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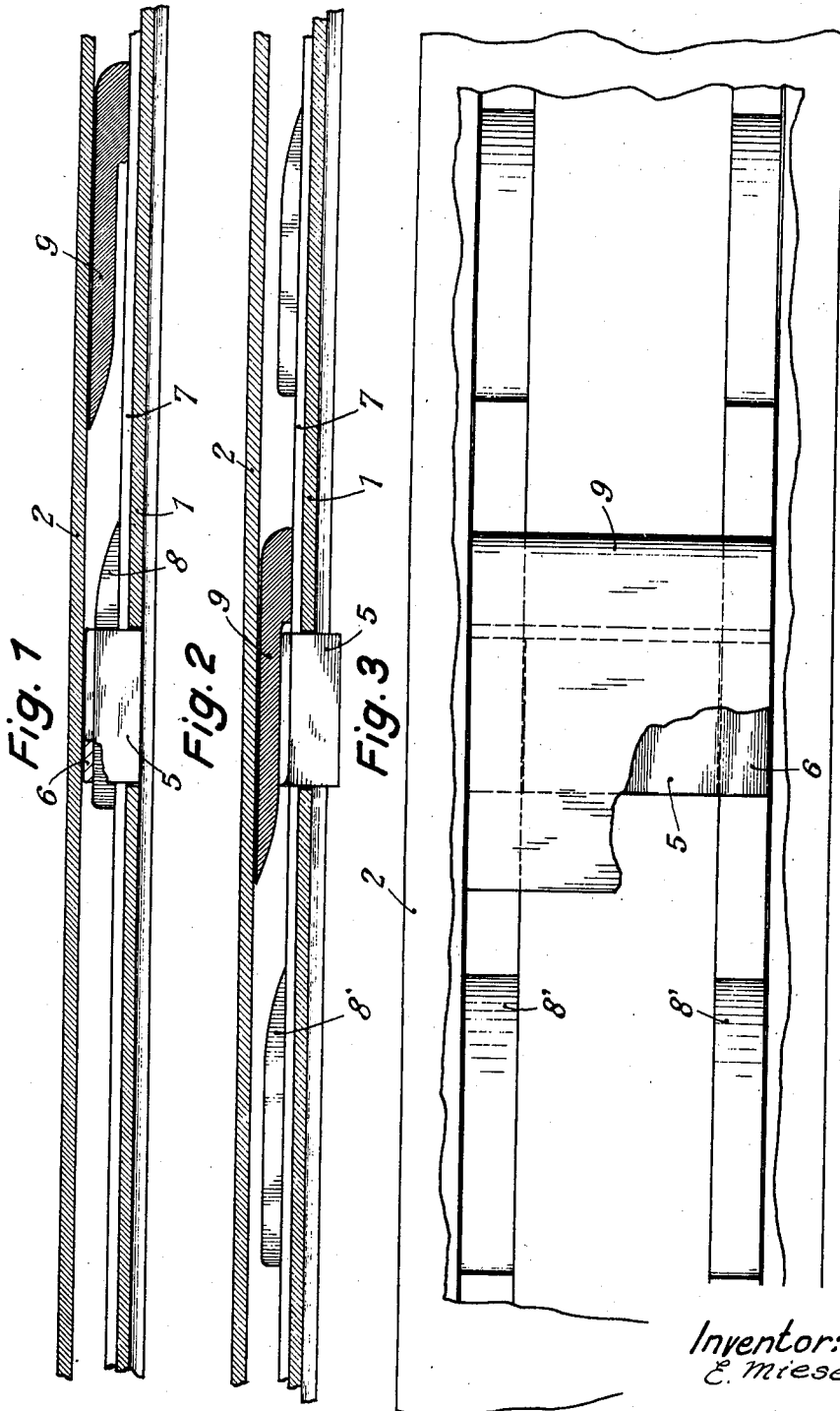
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2,248,008

SKI WITH ANTISLIP MEANS

Filed May 15, 1939

3 Sheets-Sheet 1



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Fig. 5

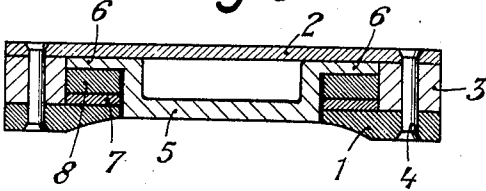


Fig. 6

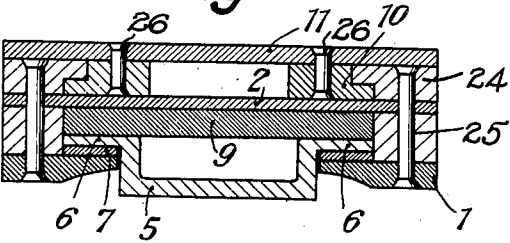


Fig. 7

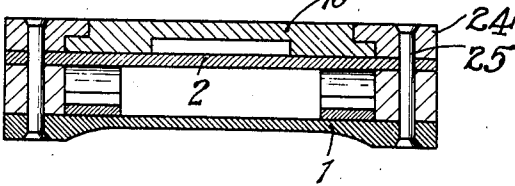


Fig. 8

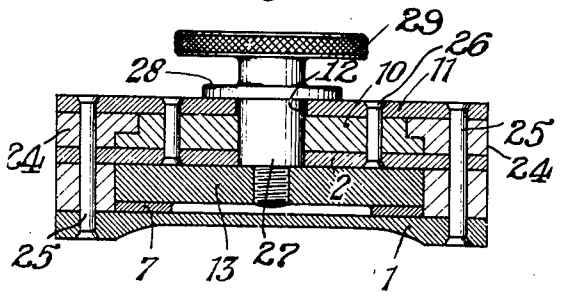
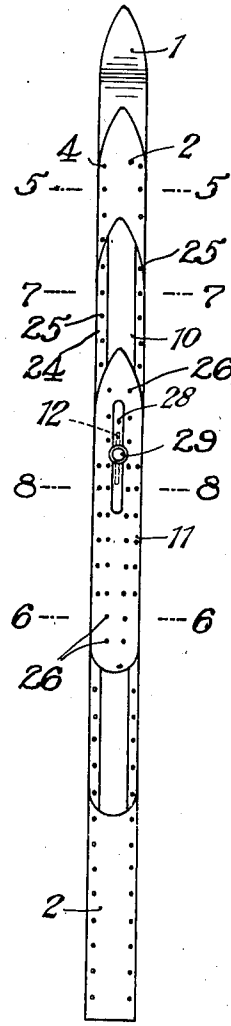


Fig. 4



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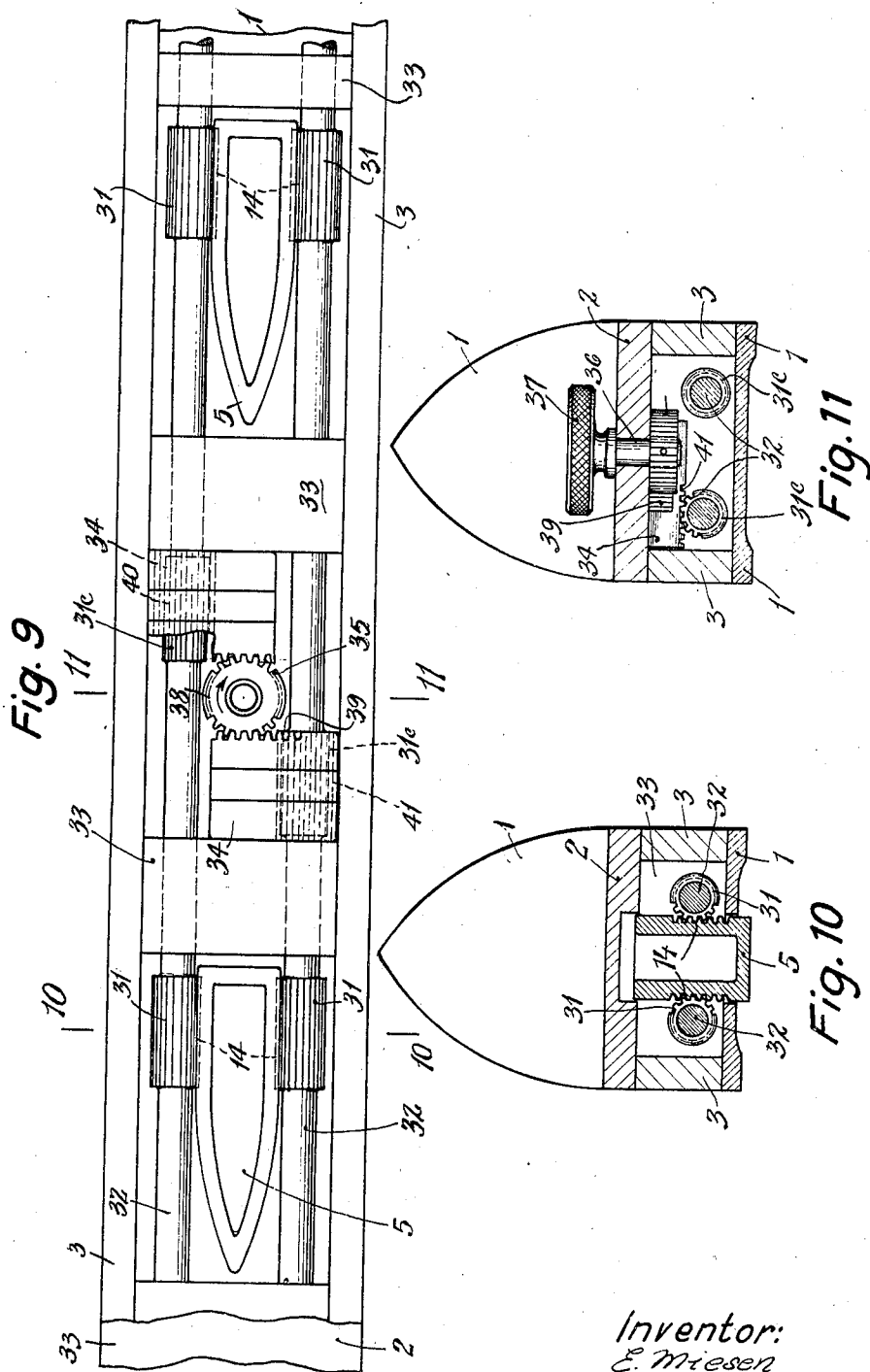
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SKI WITH ANTISLIP MEANS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,248,008

SKI WITH ANTISLIP MEANS

Erich Miesen, Berlin-Charlottenburg, Germany

Application May 15, 1939, Serial No. 273,789
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13 Claims. (Cl. 280—11.13)

My invention relates to skis and more particularly to skis with anti-slip means.

Anti-slip means for skis comprising a brake member or members projecting from the lower surface of the ski have already been proposed, but such means are not satisfactory. The brake members either were too weak, f. i. they consisted of bristles, hooks or the like, or, if of greater strength, involved the draw-back that snow and ice penetrated into the apertures the members are sliding in, obstructing or preventing altogether the shifting of the brake members.

It is an object of my invention to provide improved anti-slip means. To this end I arrange a block as the brake member which is mounted to slide in an aperture in the ski transversely to the lower surface of the ski and makes a tight fit in such aperture, in combination with manual means for reciprocating the block in its aperture.

Preferably the manual means for reciprocating the block is so designed that the lower surface of the block is flush with the lower surface of the ski in its retracted position.

I may provide more than one block in combination with a mechanism which is operatively connected to the manual means, so that the blocks are reciprocated in unison.

In the accompanying drawings, by way of example, a ski in which the aforesaid mechanism comprises wedge-shaped members for reciprocating the block, is illustrated in Figs. 1-8 and a ski in which the aforesaid mechanism comprises a system of racks and pinions is illustrated in Figs. 9-11.

More particularly

Figs. 1 and 2 are longitudinal central sections illustrating a ski of the first mentioned type with its block, or one of its blocks, in retracted and in active position respectively.

Fig. 3 is a plan view of the ski illustrated in Figs. 1 and 2 with its top plate partly broken away to expose the wedge members for reciprocating the block and one of the members partly broken away to expose the block which is below this member, the position of parts illustrated in Fig. 3 corresponding to that in Fig. 2.

Fig. 4 is a plan view of a complete ski showing the several plates or layers it is made of.

Fig. 5 is a section on the line 5-5 in Fig. 4.

Fig. 6 is a section on the line 6-6 in Fig. 4.

Fig. 7 is a section on the line 7-7 in Fig. 4.

Fig. 8 is a section on the line 8-8 in Fig. 4.

Fig. 9 is a fragmentary plan view illustrating the ski of the second type referred to with a rack and pinion mechanism, the top plate of the

ski being broken away for exposing the mechanism.

Fig. 10 is a section on the line 10-10 in Fig. 9.

Fig. 11 is a section on the line 11-11 in Fig. 9.

Referring now to the drawings, and first to Figs. 1-8, this ski is built up of several plates or layers and partly hollow. The base plate, or runner 1 is made concave in its central portion, as best seen in Fig. 7, and curved portions connect the concave portion to the sides of the runner where it has its original thickness. By these means lateral projections or skids are formed along the sides of the runner by which the keeping of the track is facilitated.

A pair of strips or spacing members 3 extend for a certain portion of the total length of the ski, and secured to the spacing members 3 by rivets 4 is a top plate 2, as best seen in Fig. 5. The front end of the top plate 2, which, as shown in Fig. 4, is pointed, is positioned at some distance behind the, also pointed, front end of the runner 1, and its rear end which is square, extends as far as the rear end of the runner.

The spacing members 3 define a cavity between the lower surface of the top plate 2 and the upper surface of the runner 1. This cavity serves for the reception of a block or a plurality of blocks 5, which, as best seen in Fig. 5, are made hollow or trough-shaped for saving weight and are provided with flanges 6 at their upper sides which project as far as the inner surfaces of the spacers 3. With its lower surface the block 5 extends into an aperture in the central portion of the runner 1 in which it makes a tight fit. Fig. 5 shows the block in its retracted position in which its lower surface is flush with the concave central portion of the runner 1.

The mechanism for reciprocating the block, or blocks, 5 comprises a pair of slides 7 which are placed on the top of the runner at both sides of the aperture in which the block 5 is mounted to reciprocate. Wedges 8 are placed on the slides and engage below the flanges 6 of the block 5. When a pair of wedges 8 engages below the flanges 6 of the block 5 the block is retracted into the position in which its lower surface is flush with the lower surface of the central portion of the runner 1, as shown in Figs. 1 and 5. Arranged between each pair of retracting wedges 8 is a block-advancing wedge 9 which connects the two slides 7 in the manner of a bridge, as best seen in Fig. 3.

At the central portion of the ski a supporting plate 10 of U-shaped section is placed on the top plate 2, Fig. 7, and held by a pair of angular

strips 24, whose inner edges are recessed to engage over corresponding flanges at the sides of the supporting plate 10. Rivets 25, which extend from the lower surface of the skids at the sides of the runner 1 as far as the top of the strips 24, hold the strips on the top plate. The top plate 10 supports a guiding plate 11, which is placed on top of the strips 24, and the outer or long rivets 25 at this portion of the ski are extended beyond the strips 24 for the thickness of the guiding plate 11. The top plate 2, the supporting plate 10, and the guiding plate 11 are connected by inner or short rivets 26, Fig. 8. The guiding plate 11 is slotted at 12, and corresponding slots are made in the supporting plate 10 and the top plate 2 for the reception of a pin 27, whose lower end is threaded and inserted in a bridge member 13 connecting the slides 7. The pin has a flange 28 which is preferably slightly dished so that its elastic reaction exerts pressure and friction against the guiding plate 11. At its upper end the pin 27 is provided with a knurled handle 29. The pin 27 is preferably arranged a short distance in front of the binding, not shown.

This part of the ski comprises four superimposed layers, as best seen in Fig. 8, viz. the runner 1, the top plate 2 which, as described, is somewhat shorter than the ski, the supporting plate 10 which is again shorter than the top plate, and the guiding plate 11 which is shortest of all.

In order to permit of deflection of the ski the parts which are above the runner are preferably made with lateral flanges or divided altogether like the slides 7 which are connected only by the advancing wedge 9 and the bridge member 13, Fig. 3. The central portions of the top plate 2, the supporting plate 10, and the guiding plate 11 are connected by the short rivets 26. The long rivets 25, as shown in Fig. 4, extend only for a portion of the length of the guiding plate 11. Toward the ends of the guiding plate 11 the long outer rivets 25 are replaced by inner short rivets 26, Fig. 6, which connect only the supporting plate 10 and the guiding plate 11. The side portions of the supporting plate 10 are in this manner connected to the top plate 2 and to the guiding plate 11 only for a comparatively short distance and beyond the side portions are only connected to the guiding plate 11 by the short rivets 26. By these means, in the region of the section 8-8, Fig. 8, the supporting plate 10 is rigidly connected to the top plate 2 and the guiding plate 11, so that relative longitudinal movement of the members does not occur, while in the region of the section C-C, Fig. 6, the top plate 2 on the one hand and the supporting and guiding plates 10 and 11 on the other hand can perform small relative movement, which greatly increases the elasticity of the ski.

Preferably the several parts of the ski, including the block or blocks 5, are made of artificial resin with or without insertions of fabric.

In operation the block, or blocks, 5, is normally held in the retracted position, illustrated in Figs. 1 and 5, by the two wedges 8; when it is desired to move the block, or blocks, 5 into the active position, the pin 27 is pushed in forward direction by its handle 29. This moves the slides 7 to the left in Fig. 1, so that the wedges 8 are withdrawn from below the flanges 6 of the block 5, and the wedge 9 now engages the flanges from above and moves the block 5 into its active position, as shown in Figs. 2, 3, and 6.

Referring now to Figs. 9, 10, and 11, the ski is

provided only with a runner 1 with its concave central portion, the spacers 3, and the top plate 2 which define a cavity in the ski. The blocks 5, two of which are shown in Fig. 9, are made hollow or trough-shaped for the purpose specified and slide with a tight fit in apertures in the central portion of the runner 1. Fig. 10 shows one of the blocks in its active position, and the top plate 2 is recessed for the reception of the upper end of the retracted block. In this construction, the front ends of the blocks, that is, those ends which lead in the direction of running, are pointed. By the mechanism which will be described the blocks can be placed in any intermediate position between their final active and retracted positions. When it is desired to assist the track-keeping action of the skids at the sides of the runner 1, the blocks 5 are partly advanced and form pointed ridges at the centre of the ski. The resistance of the blocks is practically nil on account of their pointed front ends.

Pinions 31 on shafts 32 engage in racks 40 in the sides of the blocks 5 and are mounted to rotate in bearings 33 inserted between the spacing members 3. Rotation is imparted to the shafts 32 by the gearing illustrated in Fig. 11. Racks 40 and 41 are mounted to slide below the top plate 2, as shown for the rack 41 in Fig. 11, and teeth in the lower face of each rack mesh, respectively, with central pinions 31c on the shafts 32. The pinion 35 at the lower end of a vertical shaft 36 meshes with a row of teeth 38 at the inner side of the rack 40, and a similar row of teeth 39 at the inner side of the rack 41. The shaft 36 is mounted to rotate in the top plate 2 and is provided with a knurled handle 37 for turning it. When the handle is turned clockwise, as indicated by the arrow in Fig. 9, the two racks 40 and 41 are moved inwardly. This causes the shafts 32 to be rotated in opposite directions, and the blocks 5 to be moved into their active position, as shown in Fig. 10. Rotation of the handle 37 in the opposite direction causes retraction of the blocks into their inactive position. It will appear that any intermediate position between the final retracted and final active positions can be given to the blocks so that they can be made to assist to a greater or lesser extent in the keeping of the track by the skids at the sides of the runner 1. The rear ends of the blocks are square and so prevent slipping back of the ski, while in the forward direction the pointed ends do not exert any appreciable resistance.

It is understood that I am not limited to the particular constructions illustrated by way of example but that various modifications may be made without departing from the spirit of my invention.

I claim:

1. In a ski, a body having a transverse aperture in the lower surface thereof, anti-slip means comprising a block mounted to slide vertically in the aperture in the ski and making a tight fit in such aperture and completely closing the aperture at all times, and manually operated means for extending and retracting the block with respect to the aperture.

2. In a ski, a body having a transverse aperture in the lower surface thereof, anti-slip means comprising a block mounted to slide vertically on the transverse aperture in the lower surface of the ski, and making a tight fit in and completely filling such aperture at all times, and manually operated means for vertically recipro-

cating the block in its aperture, said block being so proportioned that the lower surface of the block is flush with the lower surface of the ski in its retracted position.

3. In a ski, anti-slip means comprising a block mounted to slide in an aperture in the ski transversely to the lower surface of the ski, and making a tight fit in such aperture, and manual means arranged to be shifted in the longitudinal direction of the ski for vertically reciprocating the block in its aperture.

4. In a ski, anti-slip means comprising a block mounted to slide in an aperture in the ski transversely to the lower surface of the ski, and making a tight fit in such aperture, a pair of flanges at the sides of the block, a pair of wedges arranged to engage alternately the upper and the lower surface of each flange, and manual means for shifting the wedges in the longitudinal direction of the ski.

5. In a ski, anti-slip means comprising a block mounted to slide in an aperture in the ski transversely to the lower surface of the ski, and making a tight fit in such aperture, a pair of flanges at the sides of the block, a slide arranged at one side of each flange, wedges on each slide arranged to engage alternately the upper and the lower surface of each flange, a bridge member secured to both slides, and manual means operatively connected to the bridge member for shifting the slides in the longitudinal direction of the ski.

6. In a ski, anti-slip means comprising a block whose forward end is pointed and which is mounted to slide in an aperture in the ski transversely to the lower surface of the ski, and making a tight fit in such aperture, and manual means for reciprocating the block in its aperture.

7. In a ski, anti-slip means comprising a plurality of blocks each mounted to slide vertically in transverse apertures in the lower surface of the ski, and making a tight fit in and completely filling such apertures at all times, and manually operated means for reciprocating the blocks in their apertures in unison.

8. In a ski, anti-slip means comprising a plurality of blocks each mounted to slide in an aperture in the ski transversely to the lower surface of the ski, and making a tight fit in such apertures, and a rack- and pinion-mechanism for reciprocating the blocks in unison, and manual means for operating the mechanism.

9. In a ski, anti-slip means comprising a plurality of blocks each mounted to slide in an aperture in the ski transversely to the lower sur-

face of the ski, and making a tight fit in such apertures, a rack on opposite sides of each block, shafts arranged at opposite sides of each block, a pinion on each shaft which meshes with the corresponding rack of the block, a central portion on each shaft, a rack meshing with each central portion, and manual means including a rack- and pinion gearing for shifting the racks meshing with the central portions in opposite directions.

10. In a ski, a runner comprising a concave central portion, skids projecting along the sides of the central portion and curved portions connecting the central portion and the skids, anti-slip means comprising a block mounted to slide in an aperture in the runner, transversely to its central portion and making a tight fit in such aperture, and manual means for reciprocating the block in its aperture.

11. In a ski, a body composed of a plurality of superposed and spaced layers arranged and secured with respect to each other so that portions of the layers are free for performing a slight relative lateral movement only, said layers defining a cavity in the body of the ski which opens in the form of a transverse aperture in the lowermost layer, anti-slip means comprising a block mounted in the cavity adapted to slide through the aperture in the ski transversely to the lower surface of the ski and making a tight fit in the aperture, and means for reciprocating the block vertically in the cavity and through the aperture.

12. In a ski as claimed in claim 11, in which a handle is arranged in the uppermost layer of the ski and is operably connected with the block reciprocating means for operating the latter.

13. In a ski, a body composed of a plurality of layers arranged in superposed spaced relation with respect to each other, means connecting the medial portions of the layers directly together, means connecting the end portions of certain layers to adjacent layers so that a relative slight movement only is permitted therebetween, said layers defining a cavity in the body of the ski which opens as a transverse aperture in the lower surface of the ski, anti-slip means comprising a block mounted to slide vertically in the cavity and projected at times through the aperture transversely of the lower surface of the ski and making a tight fit in such aperture, means situated between the spaced layers for reciprocating the block, and means on the uppermost layer for operating the block reciprocating means.

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