 60%, even more preferably at least 70%. Particularly, the curvature is present on the part of the edge located opposite to the tip of the soleplate.

[0010] . The projection on the horizontal plane of the curved part of the edge has a length in radial direction (e.g. perpendicular compared to soleplate silhouette) preferably comprised between 4 and 50 mm, more preferably between 5 and 40 mm. In general, the stretch can be shorter near to the tip, where the soleplate length is lower, and can be longer near the soleplate back, where its length is greatest. In the event that the soleplate curvature is equal along the whole soleplate, except the area around the tip, there will be a junction between the curve part of the rear portion and the plane part of the tip. The junction between the tip, where the radius of curvature is to the minimum, and the rear and lateral portion of the iron where the curvature is large, can occur both gradually or suddenly.

[0011] . Soleplate curvature according to the invention can be present in different ways, i.e., if the radius of curvature is homogeneous along the stretch, the radius of curvature is preferably of at least 4 mm, more preferably of at least 7 mm and even more preferably of at least 10 mm. Once the radius of curvature increases, the desired effect of avoiding the creation of folds during lateral movement of the iron become more evident.

[0012] . Alternatively, the radius of curvature can be variable, i.e. smaller in the first stretch of length in radial direction comprised between 1 and 10 mm, and larger in a second stretch, till possibly it becomes flat ($r = \text{infinity}$). In addition, the radius of curvature can be higher at start to decrease while moving away from the flat stretch of the soleplate.

[0013] . Generally, at a distance of 5 mm from the start of curved stretch of the soleplate, the distance of the same from the ironing surface will be preferably lower than or equal to 5 mm, more preferably lower than or equal to 3 mm, even more preferably lower than or equal

to 2 mm.

[0014] . The soleplate according to the invention can be used on whichever type of iron, e.g. no-steam traditional irons, steam irons, boiler steam irons. In any case, the soleplate of the present invention give the advantage of reducing, where not avoiding folds due to lateral movement of the soleplate.

[0015] . In a preferred embodiment, the soleplate of the present invention is used on a steam iron, even more preferably on a boiler steam iron. In fact, soleplate manufacturing to obtain its curvature represents an increase of soleplate cost and this is preferably made on a medium-high value iron, such as boiler steam iron.

[0016] . In fact, boiler steam iron represents these days the best solution to obtain quickly a good level of ironing. In order to obtain an increased handing, the soleplate according to the invention, in addition to a the above described rounded edge, also presents a particular design of the soleplate. In fact, a good distribution of steam under the soleplate helps to increase iron handing during its use.

[0017] . Thus, it is possible to further increase the iron handing through a particular geometry of the soleplate, with the meaning of the opportune combination between pressing portion (which means in contact with the ironing portion) and raised portion, thus having a little height compared to the pressing portion.

[0018] . It is particularly preferred that on the soleplate the percentage of pressing portion compared to total surface of soleplate is comprised between 30 and 80%, more preferably between 40 and 75%, even more preferably between 50 and 70%. In said range, the optimal level of ironing will be obtained. When calculating the above described ratio, it has to be taken into account just the central portion of the soleplate, disregarding the curved edge of the soleplate itself. The depth of the raised zone can vary within a fairly large range, nevertheless, it has been noted that an optimal depth is preferably comprised between 0.5 and 3 mm, even more preferably between 1 and 2mm.

[0019] . Besides, in combination with said values of ratio between pressing portion and raised portion, it is preferred that steam holes are present in a not too high number, preferably in a number lower than 25, more preferably in a number comprised between 5 and 23, even more preferably between 7 and 21. In fact, a too low number of holes leads to a too concentrated steam flux and to a flux rate not high enough in term of g/min. A too high number of holes leads instead to a stream having a speed and a strength too low for some functions such as vertical ironing.

[0020] . It is obvious that the minimum and maximum number of holes present in the soleplate according to the invention is also correlated to the diameter of holes; in fact, a hole having a diameter of 2x corresponds, in terms of hole surface area, to 4 holes having diameter x. Thus, the above values relate to holes having diameter of 2 mm. In this case, the steam holes of the soleplate ac-

cording to the invention are preferably in a number lower than 25, more preferably comprised between 5 and 23, even more preferably between 7 and 21. In fact, a too low number of holes leads to a too concentrated steam flux and to a steam flow not high enough in term of g/min.

[0021] . For what previously said, it is also possible to express the steam flux rate as an inverse function of the total surface area of steam holes. In such a case, the total surface area of holes is preferably comprised between 15 and 80 mm², more preferably between 20 and 70 mm² even more preferably between 35 and 60 mm². For example, an area of total surface of stream holes of 56,52 mm² can be obtained with 18 holes having a diameter of 2 mm, with 6 holes having a diameter of 3,46 mm, with 3 holes having a diameter of 4,9 mm or with a single hole having a diameter of 8,49 mm. All these embodiments are comprised in the present invention.

[0022] . Furthermore, in a preferred embodiment of the present invention, the steam iron is able to produce steam at a pressure of at least 3 bar, preferably of at least 4 bar. In fact, the most important parameter to evaluate quality of a steam iron, is not the quantity of steam produced per minute, but the pressure of the steam itself. In fact, if the iron produces a large quantity of steam but at a low pressure, steam will become liquid when touching the fabric to be ironed, confronting the user with two possibilities: either stop ironing with a wet fabric, risking mould or bad smell of the same, or to prolong ironing without steam in order to dry the fabric. If, on the contrary, the iron produces steam to a sufficiently high pressure, i.e. at least 3 bar, even more preferably at least 4 bar, and preferably with a flux rate of at least 70 g/min, more preferably at least 80 g/min, then the ironing will be quick and result in a dry fabric.

Claims

1. Soleplate having a curved edge on at least 50% of the length of the edge of the soleplate in distal position with respect to the tip, wherein the radius of curvature of the curved edge in the at least 50% of the length of the edge is equal to or higher than 4 mm.
2. Soleplate according to claim 1, wherein the radius of curvature is equal to or higher than 7 mm.
3. Soleplate according to claims 1-2, wherein the radius of curvature varies in a continuous way from a value lower than 2 mm on the tip to a value equal to or higher than 10 mm on the back end of the soleplate.
4. Soleplate according to claims 1-3 wherein the projection on the horizontal plane of the curved part of the edge has a length in radial direction comprised between 4 mm and 50 mm.
5. Soleplate according to claim 1-4 wherein the sole-

plate presents a pressing portion which is in contact with the ironing surface, and a raised portion, such that the ratio between the pressing portion and the total surface of the soleplate is comprised between 0.3 and 0.8, and wherein in the calculation of the total area of the surface of the soleplate the area of the curved surface is not taken into account. 5

6. Soleplate according to claim 1-5 wherein the soleplate presents holes for the emission of steam in a number equal to or lower than 25. 10
7. Iron comprising the soleplate according to claims 1-5. 15
8. Steam iron according to claim 6.
9. Steam iron according to claim 8, wherein the steam iron is capable of producing steam at a pressure of at least 3 bar, preferably at least 4 bars. 20
10. Steam iron according to claim 9, wherein the steam iron is capable of producing steam at a flux rate of at least 70 g/min. 25

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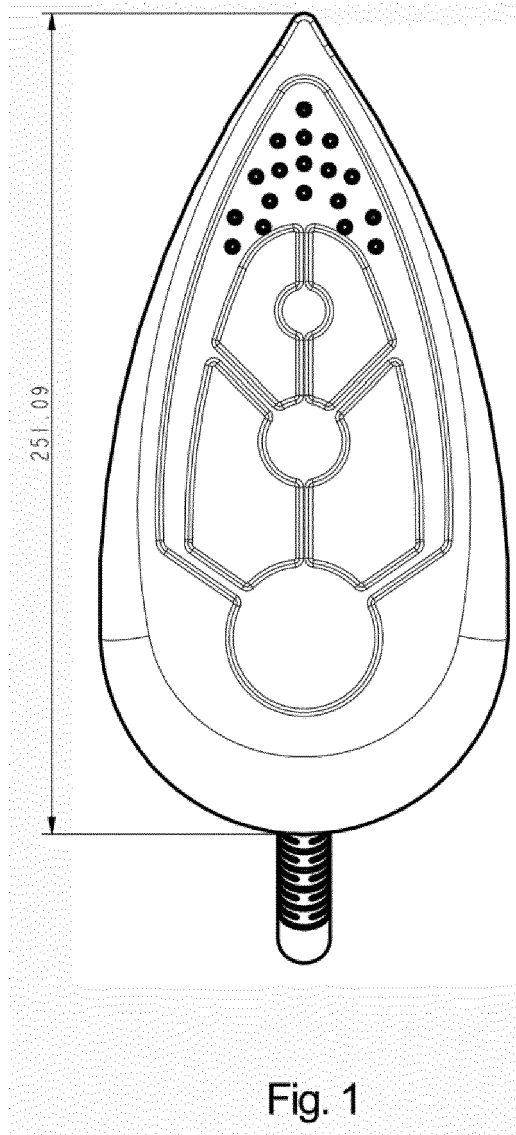
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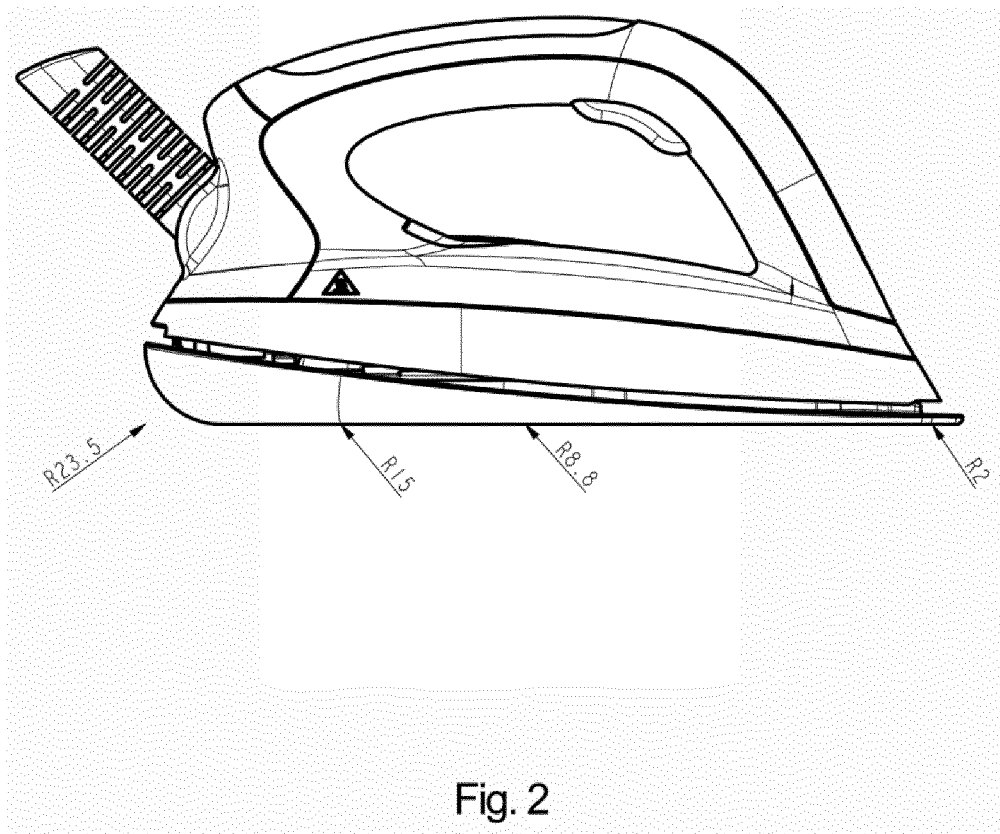
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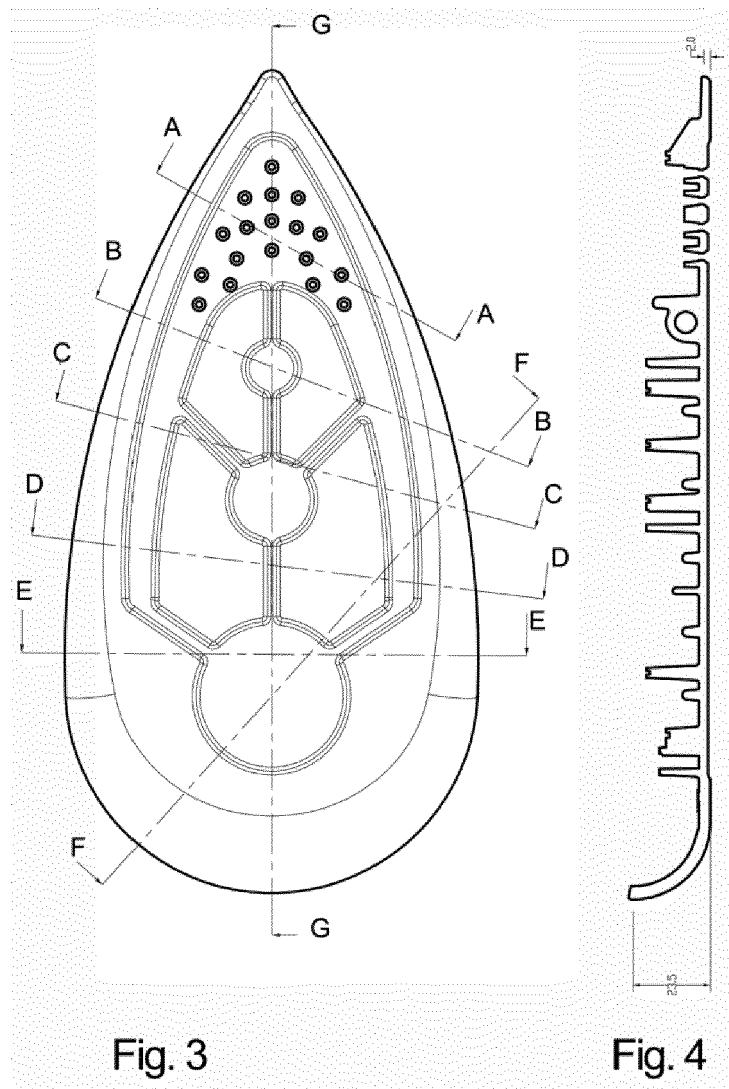
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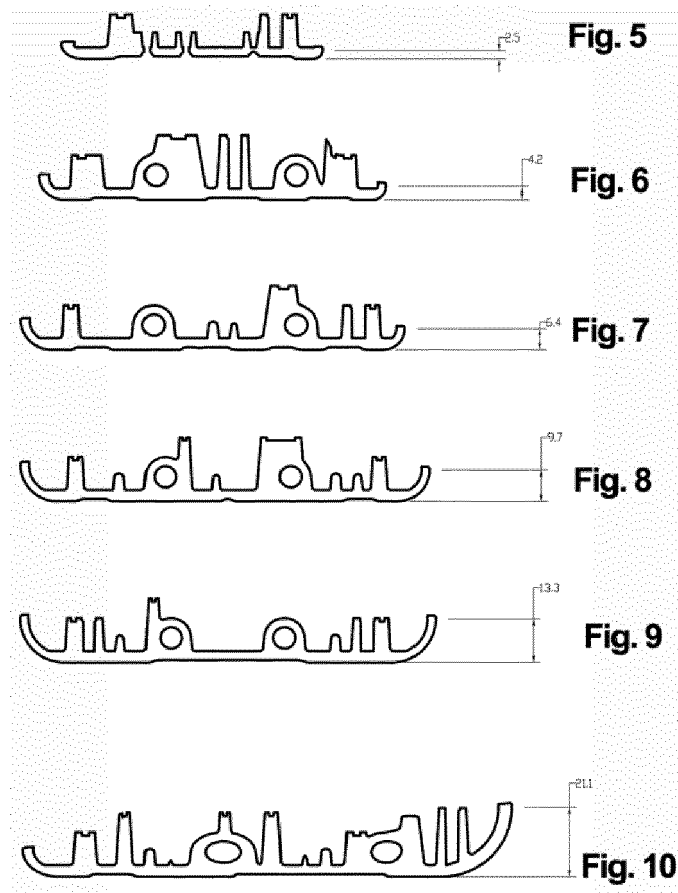
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EUROPEAN SEARCH REPORT

 Application Number
 EP 18 16 9605

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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	WO 2010/023141 A1 (BSH BOSCH SIEMENS HAUSGERÄTE [DE]; ALBANDOZ RUIZ DE OCENDA CARMEL [ES] 4 March 2010 (2010-03-04) * the whole document *	1,2,4, 6-10	INV. D06F75/38
X	EP 2 740 836 A1 (BSH BOSCH UND SIEMENS HAUSGERÄTE GMBH [DE]) 11 June 2014 (2014-06-11) * the whole document *	1,2,7-10	
X	GB 2 176 505 A (ROWENTA WERKE GMBH) 31 December 1986 (1986-12-31) * the whole document *	1,2,7-10	
X	EP 0 857 814 A1 (BLACK & DECKER INC [US]) 12 August 1998 (1998-08-12) * figures 2, 6a *	1,2,7-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 October 2018	Examiner Diaz y Diaz-Caneja
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 03/02 (P04C01)

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

EP 18 16 9605

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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ORM P0459

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010023141 A1	04-03-2010	CN 102137971 A EP 2321459 A1 ES 2338846 A1 ES 2388898 T3 RU 2011110971 A WO 2010023141 A1	27-07-2011 18-05-2011 12-05-2010 19-10-2012 20-10-2012 04-03-2010
EP 2740836 A1	11-06-2014	EP 2740836 A1 ES 2445272 A2	11-06-2014 28-02-2014
GB 2176505 A	31-12-1986	DE 3603409 A1 ES 296710 U FR 2583077 A1 GB 2176505 A HK 10789 A IT 1204378 B NL 8601436 A SG 75488 G US 4658520 A	11-12-1986 16-12-1987 12-12-1986 31-12-1986 10-02-1989 01-03-1989 02-01-1987 23-03-1989 21-04-1987
EP 0857814 A1	12-08-1998	BR 9800169 A CA 2225115 A1 DE 69713267 D1 DE 69713267 T2 EP 0857814 A1 ES 2175290 T3 US 5937552 A	04-05-1999 10-07-1998 18-07-2002 23-01-2003 12-08-1998 16-11-2002 17-08-1999