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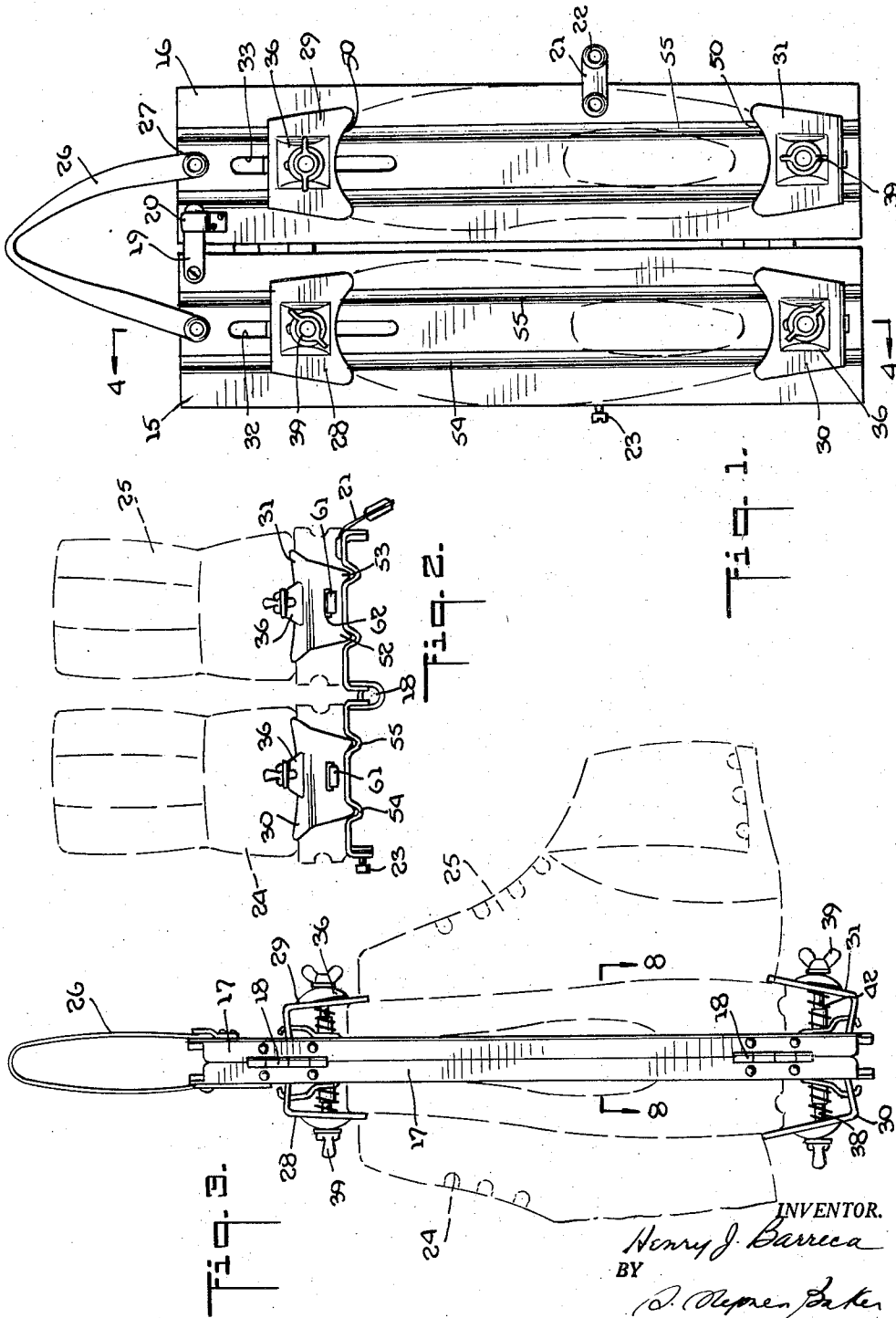
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SHOE SOLE STRAIGHTENER AND CARRYING DEVICE

Filed March 5, 1954

3 Sheets-Sheet 1



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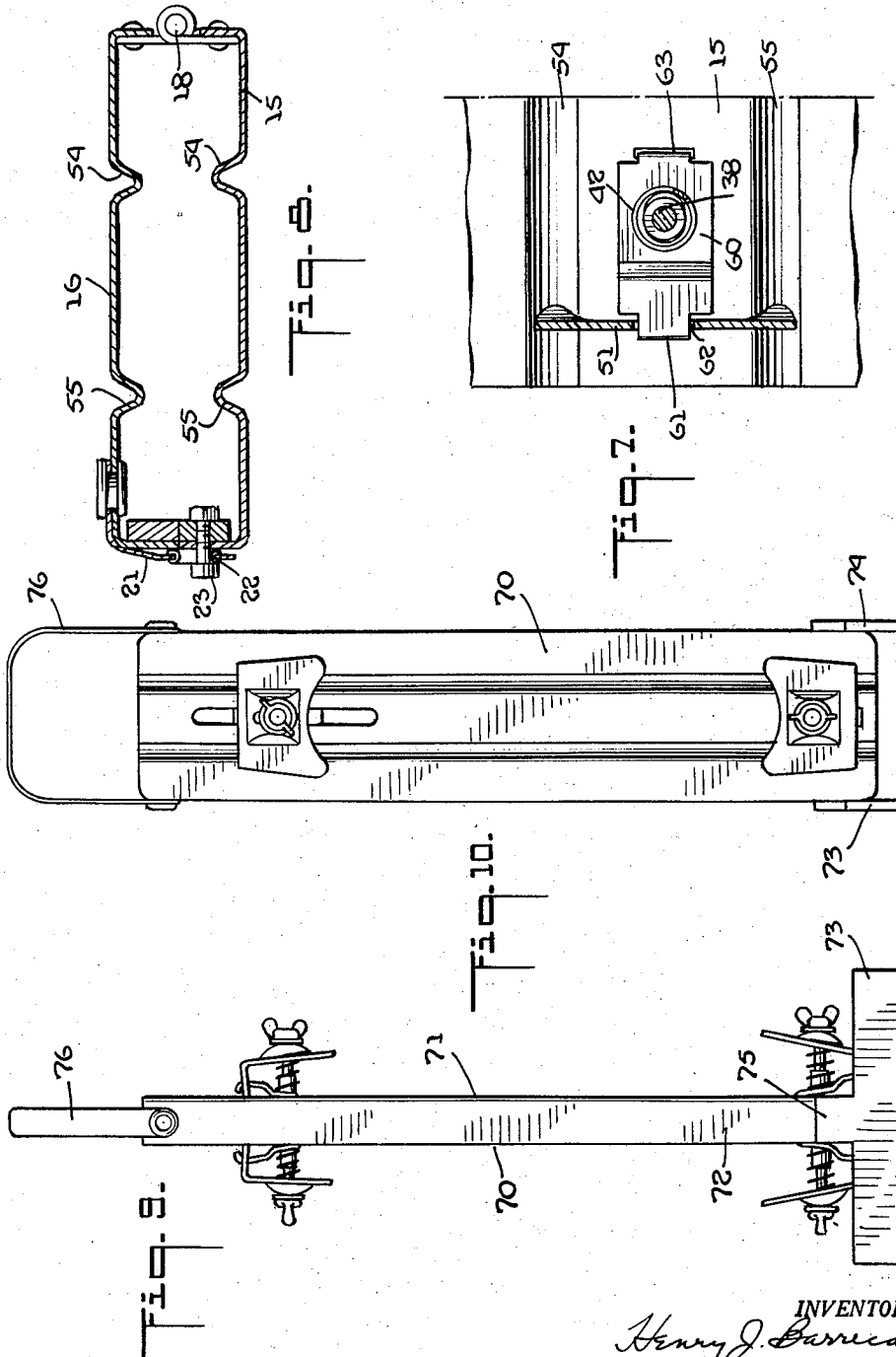
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SHOE SOLE STRAIGHTENER AND CARRYING DEVICE

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5 Claims. (Cl. 12—120.5)

This invention relates to boot trees.

The article of the instant invention is particularly directed to ski boot trees which serve to maintain the boots in proper shape during intervals of non-use.

As is well known, the soles of ski boots should be kept straight or flat on their outer surfaces in order to maintain them flush on the ski. In fact, practically all modern shoes should not be permitted to have their soles curl up unduly at the front but in ski boots the requirement is particularly important. For use with ski boots, sturdier boot trees are required since a ski boot is a more massive article than conventional wearing shoes. It is further well understood that a ski boot tree should be of the outside type rather than of the conventional inside type because an inside boot tree would interfere with drying of the boot if wet, and an inside type generally does not supply adequate pressure.

Substantially all ski boot trees are arranged to supply outside pressure to the soles of the ski boot in order to maintain them straight, but various defects have been found in such prior structures. For example, the adjustment of the ski boot tree to the boot is often troublesome where one boot tree structure serves both boots. Such structures include an adjusting device designed to vary the size of the boot tree according to the boot size. However, such boot trees generally neglect to consider the fact that both boots of a single pair may be of different sizes. All of such ski boot trees of which I am aware are adjustable for both boots simultaneously with the result that one boot may fit while the other may not.

The boot tree of the instant invention not only eliminates the objection of the above outlined disadvantages but provides a number of other advantages. For example, strong forces are applied to the boot sole so as to produce accurately directed pressures, accomplished by a most simple, sturdy mechanism which is very easy to operate. In one embodiment of my device, a most important advantage is provided in that the boot tree may assume alternative positions where the boots may be supported sole-to-sole or in a normal, sole-downward position.

The invention will be further understood from the following description and drawings in which:

Figure 1 is a top plan view of one form of my boot tree in one position;

Figure 2 is a rear elevational view thereof;

Figure 3 is a side elevational view in the carrying position;

Figure 4 is a cross-sectional view as taken along the line 4—4 of Figure 1;

Figure 5 is a cross-sectional view as taken along the line 5—5 of Figure 4;

Figure 6 is a cross-sectional view as taken along the line 6—6 of Fig. 4;

Figure 7 is a cross-sectional view as taken along the line 7—7 of Figure 4;

Figure 8 is an enlarged cross-sectional view as taken along the line 8—8 of Figure 3;

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Figure 9 is a side elevational view of a modified embodiment; and

Figure 10 is a front elevational view of the embodiment of Figure 9.

Referring to the first embodiment illustrated in Figures 1 through 8, the boot tree illustrated may assume either the position shown in Figure 1 where the boots are maintained side-by-side or that illustrated in Figure 3 where they are substantially sole-to-sole. These alternative positions provide desirable features as will be explained hereinafter.

Referring to the first embodiment, the boot tree comprises a pair of platforms 15 and 16 which are formed with side flanges 17, one pair of which are connected by hinges 18. It will thus be evident that the platforms 15 and 16 may be disposed in planar alignment as illustrated in Figure 1 or may be swung about to a closed position as illustrated in Figure 3 where the side flanges meet to form sides for the device. In order to maintain the device in the open or planar position, a latch 19 frictionally fitting into a clasp 20 is provided. In the alternative position, a flexible plastic strap 21 has a metal eye 22 which loosely embraces a screw 23 and maintains the device in the folded or closed position where the boot tree then takes the form of a substantially hollow, elongated rectangular body.

The advantage of the alternative dispositions of the platforms and the boots they support is the following:

When the ski boots 24 and 25 are applied to the device, the user may prefer to lay the device in planar condition on his lap so that he can easily and conveniently affix the boots thereto. In addition, the planar position is desirable when the boots are to be stored as in a closet or the like. On the other hand, the closed position illustrated in Figure 3 is more desirable when the boots are being carried or where the storage space available is less.

For carrying purposes, the device is provided with a flexible strap 26 which is connected as by metallic eyes 27 to both platforms 15 and 16. The boots are affixed to the boot tree by means of four clamps 28, 29, 30 and 31. In the form shown, the front clamps 28 and 29 are longitudinally slidable in respective slots 32 and 33 while the rear clamps 30 and 31 are stationary except that they are hereinafter capable of vertical adjustment as will be explained.

The clamps are formed with a head or top plate 35 which is shown as substantially planar apart from its central dome 36. Dome 36 is formed with a longitudinal slot 37 in which is slidably disposed a threaded bolt 38. Bolt 38 is engaged by a wing nut 39 disposed over a washer 40 which rests on the dome 36. An opposing washer 41 is disposed under the dome 36 and a coil spring 42 is disposed around shaft 38 and bears against washer 41. It will thus be recognized that the normal action of coil spring 42 is to push upwardly against the underside of head or plate 35 so as to urge it to an upward position. This action is limited or restrained by the wing nut 39, the function of the wing nut being to adjust the effective height of the clamp.

Head or top plate 35 is formed at its forward edge with a concavity or lip 50 which is designed to complement the toe portion of the boot so that it may engage such toe portion. Depending downwardly from the rear end of plate 35 is a perpendicular flange 51 which is provided with spaced lower projections 52 and 53 serving as feet. It will be noted that the platforms 15 and 16 are each formed with spaced longitudinal grooves 54 and 55. The feet 52 and 53 slide in such grooves during the longitudinal or sliding adjustment of the front clamps.

In order to provide more effective clamping, I have determined that it is primarily the forward or concave lip 50 of the clamps which should be substantially ver-

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tically reciprocable. The rear end of the clamps do not require such action. Accordingly, I prevent vertical movement of the rear end of the clamp by providing a metal tongue 60 which has an end lip 61 disposed through an opening 62 of the rear flange 51 so as to maintain the flange in a downward position regardless of the height adjustment of the clamp. The other end of the tongue 60 has a lip 63 which extends through the longitudinal slots 33 of the respective platforms. The tongues 60 also serve as terminals for the coil springs 42 and further limits lateral movement of the clamps.

In order to maintain the front clamps 28 and 29 in any desired position of adjustment, the threaded shanks of the bolts 38 engage a tubular nut 64 which maintains a slidable retaining plate 65 against the underside of the platforms. Retaining plate 65 is formed with edge channels 66 which ride upon the lower convex surfaces of the concavo-convex grooves 54 and 55. It will be noted from Figure 4 that the rear lip 63 of tongue 60 in the front clamps, besides extending through the longitudinal slots 32 or 33, also extends through an opening in the retaining plate 65.

The front clamps 28 and 29 are adjusted by simply sliding them manually in the longitudinal slots 32 and 33. The springs 42 provide sufficient frictional engagement to permit such sliding without undue binding. The engaging action between the clamps and the platform is provided primarily by the tongues 60 and feet 52 and 53 since these are effectively pressed against platforms by the springs. Of course, the retaining plates 65 cooperate in this action since they serve to clamp the platforms between themselves and the undersides of the tongues.

The rear clamps 30 and 31 are of the same formation as the front clamps, save that no slidable retaining plate 65 is required because the rear clamps do not slide. On the contrary, the tubular nuts 64 securely maintain the bolts 38 in respect to the platforms.

When a boot is to be applied to the boot tree, the user may prefer to dispose the device in its planar position as illustrated in Figure 1. He then pushes the heel of the ski boot until it is embraced by the concave front edge or lip of either rear clamp 30 or 31. As illustrated in Figure 3, the heel of ski boots almost invariably have a rear ledge against which the concave front edge of the clamp may rest. Of course, the user will adjust the rear wing nuts 29 until the front edge is in the proper degree of elevation for engaging the heel ledge. He may then tighten the wing nut 29. It will be noted that the rear edge of the clamp plates is substantially retained against vertical movement of the lips 61 while the front edges are not so restrained. Accordingly, when the wing nuts are tightened or loosened it is only the front concave edges 50 which effect vertical travel. This permits a very high degree of downward pressure to be applied to the ski boot by simple rotation of the wing nut. The function of the dome 36 in conjunction with the clamp slot 37 is to permit relative longitudinal motion between the screw 38 and the clamping heads 28, 29 during any adjusting movement and without causing any binding of the wing nut. As a result thereof the vertical adjusting action is considerably facilitated.

After the heel of the boot has been engaged by the rear clamp, the opposing front clamp is merely slid downwardly until its front concave lip 50 engages the toe ledge as illustrated in Figure 3. Ordinarily, the front concave lip will be disposed higher than necessary and after the clamp meets the toe ledge, the wing nut is tightened down against the toe ledge so as to secure the boot from both its toe and heel portions as illustrated in Figure 3. The wing nuts may be made as tight as desired. The other boot is then applied in the same way and, if the user desires, the device may then be swung from its open or planar position to the closed position illustrated in Figure 3 for ease in carrying, or it may be

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retained in open position whether for carrying or for storage or the like.

It will be found that the adjustability of the device is extremely simple, it being merely necessary only to slide the front clamps until the boots are engaged and then tighten them by turning the wing nuts. Furthermore, if one boot is of a length different from the other, it is of no moment since the clamps for the different boots are adjusted independently. The grooves 54 and 55 in addition to providing guide members for the feet 52, 53 and the channels 65, 66 of the retaining plate also serve as strengthening means for the platform walls which may be made of thin gauge aluminum or the like.

The modified embodiment shown in Figures 9 and 10 follows to a large extent the construction of the first embodiment with particular regard to the sliding clamp construction and their function of accommodating the boots independently. However, this second embodiment maintains the boots substantially sole-to-sole at all times in that the platforms 70 and 71 do not swing outwardly but comprise the opposite faces of the boot supporting structure. Such structure accordingly takes the form of a hollow rectangle similar to the structure of the first embodiment in the closed position and supporting the boots in the manner illustrated in Figure 3. Of course, the side 72 has no hinge as does its counterpart in the first embodiment.

The embodiment of Figure 9 has an additional feature, however, in that it is provided with a pair of supporting feet 73 and 74. Feet 73 and 74 are in the shape of an inverted T, the central arm 75 of which is connected as by spot welding to side 72. The lower edge of the transverse arm extends below the platforms 70 and 71 as illustrated in Figure 10. Accordingly, the feet 73 and 74 jointly comprise a firm support serving to maintain the boot tree in an upright position even when the boots are held thereby. Thus, the user may carry the boot tree by the strap handle 76 and may easily rest the device on a floor by means of the feet 73 and 74 so that the device is maintained in an upright position without falling. The device is also easily applied to boots having metal attachments such as for safety bindings.

What is claimed is:

1. A boot tree comprising a pair of connected platforms each respectively adapted to grip one of a pair of boots, a pair of opposed clamps on each of said platforms for engaging a boot at its extreme front and rear portions, at least on clamp of each pair of clamps being longitudinally adjustable in accordance with the length of the boots to be gripped, each of said longitudinally adjustable clamps being separate from the other and the said longitudinal adjustability of each said longitudinally adjustable clamp being independent of the other longitudinally adjustable clamp, each of said clamps comprising top plates which are slidable over the platforms, spring means disposed between the platforms and the undersides of said top plates for normally urging said top plates to an upward position, and manually adjustable means disposed on said top plates for forcing said top plates downwardly against the action of said spring means, each of said platforms being formed with a central, elongated slot, and opposed, spaced grooves, a depending flange on each top plate, said flange being slidable in said spaced grooves, a tongue having one end thereof extending through a slot in said flange and the other end thereof extending through said elongated slot of the platform, and a retaining plate disposed on the underside of said platform, said manually adjustable means comprising a nut and a threaded bolt engaged by said nut, said bolt being disposed substantially between said top plate and said platform, said retaining plate being connected to the lower end of said bolt and having edge channels which are slidable on the underside of said grooves.

2. A device according to claim 1 and wherein each

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top plate is formed with a central dome, said dome being formed with a longitudinal slot substantially parallel to said platform elongated slot, said threaded bolt extending through said dome slot, said platforms being hingedly connected together at adjacent sides thereof whereby they may be swung to a mutually planar aligned position or to a mutually overlying position.

3. A device according to claim 2 including first means to lock said platforms in said mutually aligned position and second means to lock them in their overlying position.

4. In a boot tree, the provision of a platform for gripping one of a pair of boots, a pair of opposed clamps on said platform for engaging a boot at its extreme front and rear portions, at least one of said clamps being longitudinally adjustable in accordance with the length of the boot to be gripped, at least one of said clamps being vertically adjustable for effecting downward pressure on the gripped boot, said platform being elongated and formed with an elongated slot in the face thereof, said longitudinally adjustable clamp being slidably mounted in said slot, said platform being further formed with two elongated grooves which are spaced on the top face of the platform and on either side of said slot, said longitudinally adjustable clamp comprising a vertically adjustable top plate and having a pair of downwardly depending spaced feet which are slidably disposed in the respective spaced grooves.

5. A device according to claim 4 and including means

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for slidably frictionally retaining said longitudinally adjustable clamp in respect to said grooves in which it slides, said device further including a depending flange on said top plate, said feet being formed on the lower edge of said flange, said means for slidably frictionally retaining said clamp comprising a tongue having one end thereof extending through a slot in said flange and the other end thereof extending through said slot of the platform, a retaining plate disposed on the underside of said platform, a nut, a threaded bolt engaged by said nut, said bolt being disposed substantially between said top plate and said platform, said retaining plate being connected to the lower end of said bolt and having edge channels which engage and are slidable on the underside of said grooves.

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