United States Patent [19]

Dalebout

[11] **3,711,880**

[45] **Jan. 23, 1973**

[54] **APPARATUS FOR CUSTOM FITTING BOOTS**

[76] Inventor: **Melvin W. Dalebout,** 3661 Ceres Drive, Salt Lake City, Utah 84117

[22] Filed: **March 19, 1970**

[21] Appl. No.: **21,091**

[52] **U.S. Cl.** **12/1**

[51] **Int. Cl.** **A43d 00/00**

[58] **Field of Search** ..... 12/1, 146 R, 146 L; 18/52; 264/223

[56] **References Cited**

UNITED STATES PATENTS

2,487,965	11/1949	Dresser	12/146 L
2,877,502	3/1959	Murray	12/146 L X

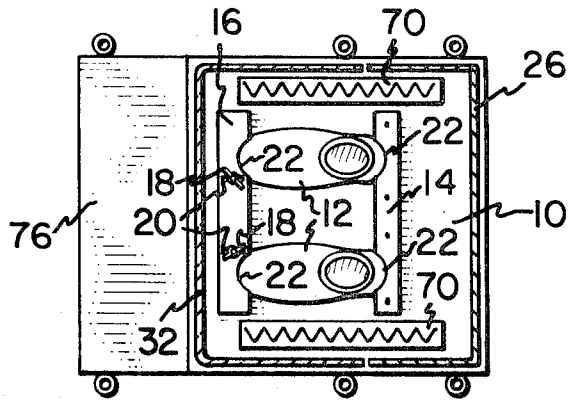
Primary Examiner—Patrick D. Lawson

Attorney—C. Harvey Gold, David V. Trask and William S. Britt

[57] **ABSTRACT**

A device for custom fitting boots which includes a support platform sized to support a pair of boots for an individual's feet, a reservoir attached to the support platform, conduit means connected to the reservoir and in communication therewith for passing a liquid material in the reservoir to each of the boots supported on the platform, and means connected to the reservoir for urging the liquid material out of the reservoir and into the conduit means. Heating means can be connected to the support platform for heating the environment around the boots and body support members can be secured to the support platforms for supporting an individual's body in an upright position while the boots are being fitted to the individual's feet.

10 Claims, 6 Drawing Figures



PATENTED JAN 23 1973

3,711,880

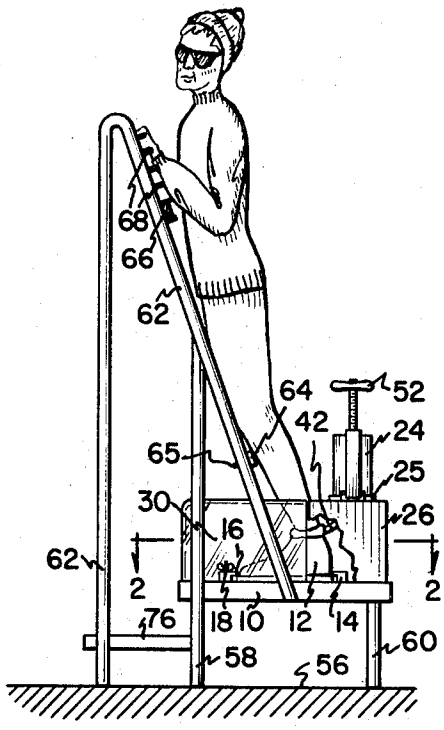


FIG. 1

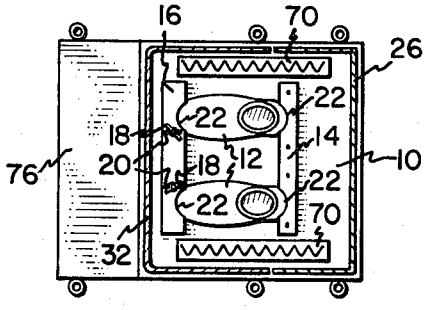


FIG. 2

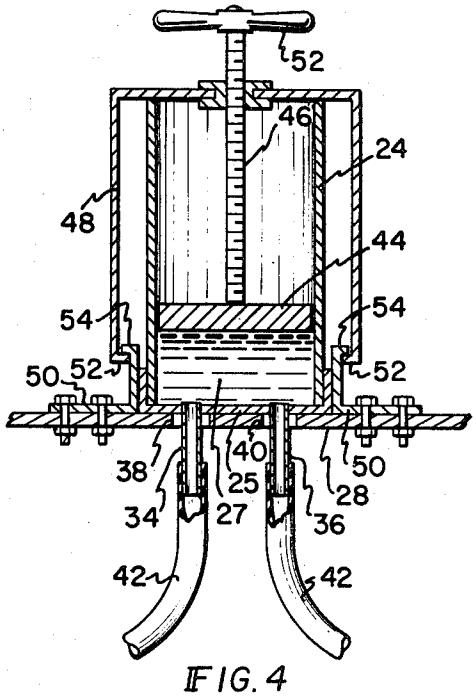


FIG. 4

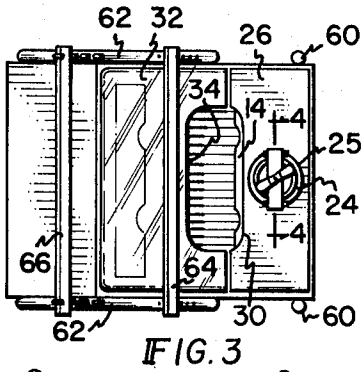


FIG. 3

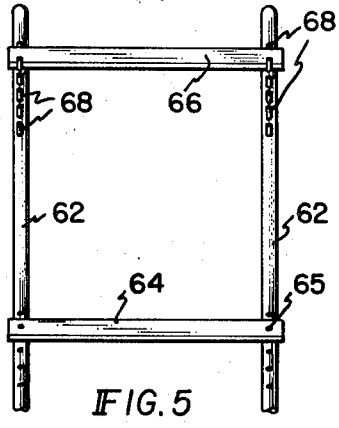


FIG. 5

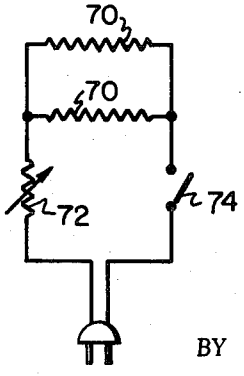


FIG. 6

INVENTOR.
Melvin W. Dalebout

BY

His Attorney

APPARATUS FOR CUSTOM FITTING BOOTS

BACKGROUND OF THE INVENTION

In my co-pending United States Patent Applications, Ser. No. 726,094, filed May 2, 1968, now U.S. Pat. No. 3,521,385, entitled "Ski Boot," and Ser. No. 8,547, filed Feb. 4, 1970, entitled "Inner Boot and Method for Forming the Same," a boot is described that is custom fit to the foot of an individual. The boot includes an outer liner, and an inner liner connected to the outer liner and spaced apart therefrom to form a substantially sealed compartment between the liners. When the individual's foot is positioned within the boot a liquid resin elastomer reaction mixture is injected into the compartment between the liners. The reaction mixture is cured in situ between the liners of the inner boot to form a resilient mold which positions the inner liner substantially adjacent to and around the foot of the individual and the outer liner is positioned adjacent to the interior sidewalls of an outer boot support shell. Because of the development of the herein described boot a need has arisen for apparatus suitable for injecting a resin elastomer mixture into the inner boot and thereafter curing the reaction mixture insitu.

BRIEF DESCRIPTION OF THE INVENTION

In its broadest form the invention comprises a support platform sized to support a boot for an individual's foot; a reservoir for containing a liquid material attached to the support platform; conduit means connected to and in communication with the reservoir for exhausting liquid material out of the reservoir and into the boot connected to the conduit means; and means connected to the reservoir for urging liquid material to flow out of the reservoir and into the conduit means.

In another embodiment of the invention, heating means are secured to the support platform for heating the environment surrounding a boot supported on the platform to accelerate curing of reaction mixture injected into the boot.

In still another embodiment of the invention upwardly extending support members are affixed to the platform for supporting an individual in an upright position while the individual is being fit with the boot.

In yet another embodiment of the invention clamping means are affixed to the support platform for fixedly positioning the boot to the support platform while the boot is being filled with a reaction mixture.

In still yet another embodiment of the invention a housing is mounted on a support platform for substantially enclosing the boot supported on the platform.

BRIEF DESCRIPTION OF THE DRAWINGS

So that the invention will be more readily understood and carried into effect reference is made to the accompanying drawings which are offered by way of example only and are not to be taken as limiting the invention, the scope of which is defined by the appended claims which are intended to embrace equivalent structures.

FIG. 1 is a side view of the apparatus of this invention showing an individual standing therein while boots are being custom fit to the individual's feet.

FIG. 2 is a sectional view of FIG. 1 taken along the plane of line 2—2 looking in the direction of the arrows.

FIG. 3 is a top view of the apparatus of this invention.

FIG. 4 is a sectional view of FIG. 3 taken along the plane of line 4—4 looking in the direction of the arrows.

FIG. 5 is a partial plan view of the support structure used for supporting the body of an individual being fitted with boots in the apparatus of this invention.

FIG. 6 is a wiring diagram of one type of circuit suitable for activating heating elements.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawings there is shown a support platform **10** sized to support a pair of boots **12** thereon in a spaced relationship. The boots are fixed to platform **10** with back-tie-down-plate **14**, fixedly secured to platform **10**, and front-tie-down-plate **16**, adjustably secured to platform **10** with bolts **18** sized to extend through parallel elongated slots **20** formed in the front plate. Plates **14** and **16** are provided with recesses **22** sized and shaped to receive a portion of either the front or rear end of a boot **12** to hold the boot against end-wide movement. By using tie down structure of the type herein described and illustrated boots **12** are fixedly secured to support platform **10** for filling while being easily releasable therefrom by loosening bolts **18** and sliding plate **16** back away from the toe ends of the boots **12**.

A housing is secured to platform **10** and mounted thereover for supporting reaction mixture reservoir **24** and its associated pumping structure, hereinafter described, and for substantially enclosing boots **12** so that the temperature of the environment surrounding the boots can be altered to accelerate reaction mixture curing. Preferably, the housing is a two piece structure which includes three-sided rear section **26** covered with top sheet **28** having a port **30** positioned therein sized to receive the back portion of an individual's legs when an individual is standing on platform **10** in boots **12**. A removable front section **32**, preferably constructed from a transparent material such as a heat resistant plastic, is mounted on platform **10** which mates with back section **26** to substantially enclose the area above the platform surrounding boots **12**. Like section **26**, front section **32** is also provided with a port **34** sized to receive the front portion of an individual's legs. As indicated, a reservoir is mounted on the top covering **28** of rear section **26**. Preferably the reservoir is a cylindrical member **24** having a removable bottom end **25** for cleaning purposes and an open opposite end. Discharge tubes **34** and **36** are secured to bottom end **25** in communication with the reservoir's interior for discharging material out of the reservoir. Ports **38** and **40** are positioned in top covering **28** to accomodate discharge tubes **34** and **36**. Flexible tubes **42**, preferably formed from an easily cutable material such as a soft plastic, are removably attached to the open ends of discharge tube **34** and **36** for passing reaction material into boots **12** as described in my above noted patent.

Reaction material is urged out of the reservoir through the discharge tubes connected thereto with piston **34** which is snugly received within the reservoir. When the reservoir is a cylinder **24**, piston **44** is a cylindrical disk-like member. The piston is urged into cylinder **24** with screw **46** which is threaded in harness **48** which in turn is secured at its opposite ends to brackets **50** affixed to plate **28**. A handle **52** can be at-

tached to the end of screw **46** to aid in turning the screw. Harness **48** is firstly used to provide a support frame for screw **46** and secondly, it holds reservoir **24** in a fixed position on plate **28**. The opposite ends **52** of harness **48** are turned inwardly towards each other and are sized to slide under the outwardly turned ends **54** of brackets **50**. Accordingly, harness **48** can be easily removed by merely loosening screw **56** and thereafter rotating the harness until its ends are positioned away from brackets **50**.

When an individual is being custom fit with boots **12**, it is preferred that the individual stand in a generally upright outwardly position. Accordingly, an upwardly extending support structure can be secured to platform **12** which provides a framework for the individual to lean upon. Also, it is desirable to elevate platform **10** above floor level **56** for ease in using the apparatus of the invention. As shown in FIG. **1** and **5** support members **56** and **60** are attached to platform **10**, preferably proximate the corners of said platform when it is a rectangular shaped member, for holding the platform at said elevated position. In addition, poles **58** aid in supporting frame members **62** which can be used to support a person's body in an upright outwardly extending position. Preferably, cross bars **64** and **66** are adjustably secured to frame members **62** at a poxition proximate the thighs and chest of the individual standing in the apparatus. The cross bars can be secured in an adjustable fashion in a variety of ways such as through the use of outwardly extending pins **68** sized to support cross bar **66** or pins **65** which are sized to pass through frames **62** and cross bar **64**.

Preferably, heating elements **70** are mounted to platform **10**, as shown in FIG. **6**, adjacent to the sides of boots **12**. The elements are powered in a conventional fashion from an electrical power source. Control means such as potentiometer **72** and on-off switch **74** can be provided in the power circuit.

To aid in mounting and dismounting platform **10** a step **76** can be secured to the platform. As shown in FIGS. **1–3** step **76** is secured to poles **58** and frame members **62** proximate the front end of the platform.

In using the apparatus of the invention front housing section **32** is removed from platform **10** so that a person wearing boots **12** adapted to be custom fit to his feet, can step onto the platform **10** from step **76** and then position the rear portion of his legs within the opening **30** formed in the top late **28** of rear section **26**. While in this position, boots **12** are locked to platform **10** with tie-down plates **14** and **16**. Reservoir **24** is then positioned on the top plate **28** such that tubes **34** and **36** pass through ports **38** and **40** respectively. Thereafter, flexible connector tubes **42** are connected between tubes **34** and **36** and the boots **12**. A liquid reaction mixture **27** is then poured into reservoir **24** and piston **44** is slid into the open end of the cylinder **24** until it contacts the liquid reaction mixture **27** contained therein. Finally, harness **48** is secured over reservoir **24** and screw **46** is turned until it contacts piston **44**. At this time, the boot is ready to be filled with liquid reaction mixture. This is accomplished by turning screw **46** which urges piston **44** to slide into reservoir **24** and thereby urge reaction mixture **27** to exhaust through tubes **34** and **36** into boots **12**. When the boots are filled with liquid material to the desired pressure, front housing section **32** is placed on platform **10** over boots **12** and heating elements **70** are activated by closing control switch **74** thereby heating the environment surrounding the boots to a desired temperature. After a predetermined time, the reaction mixture, cure hardens insitu in the boots. When this occurs, heater **70** is turned off, front section **32** is removed from support platform **10**, and tubes **42** are cut thereby allowing the individual fitted with the boots **12** to step away from platform **10**.

I claim:

1. Apparatus for filling a boot for an individual with a liquid filling material which comprises a support platform sized to support said boot; reservoir means for containing a supply of the liquid filling material attached to said platform; conduit means attached to and in communication with the interior of said reservoir for conveying the liquid filling material from said reservoir to said boot; and pressure means connected to said reservoir for pressurizing liquid filling material in said reservoir and urging said filling material to flow through said conduit means to said boot.

2. The apparatus of claim **1** wherein heating means are connected to said support platform for heating the environment surrounding said boot.

3. The apparatus of claim **1** wherein a body support frame is attached to said support platform for supporting the body of the individual standing in said boot in an upright position.

4. The apparatus of claim **2** wherein housing means are affixed to the support platform for substantially enclosing said boot supported on said platform.

5. The apparatus of claim **1** wherein attaching means are affixed to said platform for fixedly securing said boot to said platform.

6. The apparatus of claim **1** wherein said support platform is sized to support a pair of boots for said individual.

7. The apparatus of claim **4** wherein said housing means is separated into a rear section fixedly secured to said platform on a mating front section removably secured to said platform.

8. The apparatus of claim **7** wherein said reservoir is mounted on said rear section of said housing means.

9. The apparatus of claim **8** wherein a body support frame is attached to said support platform for supporting the body of the individual standing in said boot in an upright outwardly extending position.

10. The apparatus of claim **9** wherein attaching means are affixed to said platform for fixedly securing said boot to said platform.

* * * * *