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(54) Ski & ski-binding housing

(57) The present disclosure relates to a ski (1) and ski binding housing (20), in particular a general ski binding for a cross-country, telemark, touring or roller ski, for interacting with the ski boot or shoe of the user of the ski, said ski binding housing being adaptable to reposition on the surface of the corresponding ski.
A ski binding of this type affords the user the ability to repair or replace individual parts of a complete ski binding system, without needing to replace the entire binding, along with the ability to easily resize the binding housing relative to the underlying binding plate, thus accommodating a variety of different ski boot sizes.
A corrective plate is also disclosed, situated between the ski and the binding, ensuring that the user's boots are in the correct skiing position.

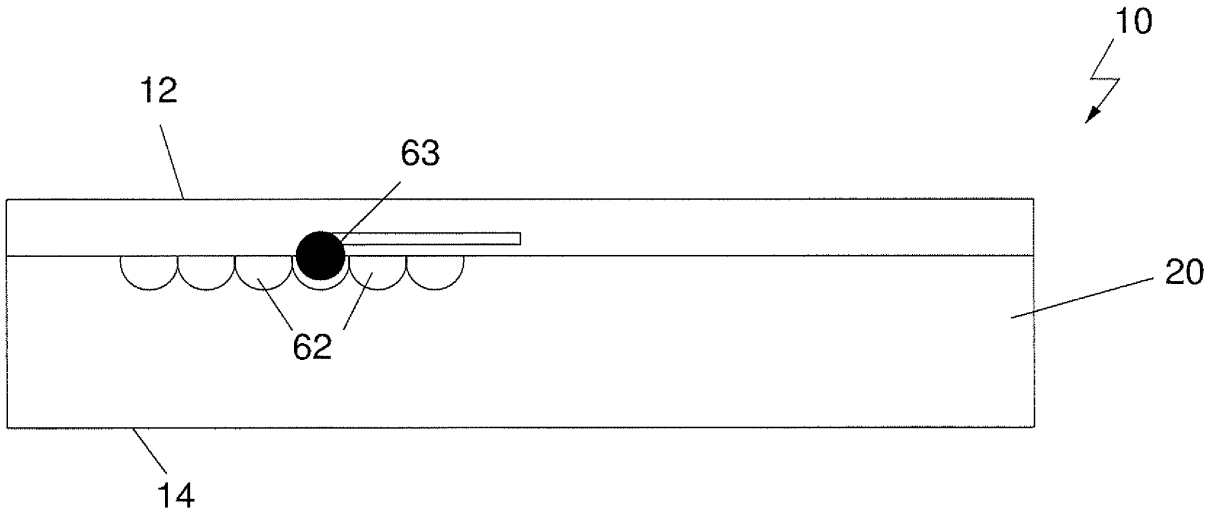

FIG. 4

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Description

Background

[0001] Cross-country or touring skiing is both very popular as a pastime and a competitive sport. In such skiing, the sports practitioner walks or skis along the flat or slightly sloped course in skis. Several techniques are known in this regard, from simply moving the skis forward whilst maintaining them parallel with each other, or using a technique more similar to ice skating, wherein the skis are pushed out to the side and angled, such that the sports practitioner is moved forward.

[0002] In order to allow the sports practitioner to move efficiently whilst cross-country skiing, it is typical for the ski boot or shoe of the practitioner to be held in a rotatable manner. Most commonly, the ski boot or shoe of the practitioner is provided with a fixing means, often a holding bar or pin forming part of the front or sole of the ski boot or shoe, which is clipped into part of the ski binding. In this way, the ski boot or shoe is held only in one place by means of this holding bar or pin, and can thus rotate around the fixing portion provided on the ski binding. In general, the fixing point is provided at the front of the ski boot or shoe, and the heel of the ski boot or shoe can be lifted off the surface of the ski.

[0003] When setting up the skis, the sports practitioner will adjust the position of the binding housing relative to the ski in order to accommodate their boot size correctly. This is often an awkward and time-consuming process, requiring the use of tools sometimes including specialist tools, or even requires the expertise of a professional ski manufacturer or reseller. Additionally, should the user be required to replace the binding housing, this can again pose problems which may only be rectifiable by a certified technical expert.

[0004] In order to alleviate the burden of these problems, it is an objective of the present invention to overcome the problems described above, concerning the repair and maintenance of skiing equipment.

Disclosure of the Invention

[0005] The present invention provides a ski and ski binding housing in accordance with the independent claims. Further preferred embodiments are given in the dependent claims.

[0006] The claimed invention can be better understood in view of the embodiments of the ski and ski binding housing described hereinafter. In general, the described embodiments describe preferred embodiments of the invention. The attentive reader will note, however, that some aspects of the described embodiments extend beyond the scope of the claims. To the respect that the described embodiments indeed extend beyond the scope of the claims, the described embodiments are to be considered supplementary background information and do not constitute definitions of the invention *per se*. This also holds for the subsequent "Brief Description of the Drawings" as well as the "Detailed Description of the Preferred Embodiments."

[0007] In particular, the present disclosure relates to providing a ski and ski binding housing which afford the sports practitioner the ability to quickly and easily relocate the elements of the binding, thus providing easy adjustment of the ski binding. The binding itself is anticipated to essentially be a regular ski binding, albeit one with additional features in and around the binding housing area. More specifically, these features are binding housing recesses and a snap-in flap, a combination of studs and recesses, or a series of protrusions and grooves, all of which may act to permit the secure adjustment of the binding housing. Complimentary adjustment means are found in the corresponding ski. Furthermore, the binding housing may include "wings" which guide the heel of the user's ski boot back on to the surface of the ski in a correct and controlled manner.

[0008] The adjustability of the binding housing and ski serve to further provide the benefit of easy binding replacement, to manufacturer, reseller and user, since all parts can easily be decoupled from each other.

Brief Description of the Drawings

[0009]

Figure 1 shows a side and top elevation of a ski with various binding attachment means.

Figure 2 shows a front elevation of a ski binding with a snap-in flap interaction arrangement.

Figure 3 shows a front and top elevation of a ski binding with a set screw and corresponding hole as attachment means.

Figure 4 shows a side elevation of a ski binding with a semi-cylindrical protrusion and lever adjustment set up.

Figure 5 shows a side and top elevation of a ski with semi-cylindrical recesses corresponding to the protrusions shown in Figure 5.

Figure 6 shows a side and top elevation of a ski with a skier correction plate inserted above.

Detailed Description of the Preferred Embodiments

[0010] The following configurations of ski-binding 10 are adapted to interact with the 'top surface' of a ski 1, i.e. the user side 2, not the mountain side 3 of the ski 1 during normal use. In the preferred embodiment, the ski-binding 10 is mounted onto the user side 2 of the ski 1.

[0011] The ski binding 10 must be lightweight, strong, durable and workable, i.e. easy to manufacture, easily

replaceable and cheap to produce. A material which exhibits these properties is plastic. In the preferred embodiment, the plastic of choice for the ski binding 10 is polyoxymethylene, which is known for its wear-resistant, low friction and light-weight properties.

[0012] The ski binding 10 may exist as a single piece which is at least the length of the user's ski boot 5. Alternatively, the ski binding 10 may exist as a plurality of individual pieces 10a, 10b, which are positioned at least beneath the relevant sections of the ski binding housing 20.

[0013] On the user side surface of the ski 1, one or more sections of ski-binding housing 20 are attached. It is the binding housing 20 which accommodates the actual ski binding mechanism 10 which operates to secure the user's boot 5 to the ski 1.

[0014] The usual manner of interaction between the binding housing 20 and the ski 1 involves a slidable engagement, wherein the user side surface 2 of the ski 1 comprises longitudinal tracks or grooves 18 sized to receive a corresponding longitudinal protrusion 19 running along a part or the entire length of the binding housing 20. Alternatively, the recessed track or groove 18 can be a feature of the binding housing 20, whilst the longitudinal protrusion 19 may exist on the ski 1. In both of these cases, the binding housing 20 and the ski 1 are held sufficiently close together and the housing elements can be slid into the desired position.

[0015] The longitudinal groove or track recess 18 on either the ski 1 or binding housing 20 can feature along the geometric centre of either the ski 1 or the housing 20. The corresponding longitudinal protrusion 19 should therefore also feature along the geometrical centre of the corresponding ski 1 or binding housing 20. Alternatively, the tracks or grooves 18 and corresponding longitudinal protrusions 19 could exist on both the ski 1 and binding housing 20 in different locations, for example along the parallel edges 8 of the ski 1 or housing 20.

[0016] Attaching and securing the binding housing 20 to the ski 1 can be done in one of many ways. For example, the ski 1 could comprise a series of periodically occurring indentations or grooves 22, size to accommodate an equivalently sized protrusion 24 from the overlying binding housing 20. The protrusion 24 could be located at the distal end of a deformable flap which is biased such that, in its relaxed state, the protrusion 24 engages and interacts with a corresponding recess formed in the ski 1. The application of force to the deformable flap 24 of the binding housing 20, either by a tool or the user's finger, could deform the flap 24 and its protrusion out of its relaxed state such that the protrusion 24 and corresponding recess 22 disengage and cease to interact. This particular arrangement of biased-flap protrusions 24 and corresponding recesses 22 is particularly advantageous when the binding housing and the ski 1 are mounted together in a slidable fashion. The user can very quickly and easily deform the snap-in flap 24, thereby disengaging the interaction between the binding housing 20 and the ski 1, allowing the user to slide the binding housing 20 to a new position on the user side surface 2 of the ski 1. Once the binding housing 20 is in the desired position, the user may simply release the snap-in flap 24, thus allowing it to return to its normal biased position, whereby the protrusion associated with the flap 24 is able to engage with a corresponding recess 22 on the ski 1.

[0017] Alternatively, the binding housing 20 could contain one or more holes 26 through which a set screw 28 is threaded. Again assuming a slidably coupled binding housing 20 and ski 1, the binding housing 20 can be moved to its desired position whilst the set screw 28 is retracted via the user side 12 of the binding housing 20. Upon reaching its desired location on the ski 1, the binding housing 20 can be secured by simply tightening the set screw 28 until it contacts and interacts with the underlying ski 1. The ski 1 itself may contain one or more recesses 30 size to accommodate the set screw 28 which is threaded through the overlying binding housing 20. A plurality holes 30 in the user side surface of the ski 1 would provide multiple positions at which the binding housing 20 could be fixed via the set screw 28. To increase the range of possible positions for the binding housing 20, i.e. to create a continuous distribution rather than a discrete distribution of housing locations, the ski 1 could be devoid of any corresponding recess holes. Instead, in order to hold the set screw 28, a frictional engagement could also be employed. For example, an irregularly crafted user side surface 2 of the ski 1 could offer the friction necessary to prevent the set screw 28 from slipping and consequently hold the binding housing 20 in its desired location. Sufficient friction could also be obtained through the utilisation of a lacquer or residue which exhibits sticky and/or frictional properties, capable of holding a threaded set screw 28 in a particular location.

[0018] In a similar manner to that described above, the corresponding snap-in flap protrusion recesses 22 need not necessarily appear down the longitudinal spine of the user side surface 2 of the ski 1, but rather could feature along one, or, preferably both of the parallel edges 8 of the ski 1. One or preferably both parallel edges 8 of the binding housing 20 could contain similar deformable snap-in flaps 44, each with its own protrusion sized to engage and interact with the corresponding recess 42 found along the parallel edge 8 of the ski 1. Again, the ease and speed with which the user is able to adjust the position of the binding housing 20 relative to the ski 1 is particularly advantageous.

[0019] Optionally, a plate 80 can be inserted between the ski 1 and the ski binding 10 to create an angle at which the user's ski boot sits. For example, if the skier has developed an unfortunate habit of leaning to one side whilst skiing, this can be compensated for, partially or totally, by the inclusion of a plate 80 between the ski 1 and the binding 10. This plate 80 causes the skier to adopt the correct stance whilst on the mountain piste.

Claims

1. A ski (1), comprising:

- a user-side surface (2);
- a mountain-side surface (3);
- a front end (4);
- a rear end (5); and
- two parallel edges (8).

2. A ski binding (10), comprising:

- a binding housing (20);

wherein the binding housing (20) comprises:

- a user-side surface (12); and
- a mountain-side surface (14).

3. The ski (1) of claim 1, wherein the ski (1) comprises adjustment means for the ski binding (10) of claim 2.

4. The ski (1) of claim 1 or 2, wherein the ski (1) comprises at least one groove (18) which runs along at least a part of the entire longitudinal length of the ski (1).

5. The ski (1) of claim 4, wherein the at least one groove (18) is a recess formed along at least one parallel edge (8) of the ski (1).

6. The ski (1) of claim 4, wherein the at least one groove (18) is a recess formed along the user-side surface (2) of the ski (1).

7. The ski (1) of claim 5 or 6, wherein the groove (18) is adapted to slidably interact with the binding (10) of claim 2.

8. A ski (1), comprising:

- a user-side surface (2);
- a mountain-side surface (3);
- a front end (4);
- a rear end (5); and
- two parallel edges (8);

wherein the ski (1) further comprises one or more indentations (22) along at least one of its parallel edges (8).

9. A ski binding (10), comprising:

- a binding housing (20);

wherein the binding housing (20) comprises:

- a user-side surface (12); and
- a mountain-side surface (14);

wherein the ski binding housing (20) further comprises at least one snap-in flap (24) on at least one of its parallel edges.

10. The ski (1) of claim 8, wherein the one or more indentations (22) are sized to accommodate the at least one snap-in flap (24) of claim 9.

11. A ski binding (10), comprising:

- a binding housing (20);

wherein the binding housing (20) comprises:

- a user-side surface (12); and
- a mountain-side surface (14);

wherein the binding housing (20) further comprises at least one hole (26) through which an adjustable set screw (28) is threaded.

12. A ski (1), comprising:

- a user-side surface (2);
- a mountain-side surface (3);
- a front end (4);
- a rear end (5); and
- two parallel edges (8);

wherein the ski (1) further comprises at least one recess (30) sized to accommodate the adjustable set screw (28) of claim 11.

13. The ski (1) of claim 12, wherein the ski (1) comprises an irregular, non-smooth user-side surface (2) which interacts with the adjustable set screw (28) of claim 11.

14. The ski (1) of any one of claims 12 or 13, wherein the ski (1) has its user-side surface (2) at least partially coated with a sticky lacquer or residue suitable for interacting with the adjustable set screw (28) of claim 11.

15. A ski (1), comprising:

- a user-side surface (2);
- a mountain-side surface (3);
- a front end (4);
- a rear end (5); and
- two parallel edges (8);

wherein the ski (1) further comprises at least one side layer (40) attached to at least one parallel edge (8) of the ski (1).

16. The ski (1) of claim 15, wherein the side layer (40) comprises corresponding means for interacting with a binding housing (20).

17. The ski (1) of claim 16, wherein the side layer (40) comprises a longitudinal recess (42) running along

at least a part of its entire length.

18. The ski (1) of claim 17, wherein the side layer recess (42) is adapted to slidably interact with a corresponding protrusion (44) on the binding housing (20).

19. The ski (1) of claim 16, wherein the side layer (40) comprises a longitudinal protrusion (46) running along at least a part of its entire length.

20. The ski (1) of claim 19, wherein the side layer protrusion (46) is adapted to slidably interact with a corresponding recess (48) on the binding housing (20).

21. The ski (1) of any of claims 15 to 20, wherein the binding housing (20) is located on the user-side surface (2) of the ski (1).

22. A ski (1), comprising:

- a user-side surface (2);
- a mountain-side surface (3);
- a front end (4);
- a rear end (5); and
- two parallel edges (8);

wherein the ski (1) further comprises at least one protrusion (50) running along at least a part of the length of at least one shoulder (7) of the ski (1), wherein the shoulder (7) is the corner between the parallel edge (8) and the user-side surface (2) of the ski (1).

23. The ski (1) of claim 22, wherein a binding housing (20) is attachable to the at least one shoulder protrusion (50).

24. The ski (1) of claim 23, wherein the binding housing (20) is adapted to slidably interact with the at least one shoulder protrusion (50).

25. The ski (1) of claim 24, wherein the binding housing (20) engages the mountain-side surface (52) of the at least one shoulder protrusion 50, along the parallel edge (8) of the ski (1).

26. A ski (1), comprising:

- a user-side surface (2);
- a mountain-side surface (3);
- a front end (4);
- a rear end (5); and
- two parallel edges (8);

wherein the ski (1) further comprises at least one semi-cylindrical recess (60) on at least one shoulder (7), wherein the shoulder (7) is the corner between the parallel edge (8) and the user-side surface (2) of the ski (1).

27. A ski binding (10), comprising:

- a binding housing (20);

wherein the binding housing (20) comprises:

- a user-side surface (12); and
- a mountain-side surface (14);

wherein the binding housing (20) further comprises at least one semi-cylindrical protrusion (62), sized to interact with the at least one semi-cylindrical recess (60) of claim 26.

28. The ski binding (10) of claim 27, wherein the at least one semi-cylindrical protrusion (62) is rotatably coupled to the binding housing (20) via a lever (63).

29. The ski binding (10) of claim 28, wherein the axis of rotation of the at least one semi-cylindrical protrusion (62) is transverse to the length of the ski (1) and parallel to the width of the ski (1).

30. The ski binding (10) of claim 29, wherein the at least one semi-cylindrical protrusion (62) is rotatable between both a locked and an unlocked position.

31. The ski binding (10) of claim 30, wherein the locked position of the at least one semi-cylindrical protrusion (62) couples the ski binding (10) to the ski (1) of claim 26.

32. The ski binding (10) of claim 30 or 31, wherein the unlocked position of the at least one semi-cylindrical protrusion (62) decouples the ski binding (10) from the ski (1) of claim 26.

33. The ski (1) of claim 1 and the ski binding (10) of claim 2, wherein a plate (80) is inserted between the ski (1) and the ski binding (10), wherein the angle of the plate (80) is selected by the user for comfortable skiing.

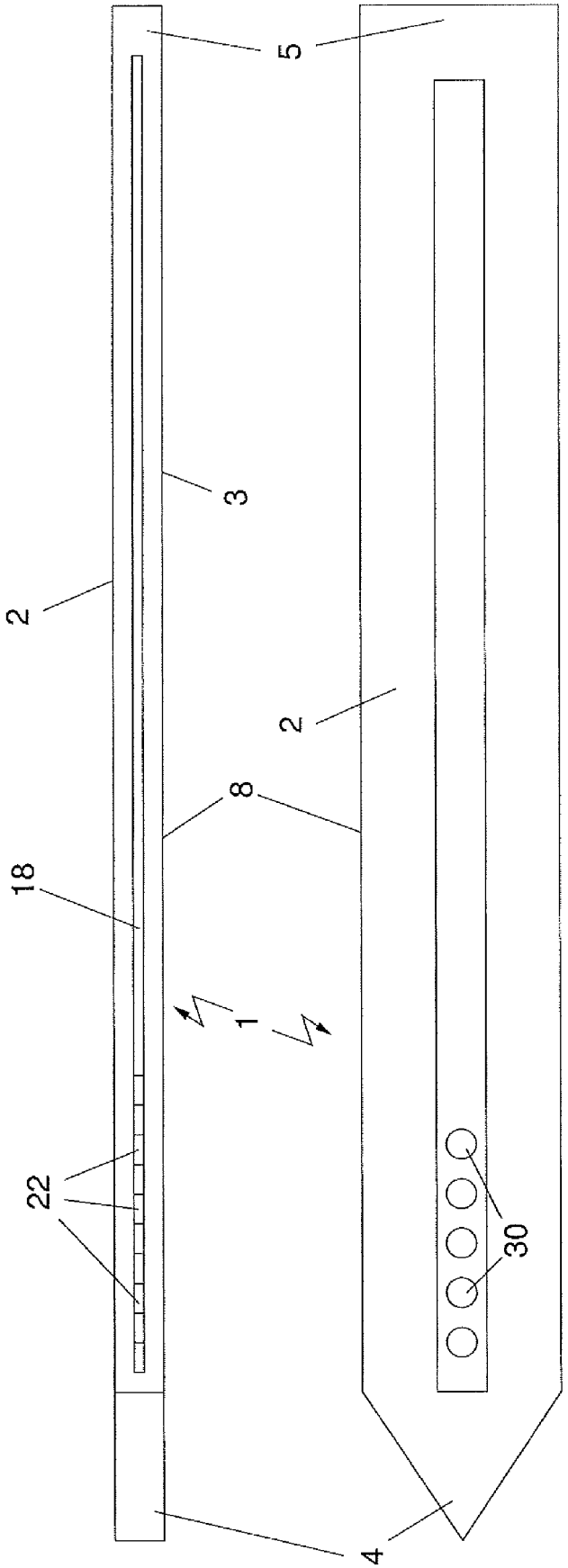

FIG. 1

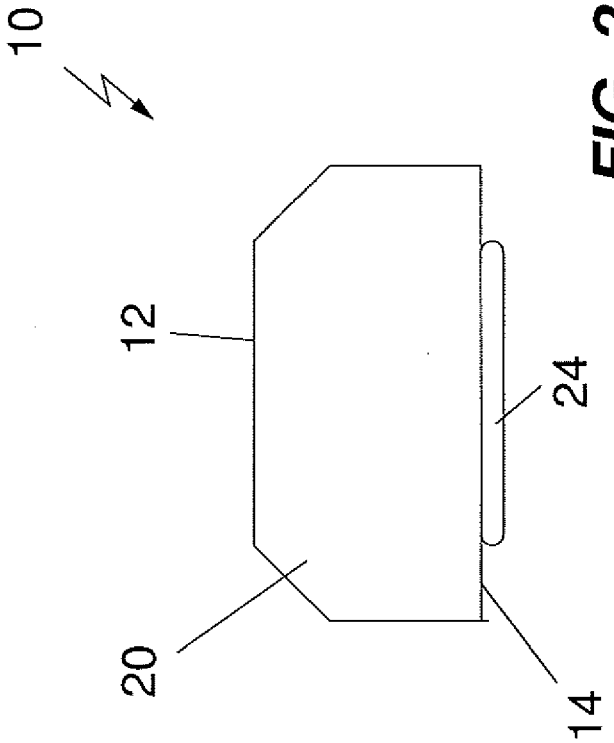

FIG. 2

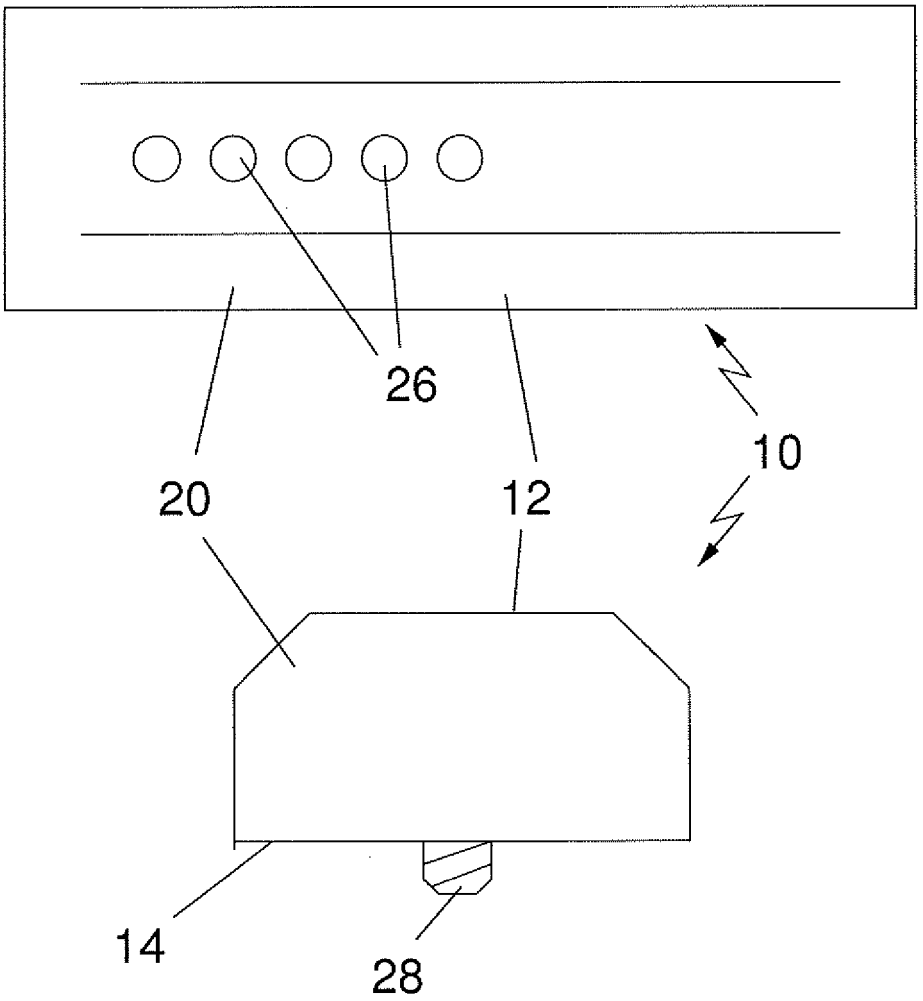

FIG. 3

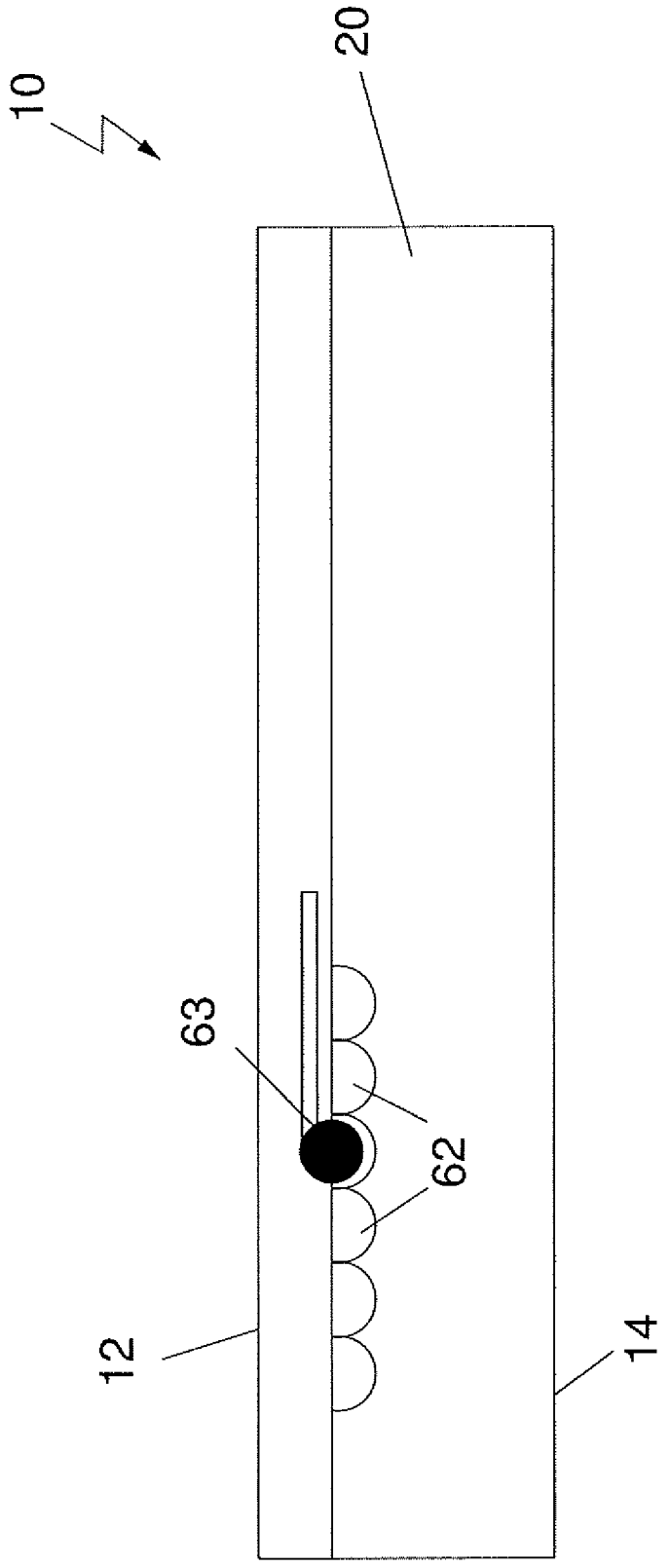

FIG. 4

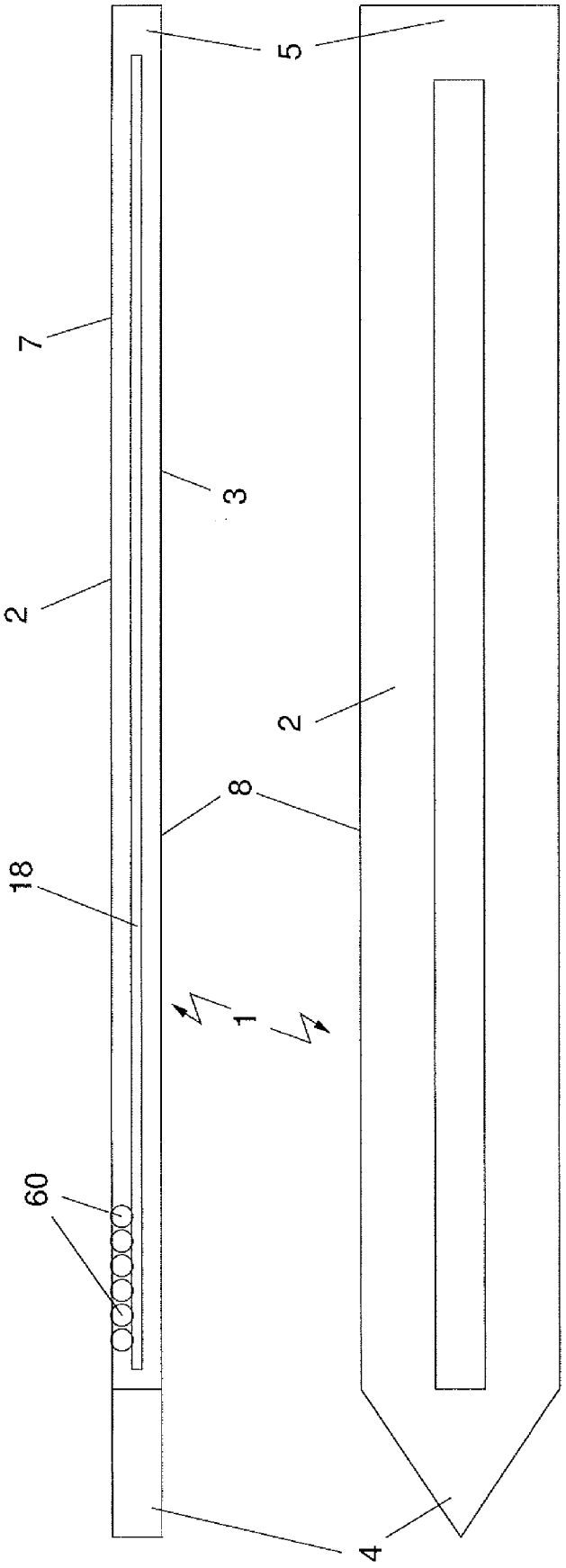

FIG. 5

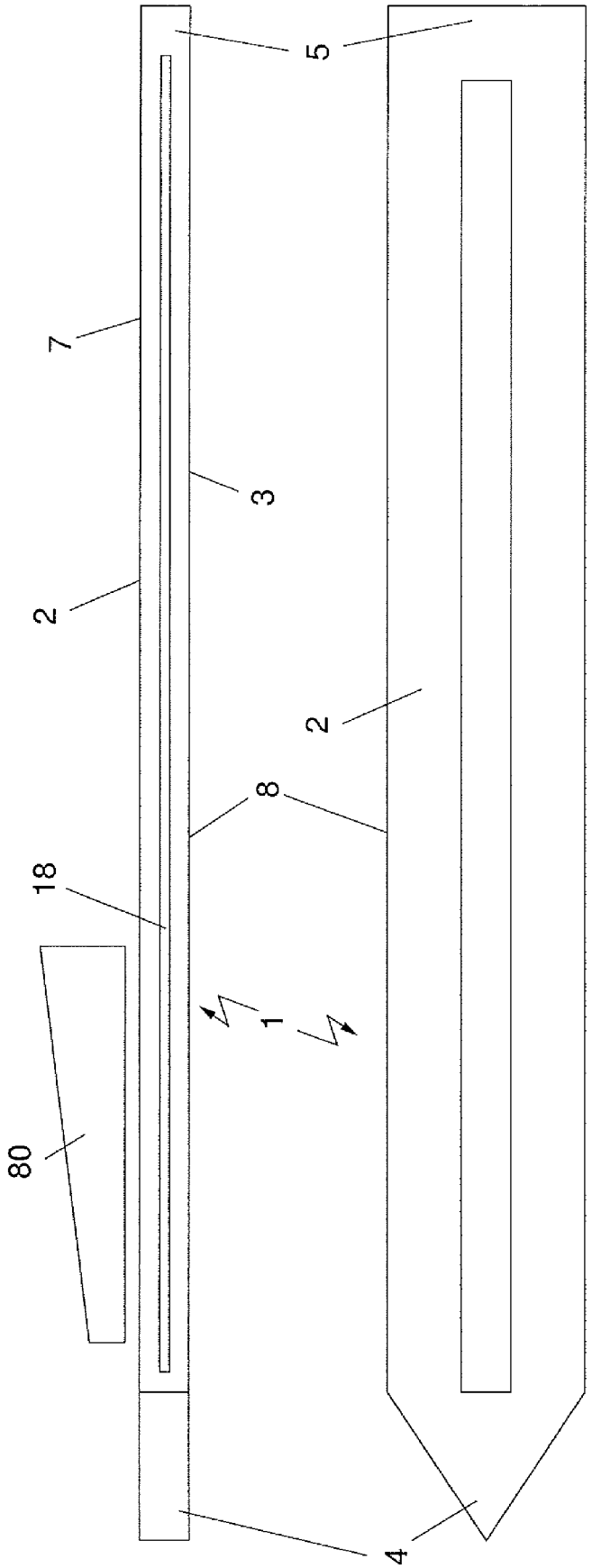

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 09 15 0068

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 Y	WO 88/04563 A (WITCO AS [NO]) 30 June 1988 (1988-06-30) * page 5, line 30 - page 8, line 23; figures 1-3 *	1-4,6,7, 11-13 8	INV. A63C5/12 A63C5/00 A63C9/20 A63C9/00
X A	EP 1 839 713 A (SALOMON SA [FR]) 3 October 2007 (2007-10-03) * paragraph [0062]; figures 1,2 *	1-4,6,7, 11,27 5,8-10, 12-26, 28-33	
X	EP 1 366 785 A (HEAD TECHNOLOGY GMBH [AT]) 3 December 2003 (2003-12-03) * paragraph [0019]; figures 1,4 *	1-7, 15-21	
X	EP 0 383 104 A (TMC CORP [CH] TYROLIA FREIZEITGERAETE [AT]) 22 August 1990 (1990-08-22) * column 1, line 53 - column 4, line 8; figure 1 *	1-5,7,8, 22-25	
X Y	DE 10 2004 024881 A1 (ROTTEFELLA AS KLOKKARSTUA [NO]) 14 July 2005 (2005-07-14) * paragraph [0016]; figures 2,4,5 *	2 10	TECHNICAL FIELDS SEARCHED (IPC) A63C
X Y	EP 1 600 196 A (TYROLIA TECHNOLOGY GMBH [AT]) 30 November 2005 (2005-11-30) * figures 1,4 *	1-5,7,9 8,10	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	15 June 2009	Murer, Michael

CATEGORY OF CITED DOCUMENTS

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15-06-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 8804563 A	30-06-1988	NO 871938 A	19-04-1988
EP 1839713 A	03-10-2007	CN 101045187 A	03-10-2007
		FR 2899121 A1	05-10-2007
		US 2007228695 A1	04-10-2007
EP 1366785 A	03-12-2003	DE 10223547 A1	18-12-2003
EP 0383104 A	22-08-1990	AT 391817 B	10-12-1990
		DE 59003383 D1	16-12-1993
DE 102004024881 A1	14-07-2005	AT 405333 T	15-09-2008
		CN 1956753 A	02-05-2007
		EP 1748827 A1	07-02-2007
		WO 2005113081 A1	01-12-2005
		US 2008129015 A1	05-06-2008
EP 1600196 A	30-11-2005	AT 7732 U1	25-08-2005
		AT 363319 T	15-06-2007

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