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(71) Applicant: **HGL Invest AS**
3120 Nøtterøy (NO)

(72) Inventor: **Lindhagen, Henrik Georg**
3120 Nøtterøy (NO)

(74) Representative: **Thorstad, Pat Lam**
Equip AS
Herslebs gate 2b
0561 Oslo (NO)

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(54) **A ROLLER SKI BRAKE DEVICE**

(57) The invention is related to a roller ski braking device for reducing a rolling motion of a roller ski wheel during use. The roller ski braking device comprises a housing and a brake mechanism connected to the housing. The housing is arch shaped in a longitudinal direction and comprises a first end connectable to a roller ski and extending towards a second flexible free end. The housing further comprises a top surface and bottom surface, and wherein the brake mechanism is connected to the bottom surface of the housing for engagement with the roller ski wheel, and the top surface comprises a catching cup arranged at the second flexible free end and a channel extending from the first end and into the catching cup. The brake mechanism comprises a body structure, and a brake pad for engagement with the roller ski wheel, wherein the brake pad is arranged substantially perpendicular to the body structure and connected to the housing via the body structure. The brake pad comprises a curved surface corresponding to a curved outer surface shape of the roller ski wheel in a longitudinal and in a transversal direction, such that during operation, the roller ski wheel wears down evenly across the curved outer surface.

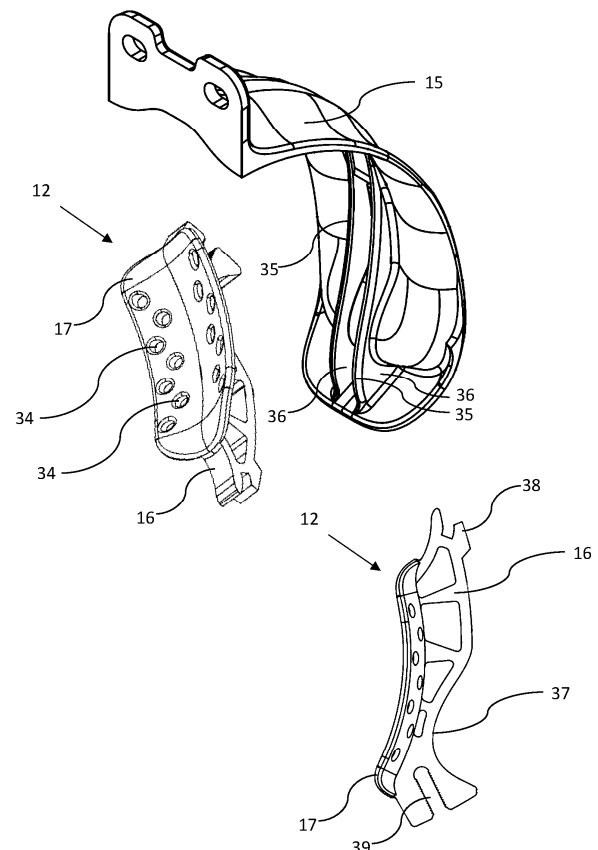


Fig. 6

Description

[0001] The present invention is directed to a roller ski braking device for reducing the rolling motion of a roller ski wheel during use.

BACKGROUND

[0002] Roller skis are designed to simulate cross-country skiing on paved surfaces, typically using small wheels mounted on a narrow frame.

[0003] Roller ski wheels are commonly made of rubber or polyurethane to provide optimal grip, durability, and a smooth ride on asphalt and other hard surfaces. Rubber wheels offer better traction, absorbing some road vibrations and enhancing skier control. Polyurethane wheels, on the other hand, tend to be more resistant to wear but may provide a harder, less cushioned ride.

[0004] Since roller ski wheels are in constant contact with rough pavement, the rubber gradually wears down over time. The tread or outer layer of the wheel experiences frictional forces that cause thinning, leading to reduced grip and changes in rolling resistance.

[0005] Skidding or sudden stops, especially with braking mechanisms that apply direct friction to the wheel, can create flat spots. This results in an uneven rolling motion, affecting stability and increasing rolling resistance.

[0006] Prolonged use, particularly during downhill descents or when using braking mechanisms that generate friction, can cause heat buildup in the rubber, leading to softening, deformation, or even premature cracking. Exposure to moisture, UV radiation, and temperature changes can cause rubber degradation over time, leading to cracks, hardening, or loss of elasticity.

[0007] Unlike traditional skis that rely on snow friction for stopping, roller skis lack an inherent braking mechanism, making controlled deceleration and stopping a challenge for users, particularly when navigating slopes or high-speed conditions.

[0008] Given these factors, an effective roller ski braking system must balance stopping power with minimal wear to the rubber wheels, ensuring longevity while maintaining safety and performance.

[0009] Several braking solutions have been attempted in the past to address this issue.

[0010] Some roller ski braking systems employ friction brake pad

s that press against the wheel or frame to create resistance. These brakes are often activated manually by the skier through a foot or calf-operated lever. However, they can introduce excessive wear on the wheels and may not offer precise control over deceleration.

[0011] Certain designs incorporate resistance mechanisms such as rolling-resistance enhancers or fluid-based dampers to slow down the wheel progressively. While effective for speed control, they may not provide

an immediate stopping function.

[0012] Advanced braking solutions have explored non-contact braking using eddy current effects or electromagnetic resistance. These offer smooth and adjustable braking but tend to be complex and costly.

[0013] Some braking systems integrate a mechanism where the skier applies pressure using ski poles to engage the brake. Although this allows for hands-on braking, it requires additional coordination and can be difficult to use during high-speed descents.

[0014] Braking mechanisms that rely on friction, such as a brake pad pressing against the wheel, accelerate the wear process. The constant pressure against the wheel surface not only reduces the wheel's lifespan but can also alter its performance characteristics, making it necessary to replace the wheels more frequently. Systems that use controlled resistance, such as fluid or magnetic brakes, reduce direct contact wear but may still cause stress on the wheel's core structure.

[0015] Publication WO2024046991 A1 discloses a roller ski with a brake system comprising a wheel fender-cover arranged to be push-able by a ski pole such that the wheel fender-cover can be pushed towards a wheel located inside the wheel fender-cover, thereby slowing the rotation of the wheel. The publication discloses a first brake mechanism, and a second brake mechanism integrated into the fender-cover.

[0016] The drawback of this invention is that the fender-cover will be easily teared down by the extreme heat during the braking action, furthermore the device introduces excessive wear on the wheels and may not offer precise control over deceleration. Another drawback is that the roller ski wheel will not wear down evenly across the curved outer surface, causing the wheel to be unstable over a short period.

[0017] Despite these prior attempts, there remains a need for an improved braking mechanism that offers effective speed control while maintaining the agility and lightweight characteristics essential for roller ski performance. The present invention aims to address these challenges by providing a novel braking system that enhances safety, control, and ease of use.

[0018] One objective of the present invention is to provide a braking device that provides less excessive wear on the wheels and offer precise control over deceleration.

[0019] Another objective of the present invention is to provide a braking device that provide a controlled and advantageous wear on the wheels during use and as such avoiding flat spots and uneven deformation of the wheels.

SUMMARY OF THE INVENTION

[0020] The present invention is directed to a roller ski braking device for reducing a rolling motion of a roller ski wheel during use, the roller ski braking device comprises a housing and a brake mechanism connected to

the housing.

[0021] The housing may be a fender or a mudguard, a protective cover over the wheel. Typically designed to prevent dirt, water, or debris from being thrown up while skiing.

[0022] The housing is arch shaped in a longitudinal direction and comprises a first end connectable to a roller ski and extending towards a second flexible free end.

[0023] The arch shaped housing comprises a first end connectable to a roller ski and extending towards a second flexible free end, wherein the first end may be connected or fixed to the roller ski by one or more screws and comprise a flexible material so that it can flex towards the second flexible free end.

[0024] The housing further comprises a top surface and bottom surface, and wherein the brake mechanism is connected to the bottom surface of the housing for engagement with the roller ski wheel, and the top surface comprises a catching cup arranged at the second flexible free end and a channel extending from the first end and into the catching cup.

[0025] The brake mechanism comprises a body structure, and a brake pad for engagement with the roller ski wheel, wherein the brake pad is arranged substantially perpendicular to the body structure and connected to the housing via the body structure. The brake pad comprises a curved surface corresponding to a curved outer surface shape of the roller ski wheel in a longitudinal and in a transversal direction, such that during operation, the roller ski wheel wears down evenly across the curved outer surface.

[0026] The body structure serves as the main support element, ensuring proper positioning and stability of the roller ski braking device.

[0027] The body structure acts as a rigid support that holds the brake pad in the correct spatial alignment relative to the roller ski wheel. It connects the brake pad to the housing, ensuring stability under dynamic braking forces.

[0028] The structure may be designed with reinforced sections or ribs to prevent deformation under repeated braking. The material selection for the body structure can include Aluminium for lightweight strength and heat dissipation, Reinforced polymer for impact resistance and reduced weight or Steel or carbon fibre composites for high durability and rigidity.

[0029] The geometry of the body structure may include angled or contoured sections to optimize force transmission and reduce unnecessary vibrations.

[0030] In aspect, the body structure may have a shape as a trusswork.

[0031] In the present disclosure, "substantially perpendicular" is to be understood as a braking surface of the brake pad, including a curved surface, being oriented approximately at 90° relative to a main extension direction of the body structure, allowing for minor deviations due to design, manufacturing tolerances, or deformation during use.

mation during use.

[0032] In an embodiment, the brake pad and the body structure may be formed as a single unit, for example as an integrally formed or monolithic component.

Alternatively, the brake pad and the body structure may be provided as separate parts interconnected to each other, such that they function as a single unit during use. The substantially perpendicular placement of the brake pad relative to the body structure ensures that braking force is applied evenly across the wheel's surface. Thus, providing precise braking control.

[0033] It also provides structural stability by maintaining proper positioning, preventing misalignment due to prolonged use. In addition, the rigid body structure ensures that force from the braking input is directly transferred to the wheel without unnecessary flex or energy loss.

[0034] The housing may be a fender and is fastened at first end to the roller ski frame while the opposite end remains free, allowing it to flex dynamically. The design prevents excessive vibration, minimizes resistance, and enhances durability while effectively blocking spray from the wheels.

[0035] The housing may comprise comprises an elongated, lightweight body, preferably made from a durable and flexible polymer, composite material, or thin metal alloy. It is shaped to conform closely to the curvature of the wheel without making direct contact, ensuring optimal coverage while preventing friction.

[0036] The first end of the housing may be affixed to the roller ski frame using a secure attachment means such as screws, rivets, clamps, or adhesive bonding.

[0037] The term transversal direction of a wheel refers to an orientation perpendicular to the wheel's rolling direction (i.e., across the wheel's axis rather than along it). A wheel primarily moves in the longitudinal direction (along its rolling path). A transversal direction is perpendicular to this rolling motion, meaning movement sideways across the wheel's width.

[0038] The brake pad refers to a friction component used to slow down or stop the roller ski by making contact with the wheel. It may preferably be positioned at the rear wheel of a roller ski, and when engaged, it presses against the wheel to create friction and reduce speed.

[0039] The brake pad comprises a curved surface to improve pressure distribution and ensure even braking force application.

[0040] According to one aspect of the present invention, the transversal width of the brake pad is larger than a transversal width of the wheel.

[0041] The brake pad is designed to have a transversal width (lateral dimension perpendicular to the rolling direction of the wheel) that extends beyond the width of the roller ski wheel. This increased width ensures that when the brake is engaged, the braking force is applied not just to the central contact zone of the wheel but also to its lateral edges.

[0042] Traditional braking systems often cause localized wear in the centre of the wheel, leading to uneven flattening and reducing the wheel's lifespan. By widening the brake pad beyond the wheel's width, the braking force is more evenly distributed across the wheel's surface. This results in a more uniform wear pattern, maintaining the wheel's round profile for a longer period, reducing the need for frequent replacements.

[0043] The optimal width of the brake pad may be calculated to be slightly larger than the widest part of the wheel, typically 5-15% wider than the wheel's maximum width. The brake pad may comprise tapered or bevelled edges to ensure gradual contact with the wheel, preventing excessive edge wear.

[0044] According to another aspect of the present invention a length of the brake pad in the longitudinal direction, is larger than the width of the brake pad in the transversal direction. Hence, the braking surface of the brake pad may have a shape of a half tube (half pipe), having a longitudinal body.

[0045] In embodiment, the length in the longitudinal direction of the brake pad may be at least a double length of the width of the brake pad in the transversal direction.

[0046] The brake pad's material composition may include high-friction, wear-resistant compounds such as metal, rubber, composite resins, or reinforced polymer blends to ensure effective braking and durability.

[0047] In a preferred embodiment of the present invention, the brake pad is made from aluminium, and includes perforations configured to reduce heat buildup during operation.

[0048] The material aluminium is chosen for its high strength-to-weight ratio, excellent heat conductivity, and durability. Aluminium's natural heat dissipation properties help to quickly transfer and disperse the heat generated by friction between the brake pad and the wheel during braking. Compared to traditional rubber or composite brake pads, aluminium provides a longer lifespan and maintains consistent braking performance over extended use.

[0049] Since aluminium is harder than rubber, the softer rubber wheel will gradually conform to the shape of the braking pad during repeated braking. This adaptation leads to a more even and predictable wear pattern, ensuring that the wheel maintains a uniform surface and consistent contact with the ground.

[0050] Traditional brake pads made of rubber or composite materials tend to wear down alongside the wheel, often resulting in irregular wear and reduced braking efficiency over time. With an aluminium brake pad, the wheel takes on the shape of the braking surface, reducing the formation of flat spots and extending the lifespan of both components.

[0051] The brake pad may comprise a series of perforations, strategically placed across its surface to enhance airflow and cooling during braking. These perforations reduce thermal buildup by allowing heat to

escape more efficiently, preventing overheating, which can degrade braking performance. The size, shape, and pattern of the perforations may be optimized to maximize heat dissipation while maintaining the pad's structural integrity.

[0052] The perforations create airflow channels, allowing ambient air to cool the braking surface more effectively. By keeping the temperature lower, the risk of brake fade (loss of braking efficiency due to heat) is minimized. The perforations contribute to a lighter overall brake pad, improving the balance and manoeuvrability of the roller ski. The holes also help to prevent water and dirt buildup, maintaining consistent contact between the pad and the wheel in various weather conditions.

[0053] The distribution of perforations follows a specific pattern, such as a honeycomb, circular, or elongated slot arrangement, ensuring uniform stress distribution across the pad. The diameter of the perforations is selected to maximize heat transfer without compromising the brake pad's strength. The brake pad may feature a reinforced edge or thicker backing plate to provide additional structural support while keeping the perforated braking surface thin for optimal heat transfer.

[0054] In a preferred embodiment of the present invention, the roller ski braking device comprises a braking system that utilizes a skier's pole tip to apply braking force. The system comprises a catching cup located at the second, flexible, free end of the housing, designed to securely receive and engage the ski pole tip and a guiding channel, extending from the first (fixed) end of the housing and leading into the catching cup, ensuring the ski pole tip is directed accurately into the braking zone. This design enables skiers to engage the brake efficiently and reliably by simply placing the ski pole tip into the channel, which guides it into the catching cup for controlled braking.

[0055] The catching cup is positioned at the free, flexible end of the fender, where it acts as the primary contact point for the ski pole tip during braking. The cup may be designed with a concave or semi-enclosed shape, allowing it to effectively capture and hold the ski pole tip, preventing slippage during braking. The inner surface of the cup may feature a high-friction material (such as rubberized or textured coatings) to enhance grip and braking efficiency. The cup's dimensions are optimized to fit standard ski pole tips while preventing excessive movement that could reduce braking effectiveness.

[0056] The guiding channel extends longitudinally from the first (fixed) end of the fender towards the catching cup, serving as a precise alignment mechanism for the ski pole tip.

[0057] The channel may be designed with gradually converging walls, ensuring that when the skier places the pole tip anywhere along the channel, it is naturally funnelled toward the catching cup. The channel may

have raised edges or sidewalls to prevent the ski pole tip from slipping out during guidance. It may also include reinforced ridges or grooves along its inner surface to improve control and stability during pole engagement.

[0058] The guiding channel ensures precise ski pole tip placement, reducing the risk of missed braking attempts. The flexible nature of the housing or the fender allows the skier to modulate braking force smoothly, wherein the catching cup design minimizes excessive abrasion or damage to the ski pole tip.

[0059] The catching cup may also comprise drainage holes or a dirt-resistant coating to prevent accumulation of debris, ensuring consistent performance in all conditions.

[0060] In a preferred embodiment of the present invention, the top surface of the housing may comprise two channels located symmetric about a centre curved section, and wherein the brake mechanism is arranged on the bottom surface below the centre curved section.

[0061] The centre curved section may comprise a centre curved surface arranged on the top surface of the housing.

[0062] This dual guiding channel system with a centrally positioned braking mechanism offers precise, reliable, and user-friendly braking control for roller skiers. By ensuring symmetrical access, efficient force transmission, and durability, the design significantly improves safety and braking efficiency compared to conventional roller ski braking systems.

[0063] The centre curved section is positioned between the two guiding channels, providing structural reinforcement and ensuring proper force distribution when braking. The centre curved section is also adapted for holding and securing the body structure of the brake mechanism.

[0064] The body structure of the brake mechanism may comprise a cut-out corresponding to the shape of the catching cup so that the catching cup is supported from below by the body structure. The catching cut may be received into the cut-out of the body structure.

[0065] The bottom surface of the housing may comprise a mouth for receiving the body structure and wherein the mouth comprises support walls for supporting sides of the body structure. The support walls are adapted for holding the body structure and the brake pad in position, relative to the housing.

[0066] The brake mechanism may be connected to the housing via a slide-and-lock mechanism, wherein the slide-and-lock mechanism comprises a hook and a screw arrangement. The screw arrangement and the hook are adapted to be secured into complementary openings (front opening and rear opening) provided in the housing.

FIGURES

[0067] The invention will now be described with refer-

ence to the attached figures, wherein:

Fig. 1 shows a prior art roller ski comprising a roller ski frame, wheel and a fender.

Fig. 2 shows the roller ski brake device comprising a housing and a brake mechanism according to the present invention and in relation to a roller ski wheel.

Fig. 3 shows a side view of the roller ski brake device.

Fig. 4 shows a top view of the roller ski brake device disclosing the top surface comprising channels and the catching cup.

Fig. 5a and 5b shows the roller ski braked device from bottom and from top.

Fig. 6 shows an exploded view of the roller ski brake device comprising a housing and a brake mechanism, wherein the brake mechanism comprises a body structure and a brake pad.

DETAILED DESCRIPTION OF THE FIGURES

[0068] In the following, exemplified embodiments of the invention will be discussed in detail with reference to the appended figures. It should be understood, however, that the figures are not intended to limit the invention to the subject-matter depicted in the figures.

[0069] Figure 1 shows a prior art roller ski 20 comprising a frame, a wheel 21 and a fender 11'. The fender 11' is connected to the roller ski at first end 13 with screws 22 and having a opposite flexible free end 14. The fender 11' may act as a brake when pressed towards the wheel 21.

[0070] Figure 2 shows the roller ski braking device isolated (not mounted onto a roller ski) but shown together with a roller ski wheel 21. The roller ski braking device 10 comprises a housing 11, and a brake mechanism 12 removably connected to the housing 11. As shown in the figure, the housing is also a fender 11' of a roller ski 20.

[0071] The width of the brake pad 17, in the transversal direction of the roller ski 20, is larger than the transversal width of the wheel 21. The larger transversal width of the brake pad 17 significantly enhances the performance and longevity of roller the ski wheels 21. By ensuring an even distribution of wear, the wheels 21 maintain their shape longer, reducing maintenance costs and improving overall safety and ride quality.

[0072] The housing 11 is arch shaped in a longitudinal direction and comprises a first end 13 connectable

to a roller ski 20 and extending towards a second flexible free end 14. The first end 13 may comprise holes or openings for securing the housing 11 to the roller ski 20 frame.

[0073] The housing 11 further comprises a top surface 31 and bottom surface 32, and wherein the brake mechanism 12 is connected to the bottom surface 32 of the housing 11 for engagement with the roller ski wheel 21.

[0074] The brake mechanism 12 comprises a body structure 16, and a brake pad 17 for engagement with the roller ski wheel 21. This arrangement is illustrated more clearly in fig. 6.

[0075] In an embodiment, the brake pad 17 and the body structure 16 may be provided as two separate parts interconnected to each other. The interconnection may be achieved by fastening, bonding, overmolding, or other suitable attachment means, such that the brake pad 17 and the body structure 16 function as a single unit during use. In an alternative embodiment, the brake pad 17 and the body structure 16 may be formed as a single unit, for example as an integrally formed or monolithic component. In a further embodiment, the brake pad 17 may be arranged at an end portion of the body structure 16 and may be defined as a solid unitary extension thereof.

[0076] The brake pad 17 connection point is substantially perpendicular to the body structure 16 and connected to the housing 11 via the body structure 16. Thus, the brake pad 17 is connected to the housing 11 via the body structure 16. In the context of the present disclosure, the expression "substantially perpendicular" with respect to the orientation of the brake pad 17 relative to the body structure 16 is to be understood such that a braking surface of the brake pad 17, including a curved braking surface, is oriented so that a tangent plane of the braking surface at a contact region with the roller ski wheel 21 extends at an angle close to 90° relative to a main extension direction of the body structure 16, such as a longitudinal axis or a surface of the body structure 16 extending in the longitudinal direction. The orientation is defined with respect to the braking surface irrespective of a mounting orientation of an opposite surface of the brake pad 17 connected to the body structure 16. Minor deviations from an exact perpendicular orientation may occur due to design considerations, manufacturing tolerances, or elastic deformation during use.

[0077] The brake pad 17 comprises a curved surface corresponding to a curved outer surface shape of the roller ski wheel 21 in a longitudinal and in a transversal direction, such that during operation, the roller ski wheel 21 wears down evenly across the curved outer surface. The length of the brake pad 17 may be longer in the longitudinal direction than in the transversal direction. It may have a shape like a half-curved tube (longitudinal tubular shape). In embodiment, the length of the brake pad 17 in the longitudinal direction is at

least double of the length of the brake pad 17 in the transversal direction. In other words, the length may be at least double of the width of the brake pad 17.

[0078] The brake pad 17 may be made from aluminium and comprise perforated holes 34.

[0079] The perforations 34 help to prevent dirt and moisture buildup, maintaining optimal contact between the brake pad 17 and the wheel 21.

[0080] This perforated aluminium brake pad 17 design offers significant performance improvements over traditional materials. The combination of high thermal conductivity, lightweight construction, and optimized airflow through perforations 34 ensures efficient heat dissipation, reduced brake fade, and extended durability, making it ideal for high-performance roller skis 20.

[0081] The aluminium brake pad 17 outlasts rubber, composite or plastic based alternatives, reducing the frequency of replacements. In addition, it provides even wheel wear by that the rubber wheel 21 naturally adapts to the shape of the aluminium brake pad 17, promoting a smoother ride and consistent braking performance.

[0082] Other advantages are that the high thermal conductivity of aluminium, combined with the perforations 34, ensures that heat dissipates efficiently, preventing overheating. The use of aluminium, along with perforations, results in a lighter overall braking system, enhancing the manoeuvrability of the roller ski 20.

[0083] The brake pad 17 may include a reinforced backing plate (not shown) to provide additional structural support, ensuring that the aluminium maintains its shape even under high braking pressures. The contact surface of the pad may feature a slightly curved or contoured design, optimizing how the rubber wheel 21 conforms to its shape over time. The perforations may follow a honeycomb, circular, or elongated slot pattern, balancing heat dissipation and structural integrity. Optional coatings or surface treatments (e.g., anodization or ceramic layering) can be applied to improve wear resistance and further enhance heat dissipation.

[0084] The body structure 16 serves as the main support element, ensuring proper positioning and stability of the brake pad 17. The body structure 16 acts as a rigid support that holds the brake pad 17 in the correct spatial alignment relative to the roller ski wheel 21. It connects the brake pad 17 to the housing 11, ensuring stability under dynamic braking forces.

[0085] This trusswork configuration of the body structure 16, as shown in figure 6, provides strength and stability by efficiently distributing loads and minimizing bending forces. For the roller ski 20 it ensures stable, effective braking performance while maintaining durability and precise alignment with the wheel 21.

[0086] This brake mechanism as shown in figure 2 and 3, with a body structure and perpendicularly positioned brake pad provides stable, efficient, and reliable braking performance for the roller ski. By ensuring rigid support, proper force alignment, and enhanced wear

resistance, this design significantly improves the braking experience while maintaining durability and precision.

[0087] Figure 4 and 5b) shows that top surface 31 comprises a catching cup 19 arranged at the second flexible free end 14 and two guiding channels 15 extending from the first end 13 and into the catching cup 19.

[0088] The catching cup 19 has a bowl shape and arranged as a unit embedded into the top surface 31 of the housing 11 or the fender 11'.

[0089] This integrated braking system, combining a catching cup 19 at the flexible end of the housing 11 and two guiding channel 15, ensures a reliable, precise, and controlled braking experience for roller skiers. The arrangement enhances ease of use, braking efficiency, and skier safety, making it a superior alternative to traditional braking mechanisms.

[0090] The symmetric guiding channel 15 design allows skiers to engage the brake using either the left or right ski pole, increasing flexibility and ease of use.

[0091] In operation, when the ski pole tip enters the catching cup 19, downward force is applied to the free, flexible end of the housing 11, pressing it and the brake pad 17 toward the roller ski wheel 21. This force causes the housing 11 to act as a lever, transferring pressure onto the wheel 21 and increasing friction for effective braking.

[0092] Since the catching cup 19 is located at the flexible free end 14, it allows for progressive braking control, where the braking force can be gradually increased by adjusting the applied pressure. The flexibility of the fender 11' also helps absorb impact forces, preventing sudden jolts or instability during braking.

[0093] The two guiding channels 15 extend longitudinally along the fender's 11' or housing 11 top surface 31 and are arranged symmetrically about the central curved section 33, ensuring accessibility from both sides.

[0094] These two guiding channels 15 serve to funnel the ski pole tip toward the catching cup 19 for activation of the brake mechanism 12, eliminating the need for precise manual positioning. The guiding channels ensure that the ski pole tip is consistently directed into the correct braking position.

[0095] The two guiding channels 15 may comprise raised edges or sidewalls, preventing the ski pole tip from slipping sideways and ensuring controlled entry into the braking area. The inner surfaces of the two guiding channels 15 may be textured or coated with low-friction materials to facilitate smooth pole movement.

[0096] The centre curved section 33 is positioned between the two guiding channels 15, providing structural reinforcement and ensuring proper force distribution when braking. The curvature helps stabilize the ski pole tip as it enters the braking system, preventing unintended lateral movements.

[0097] The brake mechanism 12 is positioned on the bottom surface 32, directly below the central curved section 33, ensuring a stable and controlled braking response. When the ski pole tip is inserted into the catching cup 19 and pushed downward, force is transferred through the curved surface to the brake mechanism 12. This design maximizes braking efficiency by ensuring direct force transmission to the braking element, reducing unnecessary flex and energy loss.

[0098] Shown in figure 6, the body structure of the brake mechanism comprises a cut-out 37 corresponding to the shape of the catching cup 19 so that the catching cup 19 is supported from below by the body structure 16.

[0099] The bottom surface 32 of the housing 11 comprises a mouth 35 for receiving the body structure 16 and wherein the mouth 35 comprises support walls 36 for supporting sides of the body structure 16.

[0100] This is illustrated in figure 5b) showing the roller ski braking device 10 from below. An end of the body structure 16 may be received into the mouth 35 and supported by support walls 36.

[0101] The brake mechanism 12 may be connected to the housing 11 via a slide-and-lock mechanism, wherein the slide-and-lock mechanism comprises a hook 38 and a screw arrangement 39. The screw arrangement may be an opening with threads adapted for receiving a screw.

[0102] The hook 38 and the screw arrangements 39 are arranged on the body structure 16 and arranged for introduction into openings and screw holes provided in the housing 11.

[0103] The housing 11 may comprise a front opening 24 provided on the central curved section 33 for interaction with the hook 38 provided on the body structure 16. The front opening 24 may have a square shape to cooperate with a square shaped hook 38.

[0104] The housing 11 may comprise a rear opening 23 provided at the flexible free end 14 of the housing 11. When mounting (connecting the brake mechanism 12 to the housing 11, the hook 38 is inserted into the front opening 24 in the housing 11 and the brake mechanism 12 secured by a screw at the rear opening 23 or the flexible free end 14.

[0105] The roller ski braking device 10 may comprise a safety arrangement to prevent the brake mechanism 12 to fall off in the event the screw should loosen during use. The safety arrangement comprises teeth arranged in the screw arrangement 39 adapted to cooperate with a protrusion and/or teeth in the rear opening 23 for holding the body structure 16 in position even if the screw should fall off.

Claims

1. A roller ski braking device (10) for reducing a rolling motion of a roller ski wheel (21) during use, the

roller ski braking device (10) comprises a housing (11) and a brake mechanism (12),

wherein the housing (11) is "arch shaped" in a longitudinal direction and comprises a first end (13) connectable to a roller ski (20) and extending towards a second end (14) the second end being flexible and free,

the housing (11) further comprises a top surface (31) and bottom surface (32), and wherein the brake mechanism (12) is connected to the bottom surface (32) of the housing (11) for engagement with the roller ski wheel (21), and the top surface (31) comprises a catching cup (19) arranged at the second end (14) and a channel (15) extending from the first end (13) and into the catching cup (19),

characterized in that the brake mechanism (12) comprises a body structure (16) and a brake pad (17) for engagement with the roller ski wheel (21),

wherein the brake pad (17) is arranged substantially perpendicular to the body structure (16) and connected to the housing (11) via the body structure (16),

the brake pad (17) comprises a curved surface corresponding to a curved outer surface shape of the roller ski wheel (21) in a longitudinal and a transversal direction, such that during operation, the roller ski wheel (21) wears down evenly across the curved outer surface.

2. The roller ski braking device (10) according to claim 1, wherein a width of the brake pad (17), in the transversal direction, is larger than a transversal width of the wheel (21).
3. The roller ski braking device (10) according to claim 2, wherein a length of the brake pad (17) in the longitudinal direction, is larger than the width of the brake pad (17).
4. The roller ski braking device (10) according to any one of claims 1-3, wherein the top surface (31) comprises two channels (15) located symmetric about a centre curved section (33), and wherein the brake mechanism (12) is arranged on the bottom surface (32) below the centre curved section (33).
5. The roller ski braking device (10) according to any one of the preceding claims, wherein the body structure (16) of the brake mechanism (12) comprises a cut-out (37) corresponding to the shape of the catching cup (19) so that the catching cup (19) is supported from below by the body structure (16).

6. The roller ski braking device (10) according to any one of the preceding claims, wherein the bottom surface (32) of the housing (11) comprises a mouth (35) for receiving the body structure (16) and wherein the mouth (35) comprises support walls (36) for supporting sides of the body structure (16).
7. The roller ski braking device (10) according to any one of the preceding claims, wherein the brake pad (17) comprises aluminium, and includes perforations (34) configured to reduce heat buildup during operation.
8. The roller ski braking device (10) according to any one of the preceding claims, wherein the brake mechanism (12) is connected to the housing (11) via a slide-and-lock mechanism, wherein the slide-and-lock mechanism comprises a hook (38) and a screw arrangement (39) provided on the body structure (16).
9. The roller ski braking device (10) according to claim 4 and 8, wherein the housing (11) comprises front opening (24) located at the centre curved section (33) for interaction with the hook (38) and a screw opening (23) located at the flexible free end (14) for securing of a screw into the screw arrangement (39).
10. The roller ski braking device according to any one of the preceding claims, wherein the housing (11) is a fender (11') of the roller ski (20).

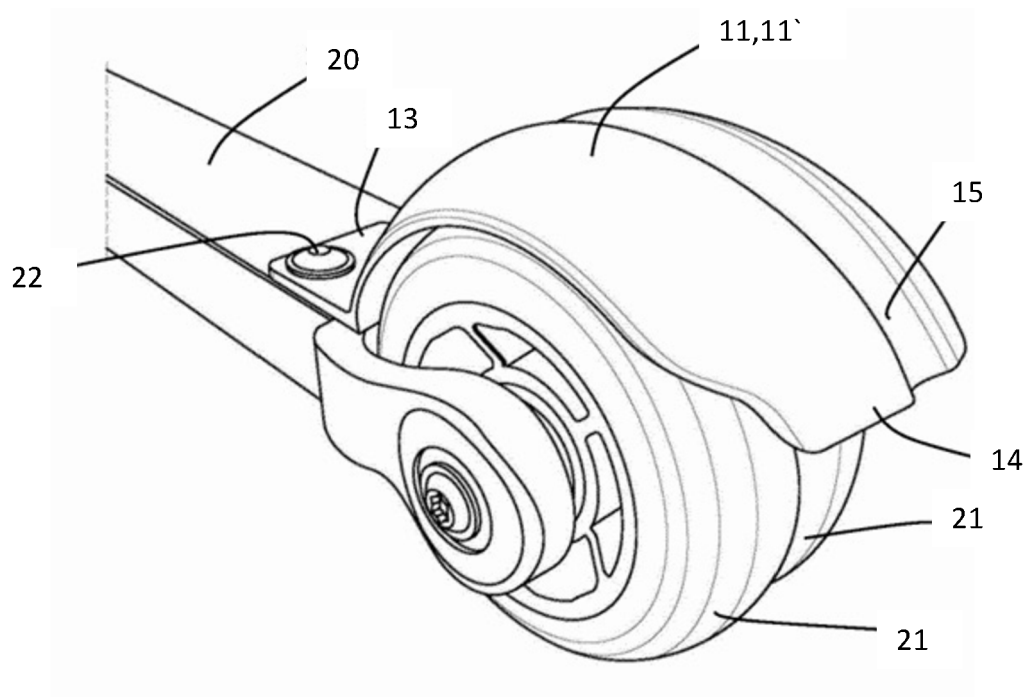


Fig. 1
(prior art)

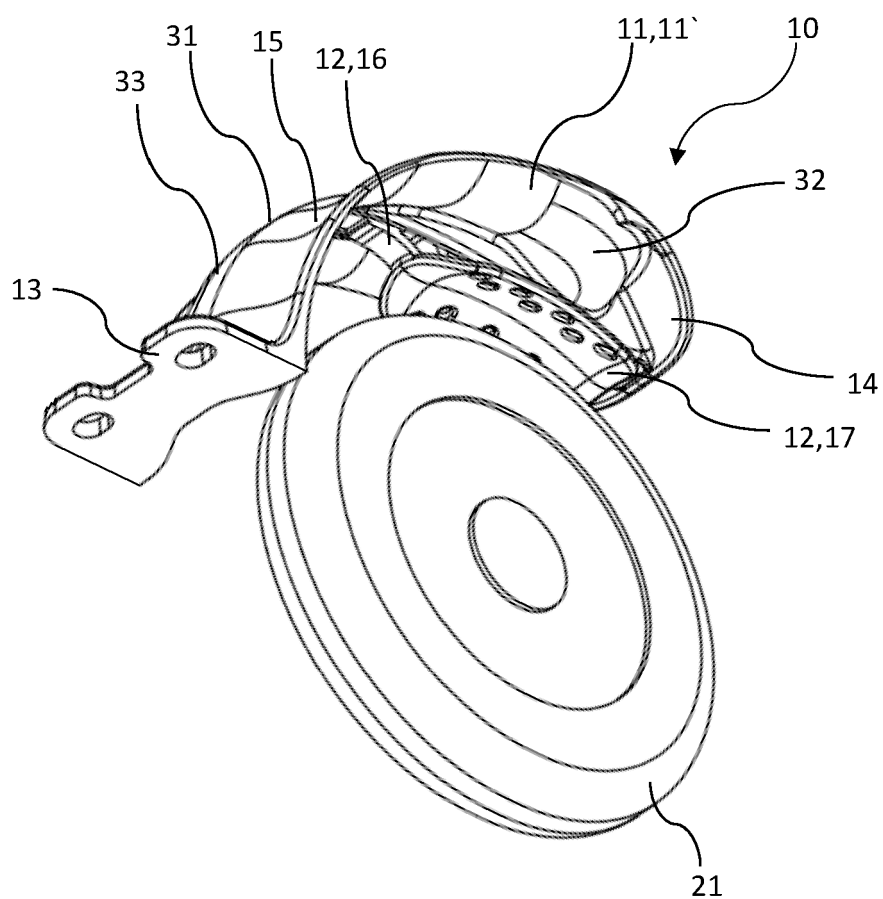


Fig. 2

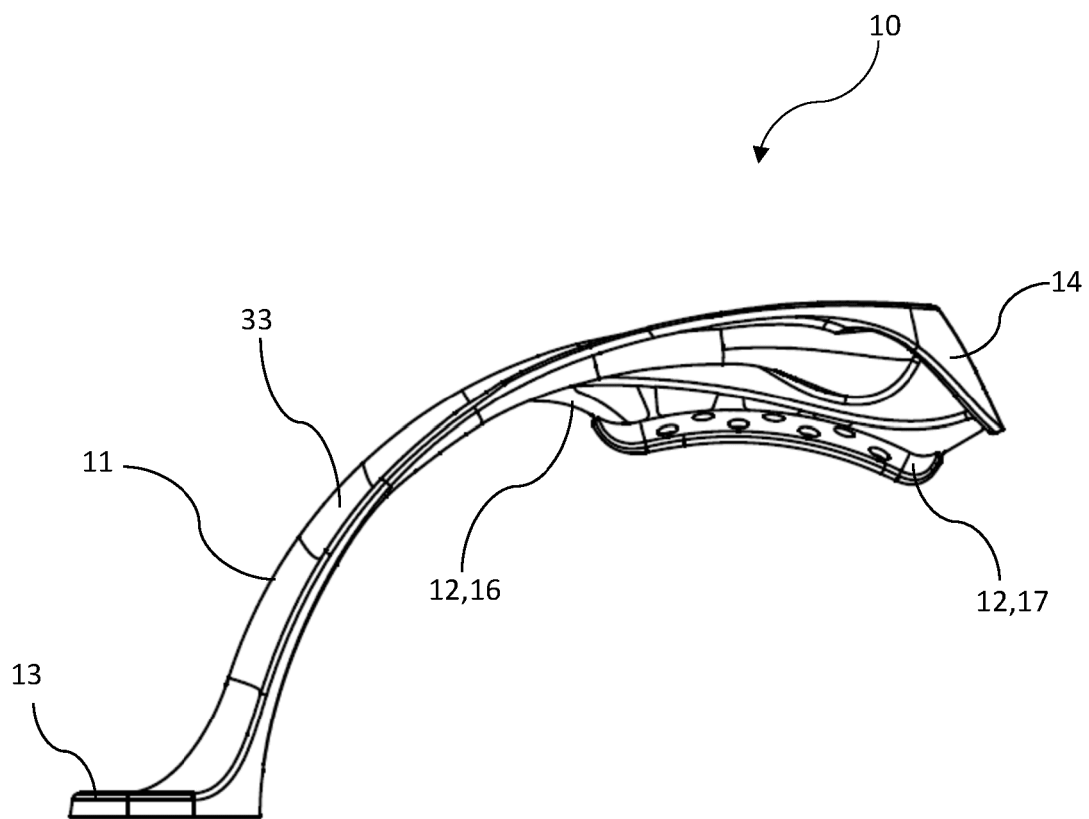


Fig. 3

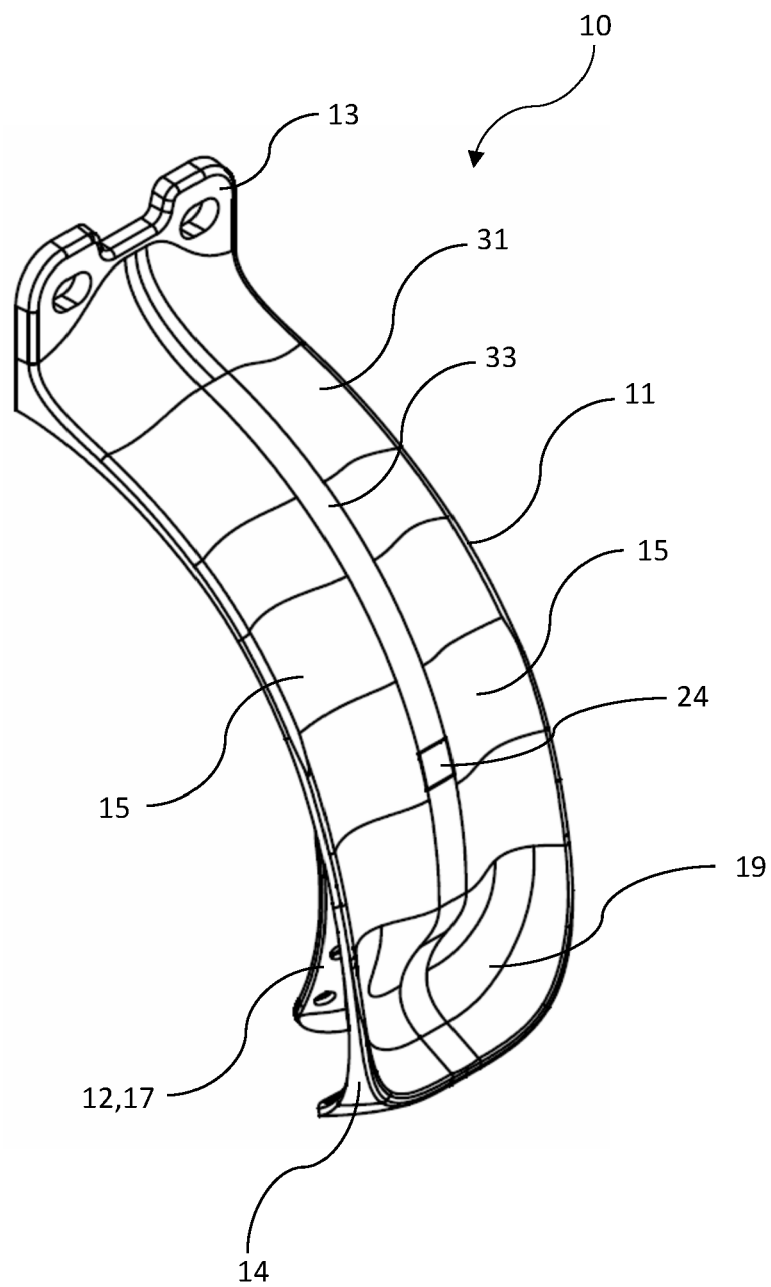


Fig. 4

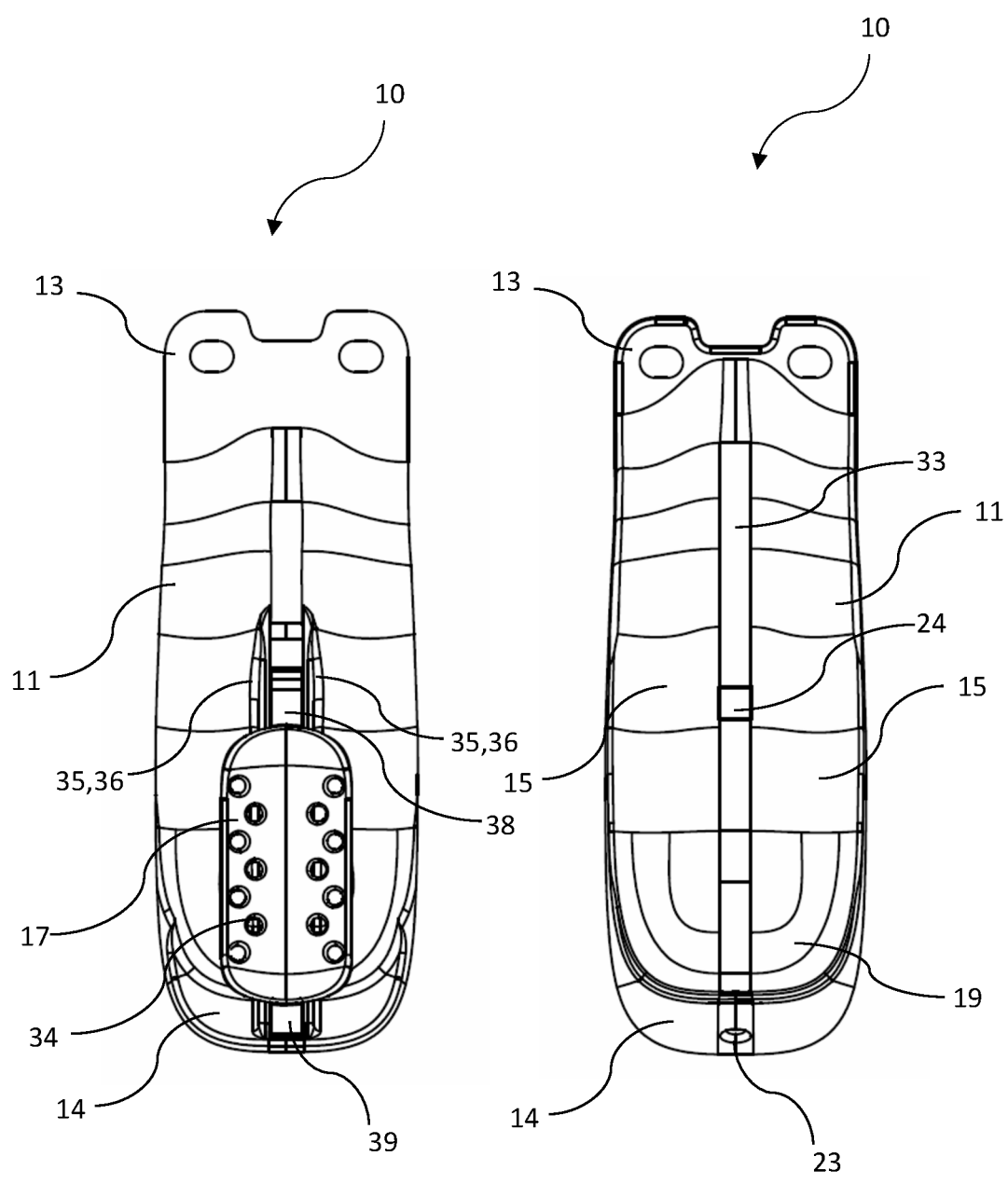


Fig. 5a

Fig. 5b

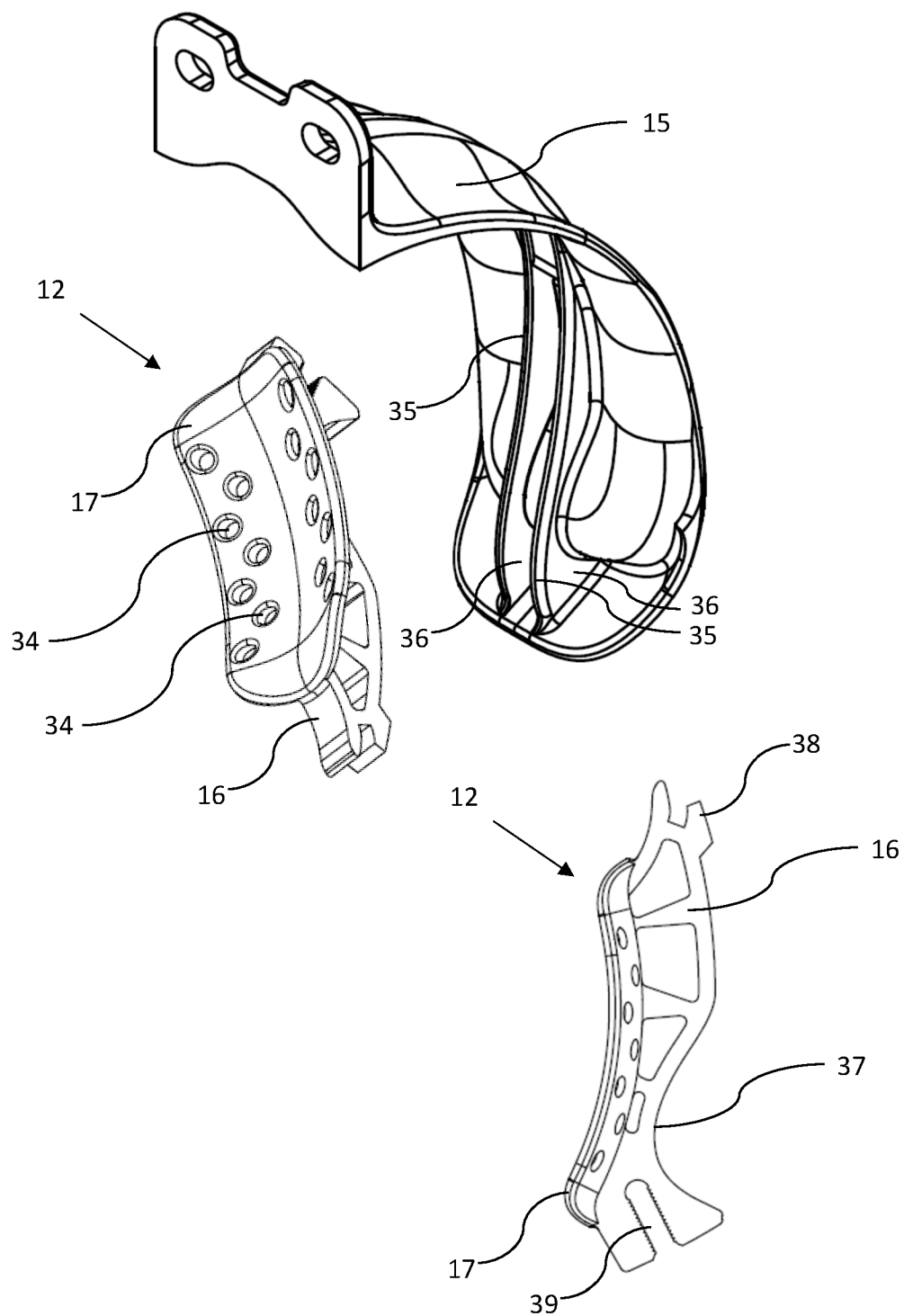


Fig. 6



EUROPEAN SEARCH REPORT

Application Number

EP 26 17 2743

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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)
A	DE 30 17 137 A1 (ALTENDORFER RICHARD) 20 August 1981 (1981-08-20) * page 5, line 1 - page 5, line 25; figures 1-3 *	1-10	INV. A63C17/14 ADD. A63C17/04
A,D	WO 2024/046991 A1 (FF ROLLERSKIS AS [NO]) 7 March 2024 (2024-03-07) * page 4, line 13 - page 9, line 5; figures 1-4 *	1-10	
A	CZ 294 116 B6 (OSMERA PAVEL [CZ]; OSMERA PAVEL DOC ING CSC [CZ]) 13 October 2004 (2004-10-13) * figures 1,2,7,8 *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			A63C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		26 August 2026	Murer, Michael
CATEGORY OF CITED DOCUMENTS			
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EPO FORM 1503 03.82 (P24C01)

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

EP 26 17 2743

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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26-08-2026

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3017137	A1	20-08-1981	NONE

WO 2024046991	A1	07-03-2024	NO
		20220928 A1	14-08-2023
		WO 2024046991 A1	07-03-2024

CZ 294116	B6	13-10-2004	NONE

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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Patent documents cited in the description

- WO 2024046991 A1 [0015]