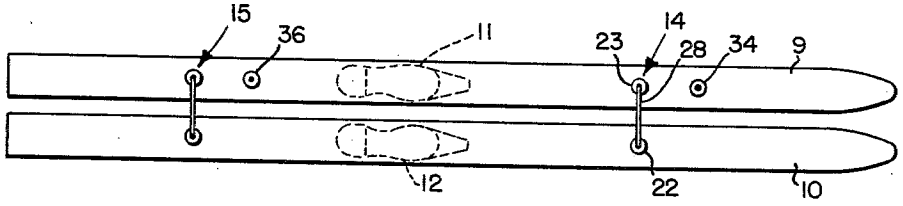
March 2, 1965 W. J. WIGHTMAN 3,171,667

SKI ACCESSORY

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FIG. 1



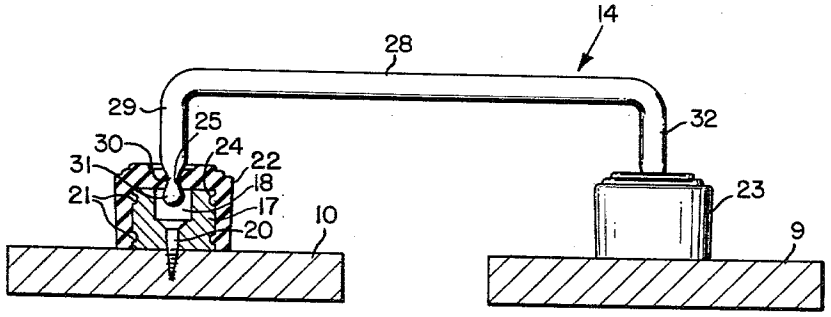


FIG. 2

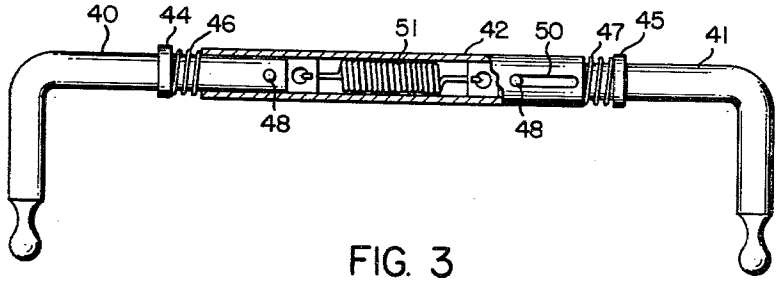


FIG. 3

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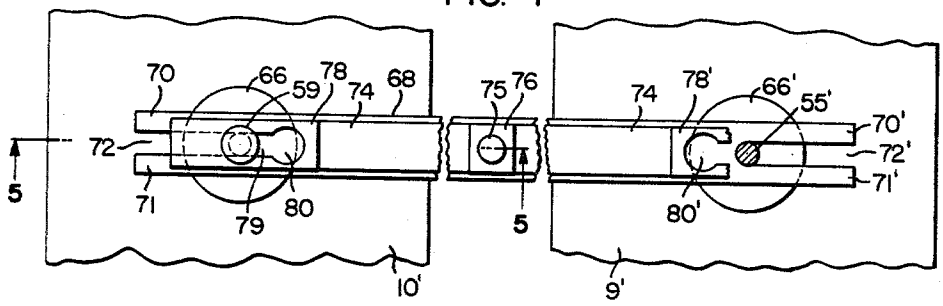
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SKI ACCESSORY

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FIG. 4



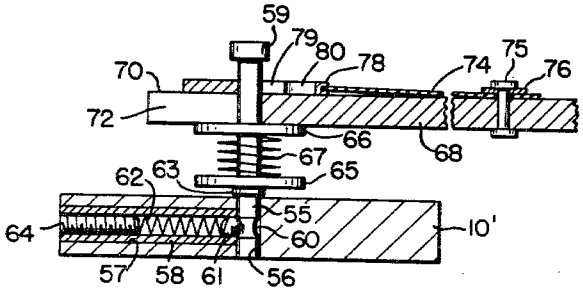


FIG. 5

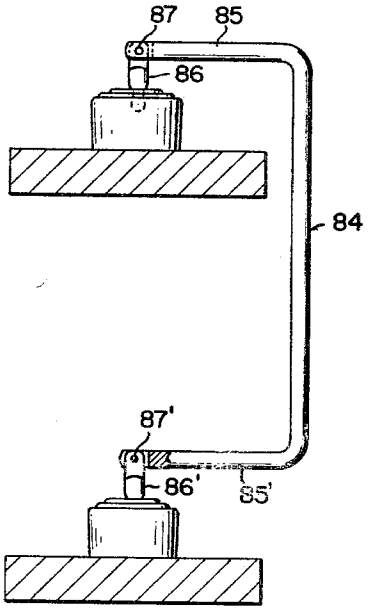


FIG. 6

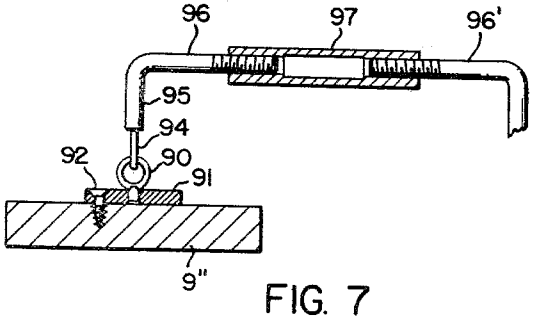


FIG. 7

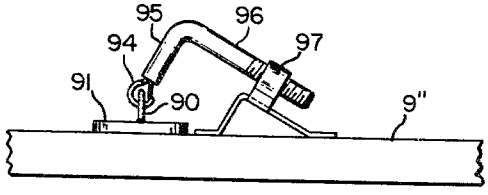


FIG. 8

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3,171,667

Patented Mar. 2, 1965

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SKI ACCESSORY

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Filed Apr. 29, 1963, Ser. No. 276,266
14 Claims. (Cl. 280—21)

This invention relates to an accessory for skiers. More particularly, the invention relates to an accessory for attachment to a pair of skis, to assist the skier in maintaining the skis a substantially uniform distance apart, that is, substantially in parallelism.

Recently, increased emphasis has been placed upon the importance of learning to ski with the skis maintained in parallelism, and particularly, upon the importance of learning to turn with the skis maintained in parallelism. This is an extremely difficult attainment for a beginner, since the novice's attention is often devoted primarily to the problem of staying upright, rather than to the refinement of maintaining the skis substantially parallel.

One object of the present invention is to provide a practical, simple device, for attachment to a pair of skis, that will assist the skier, both novice and expert, in maintaining the skis substantially in parallelism.

Another object of the invention is to provide a simple, practical device for restraining the movement of a pair of skis relative to each other, so that the skis are always substantially in parallelism, while nevertheless permitting the individual skis to pitch and roll in use relative to one another while so restrained. Another object of the invention is to provide a device of the character described that is readily attachable and quickly detachable, for convenience in use of the device and in placing it out of operation when the skis must be separated, as when climbing.

Another object of the invention is to provide a ski-restraining device of the character described and that is easily adjustable, to permit the distance between a pair of skis, that are restrained in movement to be held substantially in parallelism, to be moved by adjustment either farther apart or closer together, for convenience and safety in use. Another object of the invention is to provide a device of the character described that is resilient in its operation, to minimize the effect of shocks. Still another object of the invention is to provide a device of the character described that is quickly detachable and quickly attachable, and that can be conveniently and quickly secured on one ski, against free movement, when not in use.

A further object of the invention is to provide a ski-restraining device, for maintaining a pair of skis substantially in parallelism during skiing, that is safe to use and that, in particular, is free from long or sharp projections that might be hazardous.

Still another object of the invention is to provide a device for holding skis in a desired relationship during use, that is practical under conditions of use where the device may become covered by or filled with snow or ice.

A more specific object of the invention is to provide a practical, readily detachable device for maintaining two skis in a desired positional relation to each other during skiing, that will not damage the skis by rubbing against them or in any other way, and that is convenient to use, neat in appearance, and highly utilitarian in design.

Yet another object of the invention is to provide a ski-restraining device that is readily attachable and readily detachable, and that is simple enough in its operation so that it can be attached and detached easily even though the skier may be wearing gloves or mittens.

Other objects of the invention will be apparent hereinafter from the specification and from the recital of the appended claims. To these and other ends, the invention resides in certain improvements and combinations of

parts, all as will hereinafter be more fully described, the novel features being pointed out in the claims at the end of this specification.

In the drawings:

FIG. 1 is a top plan view of a pair of skis, showing the locations for a skier's boots in dashed lines, and wherein the skis are interconnected by ski-restraining devices that are constructed in accordance with one preferred embodiment of this invention;

FIG. 2 is a part transverse section, part elevation, on an enlarged scale, of the assembly shown in FIG. 1;

FIG. 3 is a part front elevation, part section, on an enlarged scale, of a connecting bar for a ski-restraining device, that is constructed in accordance with a modified embodiment of this invention;

FIG. 4 is a fragmentary top plan view of a pair of skis that are interconnected by a ski-restraining device that is constructed in accordance with another, different, preferred embodiment of this invention;

FIG. 5 is a fragmentary section taken on the line 5—5 of FIG. 4, looking in the direction of the arrows;

FIG. 6 is a transverse section of a pair of skis, one of which has been disposed over the other, and showing still another preferred embodiment of this invention;

FIG. 7 is a fragmentary transverse section of a device for restraining the movements of a pair of skis relative to each other, constructed in accordance with still another preferred embodiment of this invention, and

FIG. 8 is a fragmentary side elevation thereof in its disassembled, parked position.

Referring now in detail to the drawings by numerals of reference, the numerals 9 and 10 denote generally the individual members of a pair of skis. These skis may be made of wood, although the invention is equally applicable to skis made of any material. These skis are equipped in the usual manner, at generally central locations, with appropriate devices for receiving the skier's boots, as shown by dashed lines in FIG. 1, and as generally denoted by the numerals 11 and 12, respectively.

A first ski-restraining device, that is designated generally by the numeral 14, is mounted toward the front end of the skis, ahead of the location for the skier's boots, and a second ski-restraining device, that is indicated generally by the numeral 15, is mounted toward the rear of the skis, behind the location for the skier's boots. These two devices are similar in construction and operation.

Referring now particularly to FIG. 2, the device 14 is formed in the following way. A generally cylindrical plug 17 is disposed on the upper face of the ski 10, with its axis upright and aligned with the lengthwise center line of the ski. The plug 10 is formed in its upper face with a generally cylindrical bore 18. A screw fastener 20 is inserted through the base of the plug, to secure the plug to the ski. The plug 17 is also formed with a pair of circumferential recesses 21, that are generally semi-circular in section.

A resilient rubber cap or cup 22 is mounted over the plug 17. This cap is formed with a socket so that it embraces the plug snugly. The cap is also formed with a pair of inwardly projecting rings 24, that engage in the recesses 21 of the plug. The cap 22 is also formed with a small circular opening 25 in its upper face, that is in registry with and in communication with the bore 18 of the plug. A similar cap 23 is mounted on a plug (not shown) that is secured to the other ski 9.

A generally U-shaped steel bar 28 is formed at the end of one of its arms 29 with a reduced neck 30 that is connected to an enlarged, rounded head 31. The opposite arm 32 of the bar is similarly formed. The head 31 is inserted through the opening 25 in the cap 22, and is disposed in the bore 18 of the plug, so that the neck 30 is

engaged in the opening 25 of the cap and is held resiliently by elastic pressure exerted by the cap. The end of the other arm 32 is similarly gripped in an opening in the top of the cap 23.

A similar plug and cap assembly 34 is secured on the ski 9, ahead of the cap 23 by a sufficient distance to receive the head 31 on the arm 29 of the bar, for "parking" purposes, when the device is not in use to restrain relative movement between the two skis.

The second ski-restaining device 15 is similar in construction to the first device 14, and includes a cap and plug assembly 36 that is mounted on the ski 9 ahead of the device 15, for parking.

To use these ski-restraining devices, the bars of the two devices 14 and 15 respectively are disposed so that the two skis are interconnected. Thus, the bar 28 is disposed in the position that is illustrated in FIG. 2, with its ends inserted in the caps 22 and 23 respectively. When the skis are used, the interconnection between the ends of the bars and the caps and knobs permits substantially universal movement of each ski relative to its associated bar end. Accordingly, these skis can become inclined or pitch relative to each other, and can roll relative to each other, so that their respective surfaces are not coplanar and are not in parallel planes. However, the lengthwise axes of these skis remain substantially in parallelism at all times, because of the restaining influence of the devices 14 and 15, although the actual distance between these skis may vary, since each ski can move forward or backward relative to the other of the bars undergo swinging movements in their respective sockets. Although technically only the longitudinal center lines of the skis remain at substantially a uniform distance, one from the other, this relationship between the skis is referred to herein as though the skis themselves were maintained substantially in parallelism.

When the skis are not to be restrained, as for climbing, resting, unrestrained skiing, or storage, the bars are disconnected from the ski 10 and are parked in the extra cap and plug assemblies 34 and 36 respectively. To disconnect the arm 29 of the bar 28 from the cap 22, a sufficient force is exerted on the bar to withdraw the head 31 through the opening 25 in the cap 22. Since the cap 22 is resilient, this is not difficult. To reassemble these parts, or to park the bar, the head 31 is simply aligned with a cap opening and pressed into the opening.

To replace one of the caps, or as an alternative way to disconnect the bar from a ski, the cap itself can be removed from the plug over which it is engaged.

To make the bar 28 more convenient and easy to manipulate, a plastic coating (not shown) may be applied to the bar, or a handle portion may be molded over the bar. Such a coating or molding will also serve to protect the skis from damage.

The device can also be made in a somewhat different way, which involves what amounts to a reversal of parts. Thus, metal plates that are formed with upwardly projecting rounded heads can be secured on the skis, and the interconnecting bar may be a generally U-shaped tubular member that has caps mounted at its ends. The caps would have web portions that extend across the bore of the tube, and these web portions would be formed with openings, resiliently to receive therein the rounded heads of the plates on the skis.

Referring now to FIG. 3, the transverse bar, in accordance with this preferred but modified embodiment of the invention, is formed in two parts 40 and 41, respectively, whose proximal ends confront each other and are mounted to slide toward and away from each other in a tubular connector 42. The parts 40 and 41 of the arm are formed with collars 44 and 45 respectively, that are disposed adjacent their respective associated ends of the tube 42, and coil springs 46, 47 are interposed between these collars and the tube ends. The two arm parts 40 and 41 are also each formed with laterally projecting

pins 48, that are engaged for sliding movement in slots 50 in the wall of the tube, to prevent relative angular movement between the two arm parts 40 and 41 respectively. The confronting ends of the arm parts 40 and 41 are interconnected by a coil spring 51, that is disposed in the bore of the tube 42.

When an arm having the construction illustrated in FIG. 3 is substituted for the unitary arm 28 shown in FIG. 2, a yielding, resilient action is obtained that permits the skis to move slightly relative to each other in response to sudden shocks, without the complete rigidity of interconnection that is provided by the unitary arm 28. For example, the part 41 can move away from the part 40, in response to some applied force, and in doing so, stretches the coil spring 51. When the arm parts 40 and 41 are free from the applied force, they are returned to the position shown in FIG. 3 upon contraction of the spring 51. However, movement of the arm parts toward each other is limited and cushioned by the resistance to compression of the coil springs 46 and 47 between their respective collars 44 and 45 and the end of the tube 42.

Referring now particularly to FIGS. 4 and 5, the device may take a somewhat different form in which a post 55 has its lower end seated in a bore 56 in a plate 10' that is attached to the upper surface of a ski (not shown). The plate 10' is formed with a transverse bore 57 that communicates with the upright bore 56, and an internally threaded sleeve 58 is inserted in this transverse bore 57. The post 55 is formed with a recessed neck 60 that is in alignment with the bore of the sleeve 58, and a ball detent 61 is constantly urged into engagement with the neck 60 by a spring 62 that is disposed in the bore of the sleeve 58 and that is retained in the bore of the sleeve by a set screw 64.

A retainer ring 63 is secured on the post 55, in spaced relation to the upper surface of the plate 10'. A pair of collars 65 and 66 are slidably mounted on the upper end of the post 55, and a coil spring 67 is mounted about the post and is interposed between the collars 65 and 66, resiliently to space them apart. The post 55 is formed at its upper end with an enlarged diameter head 59, that is spaced above the upper surface of the plate 10'.

A similar arrangement of elements, including a post 55' and a collar 65', are mounted on another plate 9', that can be attached to the other ski.

An elongate, rigid metal bar 68 is bifurcated at its ends respectively, to provide at the left end of the bar, relative to the FIG. 4, a pair of furcations 70 and 71 that are separated by a channel 72. The bar 68 is disposed so that the upright part of the post 55 projects through the channel 72, and the furcations 70 and 71 are slidably engaged against opposite sides of the post 55 respectively. The lower surface of the bar 68, and of its furcations 70 and 71 respectively, is engaged against the upper face of the collar 66. Primed numerals are used to identify the similar structure at the opposite ends of the bar.

A strap 74 is disposed on the upper face of the bar 68. A fastener pin 75 is secured through an opening in the center part of the bar 68, and a clamping member 76 is interposed between the enlarged head of the fastener and the center part of the strap 74, to clamp the center part of the strap against the upper face of the bar 68. The strap 74 is formed from a resilient material such as, for example, a thick ribbon of rubber. A pair of metal plates 78 and 78' respectively are secured to the opposite ends of the rubber strap 74. Each of these metal plates is similar in its structure, and is formed with a keyhole slot that has a long narrow portion 79 and, at its inner end, an enlarged, rounded portion 80 that communicates with the elongate portion 79. The upper end of the post 55 is engaged in the narrow slot portion 79, and the rounded part 80 of the slot is sufficiently large

in diameter to permit the head 59 of the post to pass through.

In use of a device of this type, the skis can move apart from each other, when the bar is at right angles to the skis, to an extent that is limited by the resilience of the rubber strap 74. The strap 74 exerts a force on the posts, constantly to urge the skis together to engage the posts against the inner ends of the channels 72, 72', in the rigid bar 68. The bar 68 prevents the skis from moving together any more closely than the bar itself permits.

To use the device illustrated in FIG. 4, it is intended that two of the ski-restraining devices that are illustrated would be installed on a single pair of skis, in the same relative positions as the devices illustrated in the preceding figures.

To remove this device from the skis, the strap 74 is stretched, as by exerting a force by pulling on the metal plate 78, to bring the rounded slot part 80 into registry with the head 59 of the post. The metal plate is then slipped over the head of the post, to free the strap from the post. The bar can then be freed from the post simply by withdrawing it. The free end of the bar may then be parked on a parking post that is mounted on the ski to which the bar is still attached, or, if desired, the other end of the bar may be freed also.

Referring now particularly to FIG. 6, the device illustrated is generally similar to that shown in FIG. 2. However, the bar 84 is formed, at the ends of its arms 85 and 85' respectively, with extensions 86 and 86', that are connected to the arms through pivot pins 87 and 87' respectively, about which the arm can swing to provide additional freedom of movement for the skis, and to reduce the stresses that are applied to the rubber caps upon movement of the bar.

Referring now particularly to FIGS. 7 and 8, a ring 90 is secured to the upper face of an anchor plate 91 that is in turn secured to the upper surface of a ski 9'' by a plurality of screws 92. A snap ring 94 is coupled with the ring 90, and is secured to the end of an arm 95 of one part 96 of a link. The other end of the link part 96 is threaded into a turnbuckle 97, and a corresponding allochiral link part 96' is threaded into the other end of the turnbuckle. The coupled rings provide a substantially universal connection between the link and the skis, and the turnbuckle permits adjustment in the distance at which the skis are held apart.

The snap rings, at each end of the link, provide a convenient and fast way for connecting and disconnecting the link to and from one ski or both. For parking purposes, the rings may be left coupled, however, and the link may be disassembled by uncoupling the turnbuckle from the link parts. The link part 96, that remains coupled to the ski, can then be parked on a bracket 97 that can be mounted on the upper surface of the ski for that purpose.

While a single restraining device, preferably mounted ahead of the location for the skier's boots on the skis, will provide some restraint and assist in maintaining the skis in parallelism, it is preferred to use a pair of devices, one ahead of the skier, and one behind the skier, to maintain the skis substantially in parallelism throughout their lengths.

One of the important conveniences of retraining devices, that are constructed in accordance with the present invention, is their ease of storage on the skis, on spare caps, posts, or snap rings, or their equivalents. An important feature of the invention is the truly free-motion, universal connection between the restraining devices and each of the skis. This permits the skis to edge independently of each other.

Moreover, restraining devices that are constructed in accordance with the present invention include a coupling to each ski that is in very close proximity to the upper surface of each ski. This places the end of a lever arm, that is firmly attached to the ski, as close to the ski as possible, to minimize the effect of the lever arm, thus minimizing the translation of any spreading movement or movement together of the skis into any form of edging action or motion. In other words, the edging movements of the skis are substantially free from influence by the restraining devices. Accordingly, therefore, restraining devices that are constructed in accordance with the present invention feature independent edging of the skis, and in addition, preserve edging freedom.

In some of the peferred embodiments of the invention, such as, for example, those illustrated in FIGS. 3, 4, and 5, some resilience is built into the restraining means so that a shock that is delivered to one ski is not necessarily transmitted with equal force to the other ski. The action of the rubber caps, in the embodiments of the invention illustrated in FIGS. 2 and 6, also tends to absorb shocks and makes use of the restrained skis more comfortable.

All of the illustrated embodiments of the invention also permit the distance, at which the skis are held apart, to be adjusted quite rapidly and conveniently. For example, in the embodiments of the invention illustrated in FIGS. 1 through 6 inclusive, the substitution of a longer bar for a shorter bar, or vice versa, is an extremely simple matter. In the embodiment of the invention illustrated in FIGS. 7 and 8, a longer bar is also easily substituted for a shorter bar, or vice versa, and in addition, the turnbuckle is conveniently available for manually adjusting the length of the bar, to adjust the distance at which the skis are held apart. Alternatively, instead of using a conventional turnbuckle, a modified turnbuckle can be used, that has the same thread at both of its ends, so as to permit assembly and disassembly, and to provide some torque adjustment, but to make spacing adjustment a more deliberate operation upon asssembly of the device.

A further alternative embodiment of the invention (not shown) is one wherein the bar, such as the bar of FIGS. 1 and 2, is formed with a pair of parallel cross members that extend between the skis, and wherein the cross members are pivotally connected to the uprights at their ends. This gives an action like that of a pantograph, and reduces the wear on the rubber caps.

Devices that are constructed in accordance with the present invention can be fastened to the skis either by an adhesive or by mechanical fasteners. However, when a plug or plate is to be mounted on a finished wooden ski, an adhesive is not entirely satisfactory because of the tendency of some finishes to part from the ski surface. Accordingly, I prefer to use screws or other mechanical fasteners for securing the plugs or plates over the finish of a previously finished ski.

Devices that are constructed in accordance with the present invention are useful in training beginners by affording them the kinaesthetic experience of skiing and turning with the skis in parallelism, and also as an occasional corrective for more experienced skiers.

While the invention has been disclosed herein by reference to the details of preferred embodiments thereof, it is to be understood that this disclosure is intended in an illustrative, rather than in a limiting sense, and it is contemplated that various modifications in the construction and arrangement of the parts will readily occur to those skilled in the art, within the spirit of the invention and the scope of the appended claims.

I claim:

1. Means for restraining the movement of a pair of skis relative to each other comprising an assembly of a pair of members that are mounted on said skis at similar locations thereon respectively, a rigid link having limited resilience to permit limited, resilient movement of the skis relative to each other respectively, and quickly connecting and quickly disconnecting means for coupling the opposite ends of the link respectively to said mem-

bers for substantially universal movement of each of said members relative to its associated respective link end.

2. Means in accordance with claim 6 wherein said link has limited resilience to permit limited, resilient movement of the skis relative to each other respectively.

3. Means in accordance with claim 2 wherein said link comprises spring means that are disposed to oppose movement of the skis toward and away from each other respectively, to permit limited, resilient movement of the skis relative to each other.

4. Means in accordance with claim 6 wherein said link is adjustable in length to permit adjustment of the distance between the skis.

5. Means in accordance with claim 11 wherein said assembly is disposed in front of the location for the skier's boots and a second similar assembly is mounted on the skis respectively in spaced relation to the first assembly and behind the location for the skier's boots.

6. Means for restraining the movement of a pair of skis relative to each other compirsing an assembly of a pair of plugs that are secured to said skis at similar locations thereon respectively, a pair of resilient caps removably mounted over said plugs respectively, a rigid link comprising a bar that is formed at each of its ends with short extensions that are connected to the link by reduced necks, each of said caps being formed with a central opening in its upper face, removably to receive and grip therein the link end extension respectively for substantially universal movement of the link end relative to the cap and ski.

7. Means in accordance with claim 6 wherein said link is a generally U-shaped bar that is formed with ball-shaped extremities at the ends of its arms respectively for insertion in the openings in the caps respectively.

8. Means in accordance with claim 7 wherein each of said plugs is formed with a central bore in its upper face that is in registry with the opening of the associated plug, to permit insertion therein of the ball-shaped extremity of the bar.

9. Means for restraining the movement of a pair of skis relative to each other comprising an assembly of a pair of posts that are disposed to project above the upper surfaces of said skis at similar locations thereon respectively, a bar that is bifurcated at each of its ends, and furcations at one end being slidably engaged about one of said posts and at the other end being slidably engaged about the other of said posts, and an elongate resilient element that is coupled at its ends to said posts respectively and that is coupled intermediate its ends to said bar, and that is formed constantly to urge said posts into engagement with the bar.

10. Means in accordance with claim 9 including coil spring means mounted about each of said posts and interposed between the skis and the ends of the bar respectively.

11. Means for restraining the movement of a pair of skis relative to each other comprising an assembly of a pair of members that are disposed to project above the upper surfaces of said skis at similar locations thereon respectively, a rigid link, quickly connecting and quickly disconnecting means for coupling the opposite ends of the link respectively to said members for substantially universal movement of each member relative to its associated respective link end, and quickly connecting and quickly disconnecting storage means on at least one of said skis for receiving one end of the link when it is disconnected from the other of said skis.

12. Means for restraining the movement of a pair of skis relative to each other comprising an assembly of a pair of members that are secured to said skis at similar locations thereon respectively, a generally U-shaped bar, quickly connecting and quickly disconnecting means for coupling the opposite ends of said bar respectively to said members for substantially universal movement of said bar and relative to said members, said bar being formed adjacent the ends of its opposite arms respectively with joints additional to said coupling means for permitting pivotal movement of the bar relative to the ends of the bar about generally horizontal axes that are substantially in alignment with the lengths of the skis respectively.

13. Means for restraining the movement of a pair of skis relative to each other comprising an assembly of a pair of rings that are secured to said skis at similar locations thereon respectively, an elongate, rigid link adjustable in length, a pair of rings secured to the opposite ends of said link respectively, the rings on the link and the rings on the skis being quickly connecting and quickly disconnecting, and when connected, permitting substantially universal movement of each ski relative to the link.

14. Means in accordance with claim 13 wherein said link is formed in two parts that are interconnected by a turnbuckle to permit adjustment in the length of the link, and wherein quickly connecting and quickly disconnecting means on at least one ski receives at least a portion of said link when it is disconnected from the other of said skis.

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