March 30, 1954 L. E. E. GOSSNER 2,673,405

DOUBLE-WALLED WATERPROOF BOOT

Filed July 24, 1950

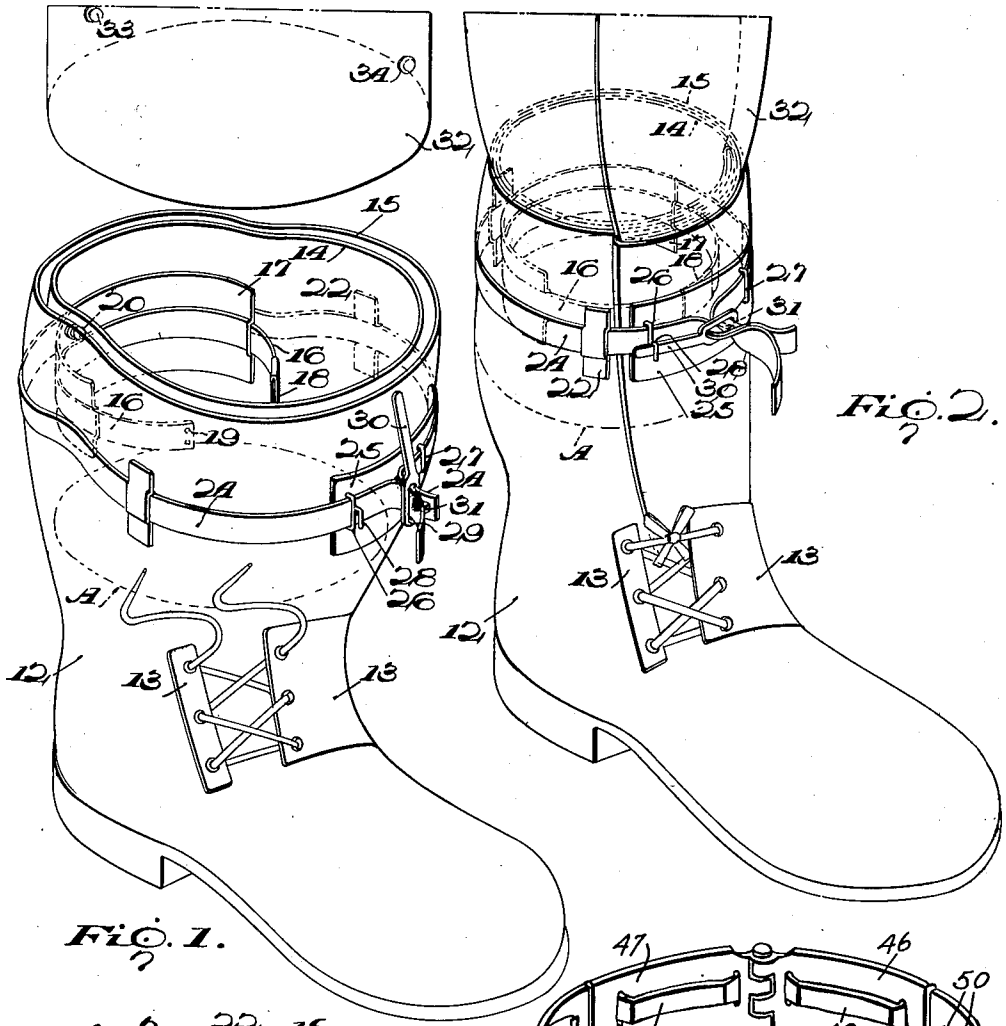


Fig. 1.

Fig. 2.

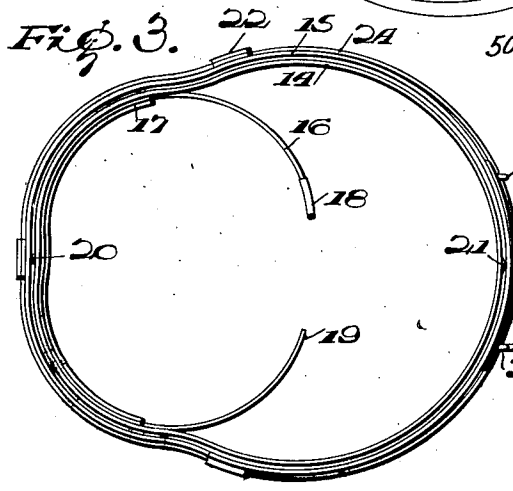


Fig. 3.

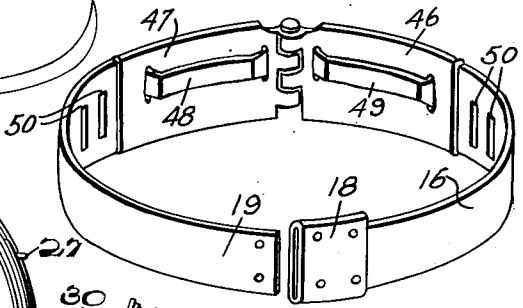


Fig. 4.

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Patented Mar. 30, 1954

2,673,405

UNITED STATES PATENT OFFICE

2,673,405

DOUBLE-WALLED WATERPROOF BOOT

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Application July 24, 1950, Serial No. 175,605

1 Claim. (Cl. 36—4)

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This invention pertains to an improved waterproof boot structure designed to be used with waterproof trousers to form a fluid-tight seal between the top portion of the boot and the lower extremity of the trouser leg when the lower extremity of the trouser leg has been inserted into the top portion of the boot and confined therein. The present application is a continuation, in part, of my pending application, Serial No. 92,636, now Patent Number 2,603,888, granted July 22, 1952.

It has long been a problem in the art to provide a truly waterproof juncture between the top portion of a waterproof boot and the lower portion of a waterproof trouser worn with the boot. One solution of this problem is disclosed in my earlier application. Another and improved solution is disclosed herewith which insures a complete and watertight seal between the trouser bottom and the boot top under all conditions of wear.

It is therefore one object of this invention to provide an improved boot top structure which is designed to receive the lower portion of a trouser leg and which will form therewith a complete and watertight seal.

It is a further object of this invention to provide such a boot top structure in which a complete and unbroken fluid seal is maintained about the entire circumference of the boot top under all conditions.

It is a further object of this invention to evolve a waterproof insert member which may be incorporated with any waterproof boot to convert it to a boot structure embodying the present invention.

It is a further object of this invention to provide improved clamping or fastening means for such a boot structure.

It is another object of this invention to provide an improved boot top for such a boot structure which is designed to receive a full diameter trouser leg and to form a completely watertight seal therewith.

Other and further objects of this invention will become apparent as this specification proceeds.

Referring to the drawing, Fig. 1 is a perspective view of a waterproof boot incorporating the present invention;

Fig. 2 is a perspective view of this embodiment of the boot with the boot top in closed and clamped position with the trouser leg inserted in the boot top;

Fig. 3 is a top elevation of the embodiment of the boot shown in Fig. 1, in open position, with the lower portion of the trouser leg inserted therein;

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Fig. 4 is a plan view of a pressure form or support band used in the interior of the novel boot top structure.

In the drawings, Fig. 1, 12 indicates a waterproof boot of rubber or other appropriate flexible material which is provided at its forward lateral extremity with appropriate off-center lacing ties 13 which are preferably disposed laterally of the forward edge of the boot for a purpose hereinafter to be discussed. As shown, the top or upper portion of the boot is preferably formed in a full curve, the rearward portion of which is of considerably smaller diameter than the forward portion, and is provided with an inner wall 14 and an outer wall 15 which as shown are appreciably separated from each other at their top extremities and which progressively approach closer to each other to meet along a line A approximately one-third of the height of the boot from its top. Inner wall 14 and outer wall 15 preferably curve outwardly from the rear seam of the boot to its forward extremity to provide a somewhat elliptical curve to the boot top.

An inner support-band or pressure-form 16 is shown supported about the rear inner periphery of inner wall 14 as by means of support band loop 17 which is appropriately cemented or stitched about the rear central periphery of inner wall 14 and lies in a horizontal plane midway between the boot top and the line of juncture A of walls 14 and 15. Inner support band 16 is preferably hinged at its rear extremity, as shown in Fig. 7, is preferably adjustable in circumference and carries a female clamping means 18 at one extremity and a studded male end 19 at the other extremity designed to removably engage female 18. Support band 16 is preferably slidable within loop 17.

As shown, inner wall 14 is preferably provided adjacent its rearward and forward extremities with snap studs 20 and 21 for a purpose hereinafter to be discussed.

A series of binding strap loops 22 are provided about the outer periphery of outer wall 15 about its median line and lying in the same horizontal plane as inner support band 16. As shown in Fig. 1, preferably three clamping strap loops are provided, one to the rear of the boot top, the others disposed at its lateral extremities. Clamping strap 24 which is preferably flat and braided of cord, nylon or other appropriate material is shown inserted through loops 22 about the outer periphery of outer wall 15 of the boot top. Clamping strap 24 is preferably of greater length than the circumference of outer wall 15. It is provided at its forward central portion with

clamping strap plate 25 which is formed of any appropriate material and is preferably curved to conform to the curvature of outer wall 15. Clamping strap plate 25 is provided adjacent its two lateral extremities with clamping strap loops 26 and 27 through which the extremities of clamping strap 24 are passed and in which clamping strap 24 is slidably engaged. Loop 26 is preferably provided with a downwardly turned hook member 28 for a purpose hereinafter to be discussed. The two extremities of clamping strap 24 preferably pass through and are slidably engaged in a slot 29 disposed in the lower extremity of clamping lever 30 which extends upwardly therefrom. Clamping lever 30 is preferably formed of metal or other appropriate material and is designed to be fitted under hook 28, as shown in Fig. 2, when the boot and trouser structure is in folded and clamped position. A knurled and inwardly tapered stud or projection 31 is provided at one extremity of clamping strap 24 to wedge the two extremities of the clamping strap within slot 29 of lever 30 when strap 24 is pulled tight within slot 29.

The lower portion of a full trouser leg 32 is shown in Fig. 1, disposed above the double wall boot top in position to be inserted between inner wall 14 and outer wall 15 thereof. Trouser leg 32 may be provided with female snap members 33 and 34 designed to register with male snaps 20 and 21 carried by inner wall 14 of the boot top. As shown, trouser bottom 32 is of substantially the same fullness and circumference as the space between inner wall 14 and outer wall 15 of the boot top and is designed to be readily insertable between walls 14 and 15 without surplus or wrinkling. By providing a large circumference to the double walled boot top and trouser structure the insertion of the lower extremity of the trouser between the walls of the boot top is greatly facilitated and an improved contact or seal therebetween is obtained as will be hereinafter discussed in detail.

As shown in Fig. 2 of the drawing, the double-walled portion of the boot top preferably extends downwardly to a distance approximately equal to one-third of the height of the boot, at which point the lower extremities of walls 14 and 15 are sealed together as by stitching or cementing along peripheral line A. As hereinbefore stated the space between inner wall 14 and outer wall 15 gradually decreases from the top extremity of the boot to the line of juncture A between the two walls.

In the embodiment of the boot shown in Figs. 1, 2 and 3 of the drawing, the following procedure is followed to form a watertight joint or connection between the boot top and the trouser leg. With the inner support band 16 adjusted to the desired circumference of the wearer's leg and closed about the leg and with the boot top in completely open position, with clamping strap 24 and the boot laces open, the lower portion of trouser leg 32 is inserted into the space between inner wall 14 and outer wall 15 of the boot top. The lower portion of trouser leg 32 is then pushed downwardly between walls 14 and 15 until its lower edge reaches the juncture line A of walls 14 and 15. Snaps 33 and 34 are then snapped to snaps 20 and 21 of inner wall 14 to hold the trouser leg in position in the space between walls 14 and 15. With the trouser leg in proper position in the space between the walls a smooth single fold is made of the entire boot top and trouser leg, as shown in Fig. 2 of the drawing, and clamping strap 24 is pulled up tight about the outer periphery of the boot top until the desired tightness is attained over inner support band 16. With clamping strap 24 pulled tight and stud 31 holding its extremities within slot 29 of lever 30, lever 30 is turned through 90° to the right to increase the tension on strap 24. Lever 30 is then inserted under hook 28 to hold strap 24 and the boot top and trouser combination under considerable tension over inner support band 16. The free extremity of strap 24 may then be inserted through one or more of loops 22 to prevent its swinging free. It will be noted that when the boot top is folded as above described the fold line will fall centrally of the lacing patches 13, as shown in Fig. 2. With the top portion of the structure in closed and clamped position the laces may then be pulled tight over the fold line and tied in the conventional manner.

A perspective view of inner support band 16 is shown in Fig. 4 of the drawing. Slotted female head 18 is shown disposed at one extremity and studded male head 19 is disposed at the other. Support band 16 is preferably hinged at its rear extremity and may be adjusted in circumference by means of collars 46 and 47 carrying L-shaped spring clamps 48 and 49, the toes of which fit through slots in collars 46 and 47 and into slots 50 in the terminal extremities of the halves of support band 16.

The invention is susceptible of numerous modifications without departing from the spirit thereof. For example, a conventional rubber laced boot could be formed with the upper portion of its top provided with double walls between which the lower edge of a trouser leg could be inserted and held merely by the pressure of the boot laces. An inner support band could be provided interiorly of the inner wall of this structure to prevent undue pressure upon the leg of the wearer.

As hereinbefore stated, the circumference of the boot top as shown in Figs. 1, 2 and 3 of the drawing is preferably large, i. e., on the order of 19½ to 20 inches and the trouser leg designed to be inserted therein is preferably of the same circumference.

The depth of the space between inner and outer walls 14 and 15 of the sealing structure is preferably on the order of from three to four inches, but this depth may be varied at will depending upon the problem involved.

The invention may be embodied in a structure of considerably smaller circumference, i. e., on the order of 8" to 10", depending upon the size of the leg and the particular sealing problem to be met.

The structure of the outer clamping strap may be varied within wide limits without departing from the spirit of this invention. Further, the particular form of the inner support band may be varied at will, the embodiments of both inner support band and outer clamping strap shown being by way of illustration only and being in no sense intended to limit the range of equivalents which may be used.

The invention is primarily designed to evolve a complete and watertight seal between a waterproof boot and the lower extremity of a waterproof trouser but it may be used also with a non-waterproof type of garment where it is desired to effect a tight and unbreakable connection between the boot top and trouser bottom.

This invention is susceptible of numerous embodiments without departing from the spirit of

the invention. Attention is directed to the appended claim for a limitation of its scope.

What is claimed is:

In a boot, a leg portion of substantially semicircular configuration at its rearward extremity to closely fit the rear periphery of a human leg, a greatly enlarged and substantially circular forward portion extending outwardly from said rearward extremity of substantially half again the diameter of said rearward extremity, the respective diameters of said portions being maintained in said leg portion to a point just above the instep of said boot, and a pair of lace ties disposed at one side of the frontal median line of said boot leg to receive and contain the fold line of said enlarged forward portion of said boot leg when folded about the leg of a wearer.

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