(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 952 713 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.08.2008 Bulletin 2008/32

(51) Int Cl.:
A43B 5/04 *(2006.01)*

(21) Application number: **07425066.3**

(22) Date of filing: **05.02.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **Sport footwear**

(57) Shoe (10;110;210) for sports activities using sliding apparatus, comprising a shell (12,112,212), a leg-piece (14,114,214), a support spoiler (20,120,220) for the calf mounted so that it is displaceable with respect to the leg-piece, characterized in that it comprises linear displacement means for displacing linearly the spoiler relative to the leg-piece between two positions where it projects by a maximum and minimum amount therefrom.

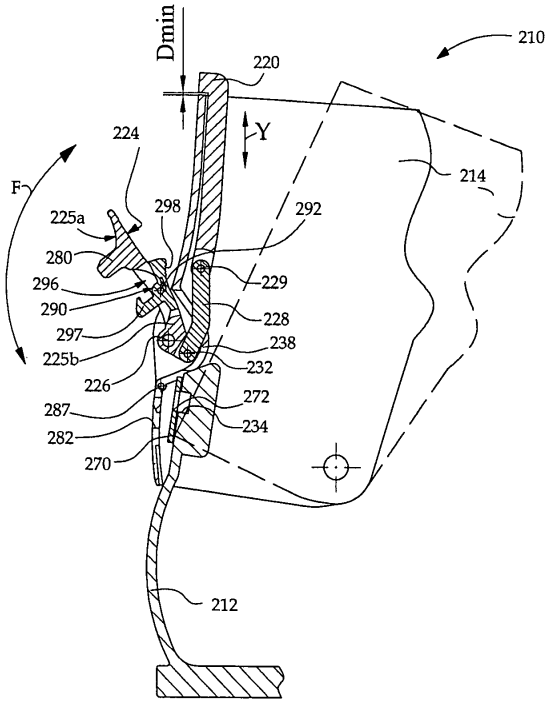

FIG. 12

EP 1 952 713 A1

Description

[0001] The present invention relates to a shoe for sports activities in which apparatus for sliding on the ground are used. In particular, the invention is intended for a ski-boot, to which reference will be made henceforth by way of example.

[0002] It is known that ski-boots generally have a rigid shell inside which the foot is accommodated and a leg-piece which is articulated on the shell and which surrounds and extends above the ankle. The articulation between shell and leg-piece (or, technically speaking, "ski-walk articulation") allows the forwards/backwards inclination of the latter with respect to the former, about a pivoting axis which passes approximately in the region of and along the ankle joint. The leg-piece is provided with means for temporary fastening to the shell so as to be able to be both locked with the shell during skiing in a position inclined forwards and released during walking, this favouring and facilitating the movement of the ankle. Examples of this type can be found in EP 0,0740,909, EP 0,086,908, WO 95/20888 and WO 93/12683. The purpose of the ski-walk articulation is clearly to allow the boot to be adapted to two different operating conditions - skiing and walking - which require a different configuration for the boot.

[0003] Very frequently, in order to improve the comfort, the leg-piece has a rear "spoiler" associated with it in order to increase the support for the calf against the boot. In some boots the spoiler is removable or can be fixed on the leg-piece in two or three positions, but requires a long and difficult manual operation. In another example, EP 0,477,817, the spoiler can be inclined, as desired, with respect to the leg-piece. The function, in these cases, is to allow the skier to adapt the height of the spoiler on the calf: a greater height during skiing, for greater control, a smaller height during walking, for greater freedom of movement.

[0004] In the solutions described above the real comfort of the spoiler is a problem. Whether the spoiler be fixed, removable or displaceable, it cannot be adapted quickly to the conditions of use, because it is required to adjust the boot by means of long and awkward operations.

[0005] The main object of the present invention is to provide a sports shoe which has a spoiler which can be adapted to the actual operating condition in a simple and quick manner.

[0006] This object is achieved with a shoe for sports activities using sliding apparatus, comprising a shell, a leg-piece, a support spoiler for the calf mounted so as to be displaceable with respect to the leg-piece, characterized in that it comprises linear displacement means for displacing linearly the spoiler relative to the leg-piece between two positions of maximum and minimum projection therefrom.

[0007] By making the spoiler slidable on the leg-piece and easily displaceable as required, the invention provides a shoe which is very comfortable and safe.

[0008] Preferably the displacement means comprise a lever member which is hinged both with the shoe and with a connecting-rod piece connected to the spoiler so that displacement of the lever member between two limit positions produces a corresponding linear displacement of the spoiler between the two positions of maximum and minimum projection from the leg piece.

[0009] This results in a simple, but very reliable as well as strong design.

[0010] Preferably, the lever member is hinged at one end on the leg-piece and in such a way as to perform a rotation with a free end inside a longitudinal (preferably centre) plane of the shoe. In this way the lever member is arranged in a position which is accessible for the skier and at the same time protected, as well as requiring a very easy movement to be performed by the skier.

[0011] Preferably, the free end of the lever member has a projection which, with said rotation, can be inserted in a complementary way inside a seat formed in the shell so as to lock the leg-piece and the shell together. This advantage of the invention is considerable: in addition to modifying the position of the spoiler, the leg-piece engages and disengages at the same time with/from the shell, performing with the same device two important functions, resulting in benefits in terms of efficiency and comfort.

[0012] Preferably, the leg-piece is provided with an opening which can be arranged over a seat formed in the shell so that said projection is able to pass through the opening and the seat so as to lock together the leg-piece and the shell. Therefore, a mutual locking mechanism is achieved in a simple manner.

[0013] Preferably the shoe comprises resilient means for recalling the lever member, or in general the functional part or parts of the displacement means, into its/their two limit positions. This results in greater safety of the boot and in particular ease of use.

[0014] Preferably, the shoe comprises locking means for locking the lever member, or in general the functional part or parts of the displacement means, in at least one of the two limit positions. This results in greater safety of the boot.

[0015] The advantages and characteristic features of the invention will emerge more clearly from the following description of some embodiments thereof, with reference to the accompanying drawing in which cross-sectional broken lines have been mainly omitted for the sake of clarity and:

- Fig. 1 shows a partial longitudinally vertically sectioned view of a boot according to the invention in a first configuration;
- Fig. 2 shows the view of Fig. 1 in a second configuration;
- Fig. 3 shows a portion of the rear of a second boot according to the invention viewed from the inside and in a first configuration;

- Fig. 4 shows a cross-sectioned side view of the portion of Fig. 3 along the plane A-A in Fig. 5;
- Fig. 5 shows a view, from the outside, of the portion of Fig. 3;
- Fig. 6 shows a side view of the portion of Fig. 3;
- Fig. 7 shows the portion according to Fig. 3 in a second operative configuration;
- Fig. 8 shows the portion according to Fig. 4 in a second operative configuration;
- Fig. 9 shows the portion according to Fig. 5 in a second operative configuration;
- Fig. 10 shows the portion according to Fig. 6 in a second operative configuration;
- Fig. 11 shows a partial longitudinally vertically sectioned view of a third boot according to the invention in a first operative configuration;
- Fig. 12 shows the boot of Fig. 11 in a second operative configuration;
- Fig. 13 shows, on a larger scale, a device for closing the third boot.

[0016] Figures 1 and 2 show a first embodiment of a boot 10 according to the invention. It is composed of a shell 12, which is partly shown, and a leg-piece 14 articulated with the shell 12 using known techniques so as to pivot about an axis X approximately coinciding with the axis of articulation of the ankle. Fig. 2 shows the displacement of the leg-piece 14 between two end positions, in one of which it is shown in broken lines for comparison.

[0017] The leg-piece 14 has, associated with it, a lug 20 (or spoiler) guided so as to slide vertically along a directrix Y between two positions, i.e. an extracted position (Fig. 1) and a retracted position (Fig. 2), where the free end of the spoiler 20 is raised from the top edge of the leg-piece 14 by a minimum amount D_{min}, more or less equal to zero (see Fig. 2), and a maximum position D_{max} (see Fig. 1), respectively.

[0018] The spoiler 20 has an elongated shape in the form of a hook towards the top and comprises a step 21 against which one end of a spring 22 bears, its other end bearing against a step 23 formed inside the leg-piece 14. In this way the spring 22 remains seated between the spoiler 22 and the leg-piece 14 and presses against the two steps 21, 23.

[0019] The bottom end of the spoiler 20 opposite to the free end is pivotably hinged by means of a pin 30 on one end of a connecting-rod piece 28 with a curved L shape in turn pivotably hinged at its opposite end by means of a pin 32 on a rounded head 25b of a vertically pivoting lever 24. The lever 24 is curved at one end 25a opposite to the head 25b, while with the head 25b it is rotatably hinged on the leg-piece 14 by means of a pin 26 so as to be able to rotate about it (see trajectory F in Fig. 2).

[0020] The shell 12 has at the rear a recessed seat 34, in the bottom of which a plate 36 with a hole 37 is arranged (cf. Figs. 1 and 2). The arrangement and the relative dimensions of the lever 24, the pin 26, the plate 36 and its hole 37 are such that, when the lever 24 is completely lowered (Fig. 1), its curved end 25a is inserted inside the seat 34 and in particular is inserted inside the hole 37 which has matching dimensions. Above the seat 34, opposite the lever 24, the shell 12 has a recess 38 with a substantially semi-circular bottom and of suitable size for allowing unimpeded rotation of the head 25b about the pin 26. The bottom of the recess 38 has a slit for allowing the connecting-rod piece 28 to pass through it and thus be able to move inside the leg-piece 14.

[0021] The operating principle of the parts described is now explained. In Fig. 2 the boot 10 is shown in the walking position, i.e. with the spoiler 20 retracted and the leg-piece 14 disengaged from the shell 12. The lever 24 is raised and by means of the connecting-rod piece 28 keeps the spoiler 20 lowered, also owing to the expansive force of the spring 22 which opposes any slight accidental lowering of the lever 24. It should be noted, therefore, that the spoiler 20 causes minimum obstruction for the skier's leg, while the freedom of pivoting movement of the leg-piece facilitates walking.

[0022] When the skier wishes to ski, he/she lowers the lever 24 until the end 25a of the lever 24 enters into the hole 37, securing the leg-piece 14 to the shell 12 and preventing the relative rotation thereof. At the same time the head 25b of the lever 24 is rotated through approximately 140° about the pin 26 (displacement with trajectory F), raising the connecting-rod piece 28 which raises the spoiler 20, compressing the spring 22. With the lever 24 completely lowered, the spring 22 tends to push the pin 32 and the spoiler 20 downwards, but the curved shape of the connecting-rod piece 28 transmits the force of the spring 22 so as to oppose raising of the lever 24. In fact the pin 23, rotating about the pin 26, is positioned (see Fig. 1) further outwards with respect of the latter, creating a lever arm (the segment between the pins 32 and 36) with its fulcrum on the pin 26 and favouring lowering of the lever 24. Therefore, a reliable locking action is ensured and the skier, in order to release the leg-piece 14 from the shell 12, must perform an intentional operation sufficient to overcome the action of the spring 22.

[0023] A description of other embodiments of a boot according to the invention now follows, in all of which said boot is always composed of a shell and an articulated leg-piece (the relative movement of shell and leg-piece is identical to that already described for the boot 10). Likewise movement of a lever causes displacement, with respect to the leg-piece, of a spoiler (which is guided so as to slide vertically along a directrix Y between a retracted position and an extracted position). The references D_{min}, D_{max}, Y and F will have the same meaning as before and, in the different variants, the prefixes "1" and "2" will be used for the references in order to indicate parts which are functionally similar to the previous parts. The description will therefore concentrate on the parts which are different.

[0024] Figures 3 to 10 show a second embodiment of part of a boot 110 (partially shown for the sake of sim-

plicity). It is composed of a shell 112 and a leg-piece 114 (only the central rear part of which is shown) articulated on the shell 112. A vertically movable spoiler 120 is associated with the leg-piece 114.

[0025] The spoiler 120 has an elongated form and its bottom end, opposite to the free end, is integral with two parallel segments 128a, 128b of a connecting-rod piece 128. Each arm 128a, 128b has a shape which is curved towards the outside of the boot 120 - approximately in the manner of a "J" - and has (see Figs. 7 and 9) an end portion 129a, 129b which is curved laterally and rotatably engaged inside a corresponding hole in a rounded head 125b of a lever 124.

[0026] The head 125b of the lever 124 is housed inside a cavity 150 formed in the leg-piece 114 and is rotatably hinged with it by means of a horizontal pin 126: the lever 124 may therefore pivot vertically (see arrow F in Figs. 8 and 10). At the opposite end to the hinged end, the lever 124 is free and has a curved portion 125a.

[0027] The shell 112 has at the rear a recessed seat 134 (see Figs. 4 and 8). The arrangement and the relative dimensions of the lever 124, the pin 126 and the seat 134 are such that, when the lever 124 is completely lowered (see Figures 3 to 6), its curved end 125a reaches and engages inside the seat 134. A plate with a hole, similar to the previous plate 36, may be inserted inside the seat 134.

[0028] A spring 122 is arranged between the two segments 128a, 128b of the connecting-rod piece 128 and is fixed, at one end, to a horizontal pin 160 integral with the head 125b and, at the other end, to a horizontal pin 162 situated at the top of the cavity 150 and integral with the leg-piece 114.

[0029] The operating principle of the parts of this variant is now described Figs. 7-10 show the boot 110 in the walking position (spoiler 120 retracted and leg-piece 114 released from the shell 112). The lever 124 is raised and, by means of the connecting-rod piece 128, keeps the spoiler 120 lowered.

[0030] The spring 122 is in a constantly tensioned state and keeps the lever in the open position (as previously) owing to the favourable geometric arrangement of the lever arm consisting of the section between the pin 126 and the pin 160, which is also a fulcrum. This lever arm allows the force of the spring 122 to be used in order to support the lever 124.

[0031] When the skier wishes to ski, he/she lowers the lever 124 until the end 125a enters into the seat 134, securing the leg-piece 114 to the shell 112 and preventing their relative rotation. At the same time the head 125b rotates approximately 140° about the pin 126 (displacement with trajectory F in Fig. 8), raising the connecting-rod piece 128 which raises the spoiler 20.

[0032] During rotation of the head 125b, the spring 122 shortens slightly, but remains under tension and pulls the pin 126 upwards, thereby keeping the lever 124 lowered.

[0033] Owing to the action of the spring 122 both reliable locking and a stable open position is ensured for the lever 125b so that the skier, in order to release/engage the leg-piece 114 from/with the shell 112, must on each occasion perform an intentional operation sufficient to oppose the action of the spring 122.

[0034] Figures 11 to 13 show a third embodiment of a boot 210 according to the invention. It is composed of a shell 212 and a leg-piece 214 articulated with it (only the rear part being shown). The leg-piece 214 has, associated with it, a spoiler 220 which is movable vertically (direction Y), with an elongated shape, having a bottom end, opposite the free end, pivotably hinged by means of a pin 229 with a connecting-rod piece 228. The connecting-rod piece 228 has a shape which is slightly curved towards the outside of the boot 220 (divided into two non-aligned segments) and is hinged by means of a pin 232 on a rounded head 225b of a vertically pivoting lever 224. The lever 224 is curved at one end 225a, opposite the head 225b, where it has a locking tooth 280. The end 225b is hinged rotatably with the leg-piece 214 by means of a pin 226, so as to be able to rotate about it (see trajectory F in Fig. 11).

[0035] The shell 212 has at the rear a recessed seat 234, with dimensions corresponding to the locking tooth 280, having, arranged above it, a plate 270 with a hole 272 coaxial with the seat 234. The leg-piece 214, in its bottom rear part, has a hole 282, the position of which is such as to coincide with the underlying seat 234 when the leg-piece 214 is in the skiing position and fully inclined towards the toe of the boot 210.

[0036] The arrangement and relative dimensions of the lever 224, the pin 226 and the seat 234 are such that, when the level 224 is fully lowered (Figs. 11 and 13), the tooth 280 is able to engage inside the seat 234 via the hole 282.

[0037] Above the seat 234, opposite the lever 224, the shell 212 has a recess 238 with a substantially semicircular bottom and of suitable size for allowing unimpeded rotation of the head 225b about the pin 226. The bottom of the recess 238 has a slit for allowing the connecting piece 228 to pass through it and thus be able to move inside the leg-piece 214. A horizontal pin 287 is situated at one end of the recess 238.

[0038] A characteristic feature of this variant is the presence, on the lever 224, of a safety pushbutton 290 in the form of a V-shaped hook 290 (see Fig. 13) which is rotatably hinged with a pin 292 inside a longitudinal through-slit 296 formed in the body of the lever 224. The pushbutton 290 has at one end a hooked locking tooth 297 and at the other end a knurled operating surface 298.

[0039] A spiral spring (not shown) is mounted around the pin 292 and pushes the tooth 297 of the pushbutton 290 so that it is always in the position engaged with the pin 287.

[0040] The operating principle of the parts described is now explained. Fig. 12 shows the boot 210 in the walking position, i.e. with the spoiler 220 retracted and the leg-piece 214 released from the shell 212. The lever 224 is raised and keeps the spoiler lowered by means of the

connecting-rod piece 228.

[0041] When the skier decides to ski, he/she inclines the leg-piece 224 forwards (position shown in broken lines in Fig. 12) and lowers the lever 224 (Figs. 11 and 13) until the tooth penetrates inside the seat 234 through the hole 282, securing the leg-piece 214 to the shell 212. At the same time the head 225b of the lever 224 is rotated through approximately 140° about the pin 226 (displacement indicated by the arrow F in Fig. 12), raising the connecting-rod piece 228 which raises the spoiler 220.

[0042] With the lever 224 completely lowered the locking tooth 297 of the hook 290 engages with the pin 292 and prevents raising of the lever 224. In order to release the lever 224 and be able to raise it again, the skier must press the surface 298 of the pushbutton 290 so as to cause it to rotate (direction FF in Fig. 13) and disengage the tooth 296 from the pin 292.

[0043] Even though it is possible to add a spring as in the previous cases in order to stabilize the lever 224, in this solution the skier is required to intervene and press the lever 224 fully into the recess 234. Only when the tooth 280 has reached the bottom of the recess 234 will the pushbutton 298 engage with the pin 287 with a "click" indicating locking, thus ensuring that the lever 224 is locked in the skiing position unless subsequent action is taken by the skier.

[0044] A particular advantage of the invention is the fact of having a safety pushbutton in the lever 224, which is important in all those situations (extreme skiing) where it is desirable to prevent an accidental event from being able to open inadvertently the lever 224, thereby exposing the skier to the risk of injury.

[0045] The pushbutton or a locking mechanism may obviously also be mounted in the other two variants.

[0046] The parts described in the variants may clearly be formed separately or in combination, for example with the use or otherwise of resilient recall means for the lever part, the formation of two holes in the leg-piece and shell which can be arranged over each other, etc.

Claims

1. Shoe (10; 110; 210) for sports activities using sliding apparatus, comprising:

   - a shell (12; 112; 212),
   - a leg-piece (14; 114; 214),
   - a support spoiler (20;120;220) for the calf mounted so as to be displaceable with respect to the leg-piece, **characterized in that** it comprises linear displacement means (24, 28; 124, 128; 224, 228) for displacing linearly the spoiler (20; 120; 220) relative to the leg-piece (14; 114; 214) between two positions of maximum and minimum projection from the leg-piece.

2. Shoe (10; 110; 210) according to Claim 1, in which the displacement means comprise a lever member (24; 124; 224) which is hinged both with the shoe and with a connecting-rod piece (28; 128; 228) connected to the spoiler (20; 120; 220) so that displacement of the lever member (24; 124; 224) between two limit positions produces a corresponding linear displacement of the spoiler (20; 120; 220) between said two positions of maximum and minimumprojection.

3. Shoe (10; 110; 210) according to Claim 2, in which the lever member (24; 124; 224) is hinged at one end on the leg-piece (14; 114; 214) and in such a way as to perform a rotation with a free end inside a longitudinal plane of the shoe.

4. Shoe (10; 110; 210) according to Claims 2 or 3, in which the free end of the lever member (24; 124; 224) has a projection (25a; 125a; 225a) which, with said rotation, can be inserted in a complementary way inside a seat (34; 134; 234) formed in the shell so as to lock the leg-piece and the shell together.

5. Shoe (210) according to Claim 4, comprising on the leg-piece (214) an opening (282) which can be arranged over the seat (234) formed in the shell so that said projection (25a; 125a; 225a) is able to pass through both of them so as to lock the leg-piece and the shell together.

6. Shoe (10; 110; 210) according to any one of Claims 2 to 5, in which the lever member (24; 124; 224) comprises a rounded head (25b; 125b; 225b) rotatably hinged on the leg-piece on which a hinging point (32; 132; 232) for the connecting-rod piece (28; 128; 228) is formed, said hinging point being positioned with respect to the hinging point (26; 126; 226) of said head on the leg-piece so as to rotate about it and towards the leg-piece following the displacement of the lever member between the two limit positions.

7. Shoe (10; 110; 210) according to Claim 6, in which the shell has a recess (38; 138; 238) with a substantially semi-circular bottom and of suitable size for allowing the rotation of said head (25b; 125b; 225b), the bottom of the recess (38; 138; 238) having a slit for allowing the connecting-rod piece to pass through it and thus be able to move inside the leg-piece.

8. Shoe (10; 110) according to Claim 6 or 7, comprising resilient means (22; 122) for recalling the lever member into the limit positions.

9. Shoe (10; 210) according to Claim 8, in which the connecting-rod piece (28; 228), which has a curved shape in the form of an L or divided into non-aligned segments, is hinged at one end with the spoiler (20;

220) and at the other end with the rounded head (25b; 225b) of the lever member (24; 224) by means of a pin (32; 232) there.

10. Shoe (10) according to Claim 9, in which the resilient means comprise a spring (22) having one of its ends bearing against a step (23) formed inside the leg-piece (14) and the other end bearing against an internal step (21) of the spoiler (20) so that the spring (22) remains seated between the spoiler (20) and the leg-piece (14) and presses against the twosteps.

11. Shoe (110) according to Claim 8, in which the connecting-rod piece (128) comprises two parallel segments (128a, 128b), each of which has an end portion (129a, 129b) curved laterally and engaged rotatably inside a corresponding hole in said rounded head (125b).

12. Shoe (110) according to Claim 9, in which the resilient means comprise a spring (122) having one of its ends fixed to a horizontal pin (160) integral with the rounded head (125b) and the other end fixed to a horizontal pin (162) situated inside a cavity (150) forming part of and integral with the leg-piece (114).

13. Shoe (110) according to Claim 12, in which the spring (122) is arranged between the two said segments (12a, 128b).

14. Shoe (210) according to any one of Claims 2 to 13, comprising locking means (287, 290) for locking the lever part (224) in at least one of the two limit positions.

15. Shoe (210) according to Claim 14, in which said locking means comprise a hook (290) mounted movably on the lever part (224).

16. Shoe (210) according to Claim 15, in which the hook (290) is rotatably hinged inside a longitudinal through-slit (296) formed in the body of the lever part (224) and has at one end a hooked locking tooth (297) and at the other end an operating surface (298), the hooked tooth being able, in a limit position, to engage with a locking pin (287) integral with the shell.

17. Shoe (210) according to Claims 15 or 16, comprising a spring mounted on the hook (290) so as to push the hooked tooth (297) always into the position where it is engaged with the locking pin (287).

Amended claims in accordance with Rule 137(2) EPC.

1. Shoe (10; 110; 210) for sports activities using sliding apparatus, comprising:

- a shell (12; 112; 212),
- a leg-piece (14; 114; 214) **articulated on the shell so as to pivot about an axis (X) approximately coinciding with the axis of articulation of the ankle,**
- a support spoiler (20;120;220) for the calf mounted so as to be displaceable with respect to the leg-piece,
- displacement means (24, 28; 124, 128; 224, 228) for displacing linearly the spoiler (20; 120; 220), **i.e. slidably,** relative to the leg-piece (14; 114; 214) between two positions of maximum and minimum projection from the leg-piece,

characterized in that the displacement means comprise a lever member (24; 124; 224) which

- is hinged both **at one end on the leg-piece (14; 114; 214)** and with a connecting-rod piece (28; 128; 228) connected to the spoiler (20; 120; 220) so that displacement of the lever member (24; 124; 224) between two limit positions produces a corresponding linear displacement of the spoiler (20; 120; 220) between said two positions of maximum and minimum projection, **and which,**
- **in addition to modifying the position of the spoiler, is mounted so as to engage and disengage with/from the shell in order to lock the leg-piece and the shell together, so that in a walking position the spoiler is retracted and the leg-piece disengaged from the shell while, when the skier wishes to ski, the leg-piece may be secured to the shell preventing the relative rotation thereof.**

2. Shoe (10; 110; 210) according to Claim **1,** in which the lever member (24; 124; 224) is hinged in such a way as to perform a rotation with a free end inside a longitudinal plane of the shoe.

3. Shoe (10; 110; 210) according to Claims **1 or 2,** in which the free end of the lever member (24; 124; 224) has a projection (25a; 125a; 225a) which, with said rotation, can be inserted in a complementary way inside a seat (34; 134; 234) formed in the shell so as to lock the leg-piece and the shell together.

4. Shoe (210) according to Claim **3,** comprising on the leg-piece (214) an opening (282) which can be arranged over the seat (234) formed in the shell so that said projection (25a; 125a; 225a) is able to pass through both of them so as to lock the leg-piece and the shell together.

5. Shoe (10; 110; 210) according to any one of **pre-**

ceeding Claims, in which the lever member (24; 124; 224) comprises a rounded head (25b; 125b; 225b) rotatably hinged on the leg-piece on which a hinging point (32; 132; 232) for the connecting-rod piece (28; 128; 228) is formed, said hinging point being positioned with respect to the hinging point (26; 126; 226) of said head on the leg-piece so as to rotate about it and towards the leg-piece following the displacement of the lever member between the two limit positions.

6. Shoe (10; 110; 210) according to Claim **5,** in which the **leg-piece** has a recess (38; 138; 238) with a substantially semi-circular bottom and of suitable size for allowing the rotation of said head (25b; 125b; 225b), the bottom of the recess (38; 138; 238) having a slit for allowing the connecting-rod piece to pass through it and thus be able to move inside the leg-piece.

7. Shoe (10; 110) according to Claim **5 or 6,** comprising resilient means (22; 122) for recalling the lever member into the limit positions.

8. Shoe (10; 210) according to Claim **7,** in which the connecting-rod piece (28; 228), which has a curved shape in the form of an L or divided into non-aligned segments, is hinged at one end with the spoiler (20; 220) and at the other end with the rounded head (25b; 225b) of the lever member (24; 224) by means of a pin (32; 232) there.

9. Shoe (10) according to Claim **8,** in which the resilient means comprise a spring (22) having one of its ends bearing against a step (23) formed inside the leg-piece (14) and the other end bearing against an internal step (21) of the spoiler (20) so that the spring (22) remains seated between the spoiler (20) and the leg-piece (14) and presses against the two steps.

10. Shoe (110) according to Claim **7,** in which the connecting-rod piece (128) comprises two parallel segments (128a, 128b), each of which has an end portion (129a, 129b) curved laterally and engaged rotatably inside a corresponding hole in said rounded head (125b).

11. Shoe (110) according to Claim **8,** in which the resilient means comprise a spring (122) having one of its ends fixed to a horizontal pin (160) integral with the rounded head (125b) and the other end fixed to a horizontal pin (162) situated inside a cavity (150) forming part of and integral with the leg-piece (114).

12. Shoe (110) according to Claim **11,** in which the spring (122) is arranged between the two said segments (12a, 128b).

13. Shoe (210) according to any one of **preceeding** Claims, comprising locking means (287, 290) for locking the lever part (224) in at least one of the two limit positions.

14. Shoe (210) according to Claim **13,** in which said locking means comprise a hook (290) mounted movably on the lever part (224).

15. Shoe (210) according to Claim **14,** in which the hook (290) is rotatably hinged inside a longitudinal through-slit (296) formed in the body of the lever part (224) and has at one end a hooked locking tooth (297) and at the other end an operating surface (298), the hooked tooth being able, in a limit position, to engage with a locking pin (287) integral with the **leg-piece.**

16. Shoe (210) according to Claims **14 or 15,** comprising a spring mounted on the hook (290) so as to push the hooked tooth (297) always into the position where it is engaged with the locking pin (287).

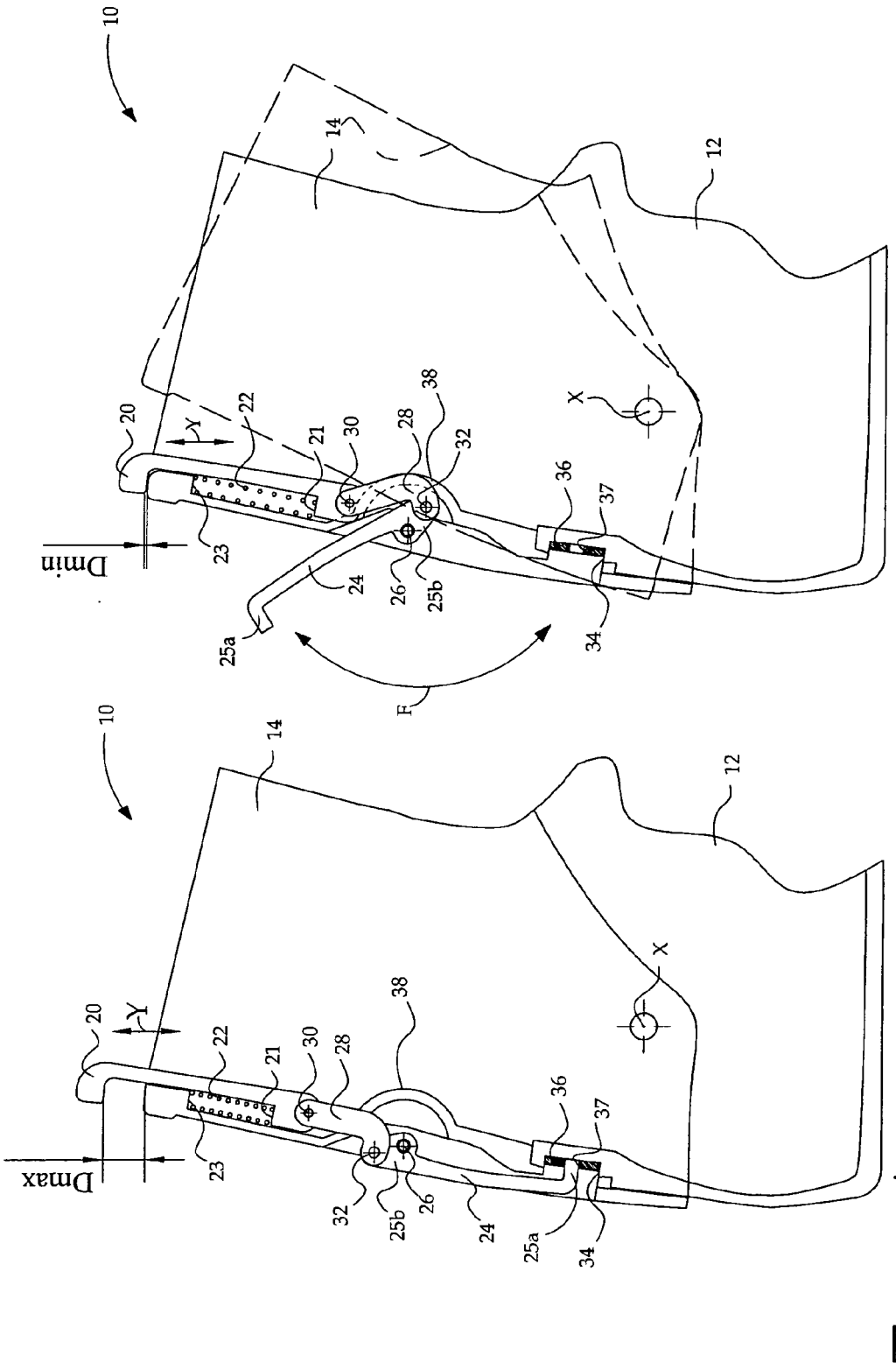
10
14
12
20
Y
22
21
30
28
38
32
36
37
X
23
Dmax
24
26
25b
25a
34

FIG. 1

10
14
12
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Y
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21
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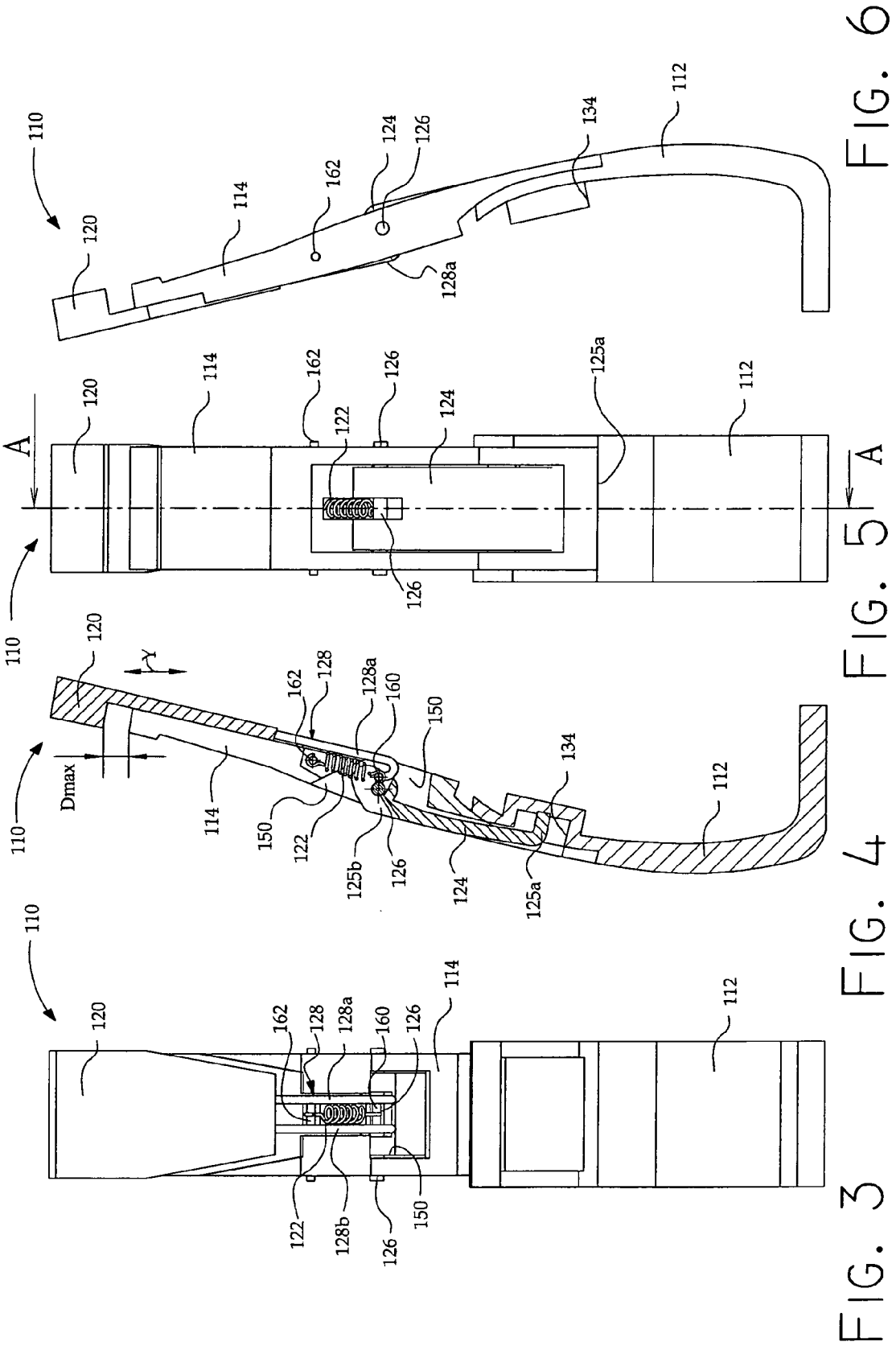
28
38
32
36
37
X
23
Dmin
24
26
25b
25a
34
F

FIG. 2


110
120
114
162
124
126
134
112
128a
A
122
125a
Y
Dmax
128
160
150
125b
FIG. 3
FIG. 4
FIG. 5
FIG. 6

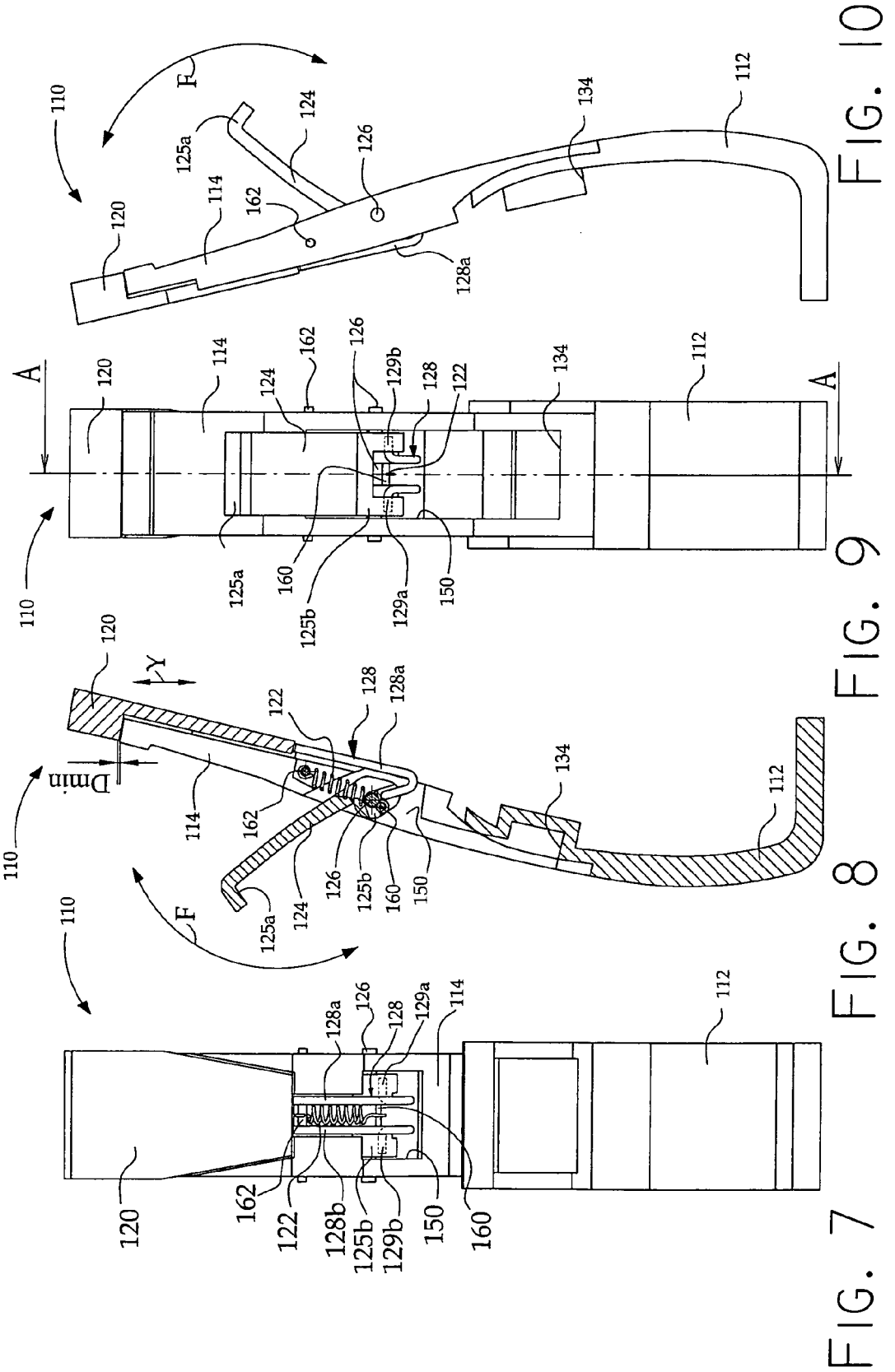


FIG. 10

FIG. 9

FIG. 8

FIG. 7

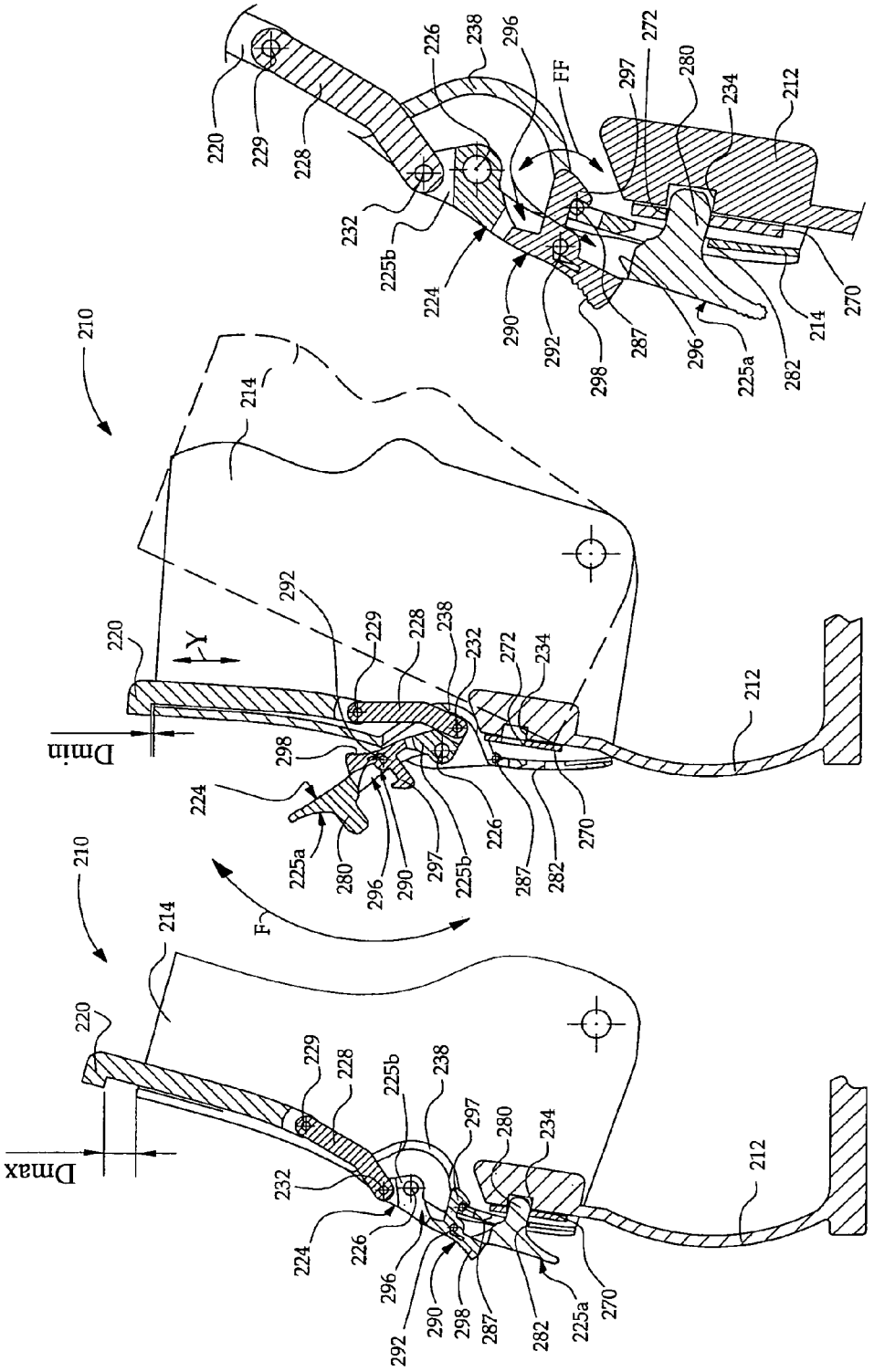


FIG. 11

FIG. 12

FIG. 13

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EUROPEAN SEARCH REPORT

Application Number
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Place of search	Date of completion of the search	Examiner
Munich	5 July 2007	Vesin, Stéphane

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