

[54] **SKI VISE** 2,636,527 4/1953 Schiemann..... 269/45
 3,608,885 9/1971 Roth 269/307 X
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 100, Apt. 433, St. Louis Park,
 Minn. 55416 3,642,269 2/1972 Ladd 269/40
 3,719,008 3/1973 Mayers 269/40 X

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 269/275, 269/321 W

[51] Int. Cl..... **B25b 1/02**, B25b 1/20

[58] Field of Search 269/4, 9, 10, 40, 43, 45,
 269/275, 321 W; 51/228; 76/83

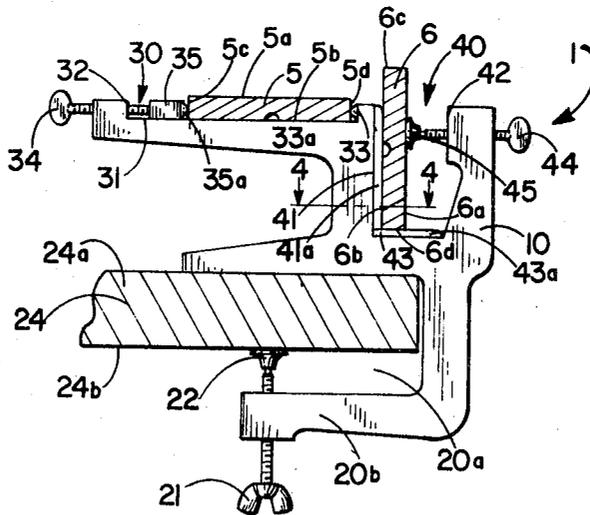
[57] **ABSTRACT**

A vise removeably attachable to a bench top for holding a horizontally oriented ski in either a flat position with one of its broad surfaces facing up or in a position with its broad surfaces generally vertical and one of its lateral edges facing up. The vise provides support across the complete width of a section of the ski and has soft bumper pads on the vise faces to protect the ski from damage.

[56] **References Cited**
UNITED STATES PATENTS

1,473,946 11/1923 Amsden et al..... 269/4
 2,535,210 12/1950 Jackson 269/275 X

3 Claims, 5 Drawing Figures



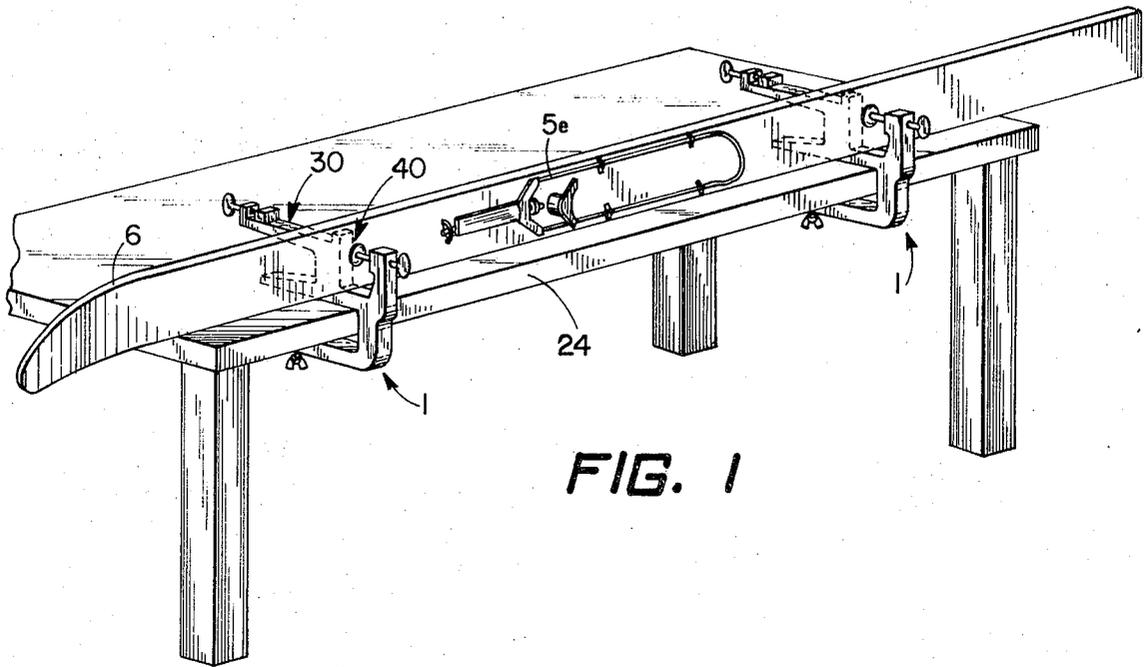


FIG. 1

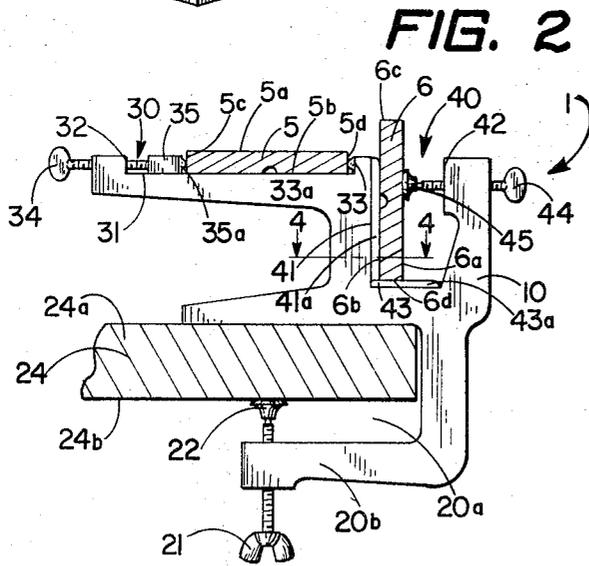


FIG. 2

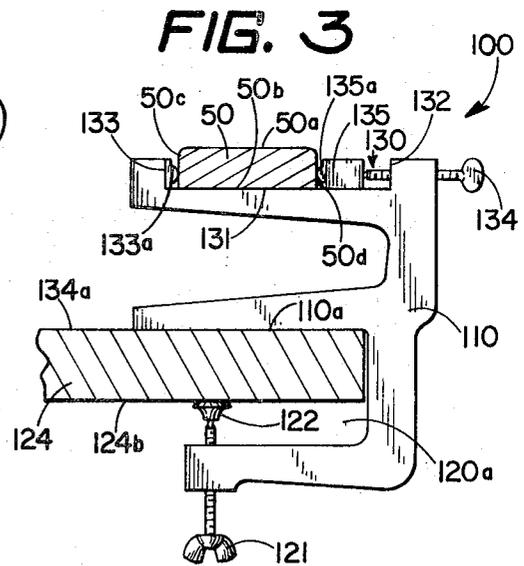


FIG. 3

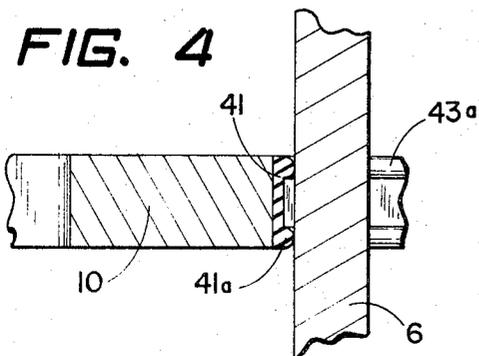


FIG. 4

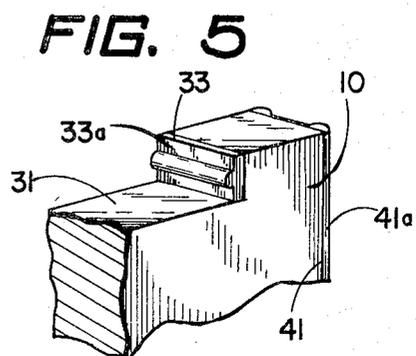


FIG. 5

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SKI VISE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to bench top vises used to hold one or two skis in place in selectable positions so that attachments, repairs and the like may be made to the ski.

2. Description of the Prior Art

The prior art discloses removeable bench top vises which can be used to grip various items. See U.S. Pat. No. 1,473,946 (Amsden) and U.S. Pat. No. 1,194,058 (Neumayer). U.S. Pat. No. 3,642,269 (Ladd) discloses a device for holding two skis in parallel proximity to facilitate the attachment of ski bindings.

While the Amsden and Neumayer vises could conceivably be used to grip a horizontally oriented ski between their jaws with the broad surface of the ski in a horizontal plane, no means are provided for supporting the lower horizontal surface of the ski while it is in the vise. Such support is desirable for various waxing and repair operations where it is desired that the broad surfaces of the ski do not flex under the force of the work being done upon them. Both inventions disclose serrated jaw surfaces which would be damaging to a ski surface or edge and the inventions do not provide for any type of protective bumper pads on the vise jaw surfaces to protect the ski.

Neumayer and Amsden do not disclose means by which two skis may be held separately in different orientations in one vise at the same time (i.e. the skis are parallel but not co-planar). Such parallel mounting of both skis of a pair in exact alignment is often necessary for a proper attachment of ski bindings to the skis.

The Ladd support device is designed specifically for use with skis, but provides no means for mounting a horizontally oriented ski on its edge with its broad surfaces in a generally vertical plane. Such orientation is necessary where it is desired that the ski edge be sharpened or that other work be done upon the edge. Also, the numerous ski support members in the Ladd vise extend above the ski surface and would interfere with such operations as the application of wax or the grinding of the ski surface. The Ladd support device is relatively complex in its design and construction and must be bolted to a particular type of work bench using a special mounting apparatus. No protective bumper pads are provided on the vise surfaces for protecting the skis.

SUMMARY OF THE INVENTION

The present ski vise is designed specifically to hold various skis in place while bindings are being attached or while the skis are being sharpened, waxed or the like. Ordinarily, the vise includes vise jaws which are opened and closed by turning a wing nut to thereby clamp or grasp a ski in the vise with the ski's board surfaces generally horizontal. A flat horizontal support surface is provided between the vise jaws to provide even support beneath the entire width of the ski to facilitate the process of ski waxing. Preferably, the vise will also include a second set of vise jaws which are also opened and closed by turning a wing nut to thereby clamp or grasp a ski in a horizontal, edge-up position with the broad surfaces in a generally vertical plane. The edge-up positioning of a ski in the vise facilitates

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the sharpening of the ski edge. In this latter embodiment, both skis of a pair may be mounted side by side in exact alignment for the attachment of ski bindings. If desired, vises can be constructed according to the present invention with one or more vise jaws for only the edge-up positioning of skis, without also including jaws designed for the surface-up position of skis. Whichever vise embodiment is preferred, the two such vises will ordinarily be used to hold a single ski.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a pair of identical ski vises, each with two jaw means, which vises are attached to a bench top and which support a horizontally oriented ski in an edge-up position;

FIG. 2 is a side view of one of the ski vises of FIG. 1 illustrating how it can be used to support two skis in parallel or aligned (but not co-planar) relationship;

FIG. 3 is a side view of a single jaw embodiment of the ski vise showing a horizontally oriented ski held in a surface-up position;

FIG. 4 is a partial fragmentary top view along plane 4-4 of FIG. 2 showing protective bumper pads on vise jaw surfaces;

FIG. 5 is a fragmentary perspective view showing a portion of the vise jaws with protective bumper pads attached.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1-5, wherein like numerals refer to like elements of the invention, two ski vise embodiments are shown.

FIGS. 1, 2, 4 and 5 depict a first embodiment of applicant's invention and show a ski vise 1 which can hold a ski generally in either a first or second position, or can hold two skis simultaneously with one in each of a first and second position. Referring to FIG. 2, in the first position, a ski 5 generally described as having top and bottom broad surfaces (5a and 5b respectively) and two generally parallel narrow lateral edges 5c and 5d opposed on either side of the broad surfaces 5a and 5b, is oriented in vise 1 with its length extending generally horizontally and with its broad surfaces being generally horizontal with either its top or bottom surface (5a and 5b respectively) facing outwardly from vise 1. In this position, the ski bottom 5b can be easily waxed, surface 5a or 5b repaired or a ski binding 5e attached. In the second position, a similarly described ski 6 is oriented in vise 1 with its length extending generally horizontally and resting on one of its edges with its broad surfaces generally vertical. In this position, a ski edge (6c or 6d) can be ground or sharpened. If desired, a simplified version (not described in detail) of this vise embodiment may be constructed using only the portion of vise 1 which supports a horizontally extending ski with its broad surfaces generally vertical.

FIG. 3 depicts a second embodiment of applicant's invention and shows a ski vise 100 which can hold a ski 50 generally in only one position. This position is the "first" position described above wherein the ski 50 is oriented with its length extending generally horizontally and its broad surfaces (50a and 50b) being generally horizontal. Vise 100 would be used with cross-country type skis and the like where there is no need to sharpen the ski edges.

Describing the first embodiment of applicant's invention, i.e. the two-position embodiment, ski vise 1 comprises a unitary vise body 10 which is removeably attachable to a bench top overhang 24 (See FIGS. 1 and 2). To provide for attachment of vise body 10 to bench top 24, vise body 10 contains an open channel 20a extending through vise body 10 generally parallel to bench top 24 and having at least one generally flat surface area 10a. Surface 10a rests upon the top surface 24a of bench top 24 when vise body 10 is positioned over bench top 24 by inserting the bench top into channel 20a.

Referring to FIG. 2, thumb screw 21 which can be turned by hand or by using a tool is used in combination with channel 20a to secure vise body 10 to bench top 24. Thumb screw 21 extends through a portion 20b of vise body 10 which is adjacent to channel 20a and generally opposite channel surface 10a. Thumb screw 21 extends across channel 20a toward surface 10a. When bench top 24 is positioned in channel 20a, thumb screw 21 can be advanced against the under surface 24b of bench top 24 to secure vise body 10 in place. A moveable jaw 22 is affixed to one end of thumb screw 21 to distribute the compressive load of thumb screw 21 across bench top 24. The length of thumb screw 21 is sized such that any thickness of bench top 24 can be used to secure the vise 1 in place. Thus, channel 20a in combination with thumb screw 21 acts as a clamp to hold vise 10 to bench top 24.

To hold a ski 5 in position in vise 1 with the broad surfaces 5a and 5b of the ski generally horizontal, vise body 10 contains a shallow first open channel 30 in combination with a thumb screw 34 to form a first holding vise means (see FIG. 2). Channel 30 extends all the way through a portion of tool body 10 and has a generally rectangular cross-section with a flat bottom surface 31 which is generally horizontal. The distance between channel bottom surface 31 and the bench surface 10a is such that when ski 5 is placed in channel 30 with the binding (not shown) facing down, the binding fits in that space. Channel 30 has two opposed vertical walls 32 and 33. The height of walls 32 and 33 defines the depth of channel 30 and is less than the thickness of ski 5. This allows ski 5 to be held in channel 30 with one of its broad surfaces (5a or 5b) lying against base 31 of channel 30 and with its other surface lying in a plane external to all portions of vise body 10. This prevents any structural interference from vise body 10 when the broad surface (5a or 5b) of ski 5 is being waxed or otherwise worked upon. However, the height of wall 33 of channel 30 must cover a sufficient portion of edge 5c or 5d of ski 5 to provide a firm grip on ski 5.

As is shown in FIG. 2, thumb screw 34 extends through channel wall 32 across channel 30 toward opposite wall 33. Thumb screw 34 is generally parallel to channel bottom surface 31. A moveable jaw 35 is affixed to thumb screw 34 and is intended to bear against the edge 5c or 5d of ski 5 to distribute the compressive force of thumb screw 34. As is shown in FIGS. 4 and 5, soft bumper pads 35a and 33a may be affixed to moveable jaw 35 and channel wall 33 respectively to protect the surface of ski 5 from damage. Pads 33a and 35a are shown with a T-shaped cross-section but may have other suitable shapes and may be formed from rubber or any similar resilient flexible material. Even without protective pads, the surfaces of moveable jaw

35 and wall 33 may be fabricated with smooth surfaces and rounded edges to help prevent marring of ski surfaces. The width of channel 30 between walls 32 and 33 is sufficient to accommodate the cumulative dimensions of moveable jaw 35, bumper pads 35a and 33a and the breadth of ski surfaces 5a and 5b.

To hold a ski 6 in position in vise 1 in an edge-up position with the broad surfaces of the ski 6a and 6b generally vertical, vise body 10 contains a relatively deep second open channel 40 in combination with a thumb screw 44 to form a second holding vise means (see FIG. 2). Channel 40 extends entirely through a portion of vise body 10 parallel to first channel 30 and has a generally rectangular cross-section comprising a flat vertical wall 41, an opposed generally vertical wall 42 and a flat bottom surface 43 perpendicular to wall 44. The height of walls 41 and 42 define the depth of channel 40 and is less than the breadth of ski surfaces 6a and 6b. This allows ski 6 to rest on one edge (6c or 6d) in channel 40 with the opposite edge lying in a plane external to all portions of vise body 10. The exposed ski edge can then be sharpened without structural interference from vise body 10. Referring to FIG. 2, thumb screw 44 acts as the moving jaw of the vise means formed by channel 40 and extends through channel wall 42 across channel 40 toward wall 41. Thumb screw 44 is generally parallel to channel bottom surface 43. A moveable jaw 45 is affixed to thumb screw 44 to bear against the broad surface 6a or 6b of ski 6 and distribute the impact load of thumb screw 44 as it is advanced against the ski 6. In this embodiment of ski vise 1, soft bumper pads 41a and 43a are affixed to surfaces 41 and 43 respectively to prevent surface damage to ski 6. As shown in FIGS. 4 and 5, bumper pads 41a and 43a have a channel-shaped cross-section with the broad portion affixed to vise surfaces 41 and 43. Other suitable pad shapes may be used. Pads 41a and 43a may be fashioned from rubber or other resilient pliable materials. As is noted in FIG. 2, channel walls 41 and 42 are spaced far enough apart to accommodate the combined dimensions of the thickness of ski 6, the thickness of bumper pad 41a and contact pad 45. Channel 40 may also be sized to accommodate two or more skis stacked together if that is desirable for a particular work operation.

The second embodiment of applicant's invention, i.e. the one-position embodiment, is a ski vise 100 which holds a ski 50 in only one general position. As is shown in FIG. 3, in this position a ski 50, generally described as having a top and bottom broad surface (50a and 50b respectively) and two generally parallel narrow edges (50c and 50d respectively) opposed on either side of the broad surfaces 50a and 50b, is oriented with its length extending generally horizontally and with its broad surfaces 50a and 50b generally horizontal with either its top 50a or bottom surface 50b facing outwardly from the vise 100. As noted earlier, this second embodiment is used on cross-country skis and the like where there is no need to sharpen the ski edge.

As shown in FIG. 3, ski vise 100 comprises a vise body 110 which is removably attachable to a bench top overhang 124. An open channel 120a extends through vise body 110 generally parallel to bench top 124, and has at least one generally flat surface area 110a. Channel 120a is sized so that it will fit over the bench top overhang 124. When vise 100 is attached to bench top 124, channel surface 110a rests upon the top surface

124a of bench top 124. To hold vise 100 to bench top 124, a thumb screw 121 which can be turned by hand or using a tool extends through a portion of vise body 110 and across channel 120a toward surface 110a. Thus, when vise 100 is fitted over the edge of a bench top 124 by means of channel 120a, thumb screw 121 can be advanced against the under surface 124b of bench top 124 to secure vise 100 to bench top 124. A moveable jaw 122 is affixed to thumb screw 121 to distribute the compressive load from thumb screw 121 across bench top 124. Channel 120a is sized so that it can accommodate the thickness of bench top 124 and the dimension of moveable jaw 122. Thus, channel 120a in combination with thumb screw 121 acts as a clamp to hold vise 100 to bench top 124.

To hold a ski 50 in position in vise 100, vise body 110 contains a shallow open channel 130 which extends entirely through a portion of body 110 (see FIG. 3). Channel 130 has a generally rectangular cross-section with a flat generally horizontal bottom surface 131 and two opposed vertical walls 132 and 133. The height of walls 132 and 133 define the channel depth and have a dimension less than the thickness of ski 50 measured by edges 50c or 50d. This allows ski 50 to be positioned in channel 130 with one of its broad surfaces (50a or 50b) resting against channel bottom surface 131 with its opposite broad surface lying in a plane external to any portion of vise body 110. This allows the grinding or waxing of broad surfaces 50a or 50b without structural interference from any portion of vise body 110.

To hold ski 50 in channel 130, a thumb screw 134 extends through channel wall 132 toward opposite wall 133 and generally parallel to channel bottom surface 131 (see FIG. 3). A moveable jaw 135 is affixed to the end of thumb screw 134 to distribute the compressive load of the thumb screw 134. Thus, as thumb screw 134 is advanced in channel 130 it bears against edge 50c or 50d of ski 50 to hold it in place in channel 130. Soft bumper pads 133a and 135b are attached to channel wall 133 and moveable jaws 135 respectively to prevent damage to the edges of ski 50. In the preferred embodiment, contact pads 133a and 135a have a T-shaped cross-section with the broad part affixed to the vise surface, but other shapes may be used. The width of channel 130 is greater than the combined dimensions of pads 133a, 135a, the breadth of ski surface 50a or 50b and moveable jaw 135.

The operation of the two primary embodiments of applicant's invention can be summarized as follows. Where it is necessary to do work upon the surface of a ski and no work is required on the ski edge, such as in the case of a cross-country type ski, the embodiment represented by ski vise 100 would be utilized. The vise 100 would be attached to a bench top overhang 124 by inserting the vise body 110 over the bench top edge 124 by means of channel 120a. The vise body 110 would then be secured to bench top 124 by advancing a thumb screw 121 until it forceably bears against the under surface of bench top 124. A ski 50 would then be positioned in a channel 130 formed in the top of vise body 110, and thumb screw 134 would be advanced to hold ski 50 in the channel 130. The bottom or top surface of ski 50 would then be exposed for either waxing or the affixing of bindings or the like. While applicant's ski vise can be used as a single unit, it may be desirable in many instances to use two of applicant's ski vises in combination to support both ends of a ski.

In applications where it is necessary to perform work operations upon the edge of a ski as well as upon the surface of a ski or where it is desirable to hold each of a pair of ski in the same vise simultaneously, the embodiment of applicant's invention represented by ski vise 1 would be used. Ski vise body 10 would be affixed to a bench top overhang 24 by inserting the bench top overhang 24 into a channel 20a contained a vise body 10. The vise 1 would then be secured in place on bench top 24 by advancing a wing nut 21 which would extend through channel 20a and bear against the under surface 24b of bench top 24. A ski could then be held in vise 1 in either an edge-up position or a broad surface-up position. To hold the ski in the broad surface-up position, the ski 5 would be layed in channel 30 of vise 1 with either its top or bottom surface facing out. The ski 5 would be secured in channel 30 by advancing a thumb screw 34 which would extend across channel 30 to bear against the edge of ski 5. When held in this position, either the top or bottom broad surface of ski 5 could be waxed or bindings could be attached thereto.

To hold a ski 6 in a vertical position in vise 1, the ski 6 is inserted in a second channel 40 with the broad surface of the ski lying in a generally vertical plane. The ski 6 is secured in channel 40 by advancing a thumb screw 44 which would bear against the broad surface of ski 6 to hold it in place. One edge of ski 6 would then be exposed for sharpening or similar work upon it. Where it is necessary to exactly align two skis of a pair side by side, each ski would be secured in vise 1, one in a flat horizontal position and one in a vertical position. Ski bindings could then be attached to the ski lying in a surface-up position in alignment with a binding on the ski mounted in an edge-up position. The ski vise 1 can be used either as a single unit or in pairs if it is desired to provide more than one point of support for the ski while it is being worked upon.

What is claimed is:

1. A ski vise, securable to bench tops and the like, for simultaneously holding two vertically and horizontally oriented skis, said skis generally having relatively flat top and bottom surfaces and opposed lateral edges, said vise comprising:
 - a. A vise body;
 - b. Support securing means for removably attaching said vise body to the edge of a bench top and the like;
 - c. Vertical jaw means carried by said vise body for holding a first ski with the ski top surface in a generally vertical orientation and the ski edges generally horizontal, said vertical jaw means including:
 - i. Said vise body containing a vertical channel having opposed first and second sidewalls and a bottom surface;
 - ii. A screw-advance vise jaw carried by said first sidewall and advanceable towards said second wall, said jaw selectively positionable to bear against the ski for holding it in a vertical orientation; and
 - iii. Said channel bottom surface spanning the entire width of said channel and positioned therebetween to support one ski edge in abutting engagement therewith and the opposite ski edge exposed above said sidewalls;

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d. Horizontal jaw means carried by said vise body for holding a second ski simultaneously with and adjacent to the first ski and with the ski top surface in a generally horizontal orientation, said horizontal jaw means including:

i. Said vise body containing a horizontal channel having opposed first and second sidewalls and a bottom surface;

ii. A screw advance vise jaw carried by said first wall and advanceable toward said second wall, said jaw selectively positionable to bear against the edges of the second ski for holding it in a horizontal orientation; and

iii. Said channel bottom surface spanning the entire width of said channel and positioned therebetween to support one abutting ski surface with

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the opposite surface exposed above said channel sidewalls.

2. The ski vise of claim 1 including:

a. Resilient bumper pads attached to the second sidewall, bottom surface and vise jaw of said vertical channel to prevent damage to the surface and edges of the ski held therein; and

b. Resilient bumper pads attached to the second side surface and vise jaw of said horizontal channel to prevent damage to the edges of the ski held therein.

3. The ski vise of claim 2 wherein the screw advance vice jaws of said vertical and horizontal channels are each thumb screws movable and selectively positionable by thumb and finger force.

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